

CALIFORNIA COASTAL COMMISSION

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November 3, 2000

To: California Coastal Commissioners and Interested Parties
From: Peter Douglas, Executive Director
Rebecca K. Roth, Federal Programs Manager 
Subject: **Background Information for the CCMP Workshop on Wednesday, November 15, 2000.**

Attached is information provided as background for the November 15, 2000, workshop about Habitat Conservation Plans and Natural Community Conservation Plans. The Executive Director's staff report prepared for the workshop is being sent to the Commission separately the week of November 6. In addition, the staff report will be sent to all known interested parties.

HCP/NCCP Background Information for the CCMP Workshop

1. *Correspondence*. From Mike Spear, U.S. Fish and Wildlife Service, to Peter Douglas, California Coastal Commission. August 11, 2000.
2. *Correspondence*. From Jeff Benoit, Office of Ocean and Coastal Resource Management, to Peter Douglas, California Coastal Commission. August 31, 2000.
3. *Habitat Conservation Planning Handbook* (excerpts). U.S. Fish and Wildlife Service and National Marine Fisheries Service. November 1996.
4. *NCCP Act*. Fish and Game Code Section 2800-2840.
5. *NCCP General Process Guidelines*. California Department of Fish and Game. 1998.
6. *Southern California Coastal Sage Scrub NCCP Process Guide*. California Department of Fish and Game. November 1993.
7. *Southern California Coastal Sage Scrub NCCP Conservation Guide*. California Department of Fish and Game. November 1993.
8. *Legal Standards for Habitat Conservation Planning Under the Federal ESA*. Tara L. Mueller, Deputy Attorney General, Land Law Section, California Office of the Attorney General. 2000.
9. *Using Science in Habitat Conservation Plans* (without Appendix). Peter Kareiva et al. National Center of Ecological Analysis and Synthesis.
10. U.S. Fish and Wildlife Service's Response to AIBS/NCEAS's Study: *Using Science in Habitat Conservation Plans*.
11. *Leap of Faith: Southern California's Experiment in Natural Community Conservation Planning*. Natural Resources Defense Council.

12. *Frayed Safety Nets: Conservation Planning Under the Endangered Species Act.* Laura Hood. Defenders of Wildlife.
13. *Habitat Conservation Plans: Safeguards are needed to ensure that the Endangered Species Act's recovery goal is not undermined.* National Wildlife Federation.



IN REPLY REFER TO:

United States Department of the Interior

FISH AND WILDLIFE SERVICE

California/Nevada Operations Office
2800 Cottage Way, Suite W-2606
Sacramento, California 95825-1846

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AUG 14 2000

CALIFORNIA
COASTAL COMMISSION

August 11, 2000

Mr. Peter M. Douglas
Executive Director
California Coastal Commission
45 Fremont Street, Suite 2000
San Francisco, California 94105-2218

Dear Mr. Douglas:

Your letter of June 9, 2000 informed the Fish and Wildlife Service (Service) you intended to add incidental take permits (ITP) issued as a result of habitat conservation plans (HCPs) under the Federal Endangered Species Act (ESA) and the State Natural Communities Conservation Plan Act (NCCP) to the list of permits requiring a Coastal Commission (Commission) consistency certification prior to issuance by the Service and California Department of Fish and Game (Department). On July 26, 2000 you wrote to inform us that the Commission intended to review the application of the City of Carlsbad for an ITP.¹ After reading your June 9, 2000 letter I was unsure of the implications of your intentions. Your letter on the Carlsbad HCP provides considerable detail about the depth and breadth of your proposed review, and I believe your intentions raise very serious policy and procedural issues between the Commission and the Department. These problems threaten very successful coordination efforts between the Department and the Service designed to develop scientifically sound HCP/NCCPs while easing the regulatory burden on applicants for ITPs.

Under the ESA the Service is responsible to conserve listed species and the ecosystems on which they depend. The NCCP requires the Department to assure plans are ecologically sound and they must preserve California's natural communities. Combining the two laws to develop an HCP/NCCP results

¹The July 26, 2000 letter incorrectly states that Federal agencies reviewing permit applications "cannot approve the activity" until the State CZMA agency concurs that the activity is consistent with the coastal management plan. What the CZMA actually requires is that the Federal agency receive from the state coastal management agency "its concurrence from the State as to consistency" unless the Secretary...finds, after providing a reasonable opportunity for detailed comments from the Federal agency involved and from the State, that the activity is consistent..... or is otherwise necessary in the interest of national security.

in the most comprehensive habitat and species conservation program in the nation. The standards are high, requiring both species recovery and ecological integrity. They are also difficult, costly, and usually require two-four years to prepare. But, despite these drawbacks and the fact that they require tough decisions by local elected officials and landowners, they are increasingly seen as the best method to resolve the tough development versus conservation issues of this fast growing and biologically diverse state. These plans provide long term certainty for landowners, communities, and species, thereby implementing Federal and State conservation policies.

What is clear in your letter on the Carlsbad HCP/NCCP is that you propose to review the fundamental biological framework and analysis that the Service and the Department have just completed in cooperation with Carlsbad over the last several years. It is not clear what standards you will use to judge this HCP. You raise the spectre of your review going beyond the coastal zone to areas inland. To the extent we are dealing with migratory species with 1,000 mile ranges or, in some parts of the coast, streams with watersheds hundreds of miles long, the scope of your review is possibly very broad.

Procedurally, your review, coming at the end of what is already a long process, can only add more months. This additional time and effort is costly to applicants, the Department and the Service. We are frequently criticized for the time and complexity of the existing process, and we are very sensitive to those concerns. We are always seeking ways to simplify and shorten the process such as "one stop shopping", meaning parallel execution of as many local, State and Federal regulatory reviews as possible. What you propose is not "one stop shopping" but, to use the parlance of developers, a "second bite of the apple". You propose to reexamine the biology of the plan to some new and different standard.

In summary, the Service believes the proposed Commission review of NCPs/NCCPs is duplicative and will have a chilling effect on applicants' willingness to engage in the HCP/NCCP program, a program which we believe is vital to provide species conservation in rapidly growing California. We ask that you withdraw your proposed review of HCP/NCCPs, and specifically the Carlsbad HCP/NCCP, and resolve any conflicts which may exist within the context of State law. We are unaware of anything in Federal law which would prevent California from saying that any plan which complies with the rigorous biological standards of the State NCCP and Federal ESA is deemed to be biologically and ecologically consistent with the Coastal Zone Management Act. By copy of this letter to The Resources Agency Secretary Mary Nichols, and Director of Fish and Game Bob Hight, I respectfully suggest the three of you resolve this matter consistent with the goals of maintaining the conservation values of HCP/NCCPs with minimum regulatory burden.

Mr. Peter M. Douglas

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If the Service can be of further assistance in resolving this matter, please call me at 916-414-6464.

Sincerely,



Manager

cc:

Jamie Clark, Director, USFWS, Washington, DC

Mary Nichols, Secretary, The Resources Agency, Sacramento, CA

Bob Hight, Director, CDFG

Jeff Benoit, Office of Ocean and Coastal Resource

Management, Silver Spring, MD

Michael Holzmilller, Planning Dir., City of Carlsbad

Ken Berg, Field Sup., Carlsbad FWO



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UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL OCEAN SERVICE
OFFICE OF OCEAN AND COASTAL RESOURCE MANAGEMENT
Silver Spring, Maryland 20910

AUG 31 2000

CALIFORNIA
COASTAL COMMISSION

Mr. Peter M. Douglas
Executive Director
California Coastal Commission
45 Fremont Street, Suite 2000
San Francisco, California 94105-2219

Dear Mr. Douglas:

This letter responds to the California Coastal Commission's (Commission's) request to review the City of Carlsbad's application to the U.S. Fish and Wildlife Service (FWS) for an incidental take permit pursuant to the Endangered Species Act (ESA) as an unlisted activity pursuant to the Coastal Zone Management Act (CZMA) and implementing regulations. Letter from Peter M. Douglas, Commission, to Jeff Benoit, Director, Office of Ocean and Coastal Resource Management (OCRM) (July 26, 2000)). OCRM received comments from the City (two letters from Michael J. Holzmilller, Planning Director, City of Carlsbad, to Jeff Benoit, Director, OCRM (Aug. 10, 2000) and (Aug. 23, 2000)), and from the FWS (letter from Mike Spear, Manager, California/Nevada Operations Office, FWS (Aug. 11, 2000), with supporting documents). After review of all materials submitted to OCRM, and pursuant to 15 CFR § 930.54, OCRM finds that the City's activity can reasonably be expected to affect coastal resources of California's coastal zone and approves your request. This finding does not address whether the activity is consistent with the California coastal management program; it merely authorizes the Commission's review.

Therefore, in order to receive the FWS permit, the City of Carlsbad must provide the Commission with a consistency certification pursuant to the Coastal Zone Management Act (CZMA) (16 USC § 1456(c)(3)(A)) and 15 CFR part 930, subpart D. The Commission must complete its review within six months from the original notice of the activity or within three months from receipt of the City's consistency certification and accompanying information, whichever period terminates last. See 15 CFR § 930.54(e). The FWS may not approve the City's application until the requirements of 15 CFR part 930, subpart D have been met.

State CZMA Review of an "Unlisted Activity"

States with Coastal Management Programs (CMPs), developed and federally approved under the CZMA, list in their CMP program documents those federal license or permit activities that are subject to the State's review under the CZMA federal consistency requirement, 16 USC § 1456(c)(1)(A). See 15 CFR § 930.53(b). An unlisted activity is an activity that requires a federal license or permit, but is not listed in a State's CMP. See 15 CFR § 930.54. For unlisted activities, in or outside the coastal zone, the State CMP must notify the applicant and the relevant Federal agency that it intends to review the activity. The State must make this notification within



30 days of receiving notice of the license or permit application to the Federal agency, otherwise the state waives its right to review the unlisted activity. The waiver does not apply where the State CMP does not receive notice of the application. The applicant and the Federal agency have 15 days from receipt of the State CMP's request to provide comments to OCRM. OCRM will make a decision usually within 30 days of receipt of the State's request. The sole basis for OCRM's decision will be whether the proposed activity can be reasonably expected to affect any land or water use or natural resource of the coastal zone. The permitting Federal agency may not approve the activity unless OCRM denies the State's request, or, if OCRM approves the State's request, the State concurs with the applicant's consistency certification, or if the State objects to the consistency certification and the applicant appeals the State's objection to the Secretary of Commerce, pursuant to 15 CFR part 930, subpart H, and the Secretary overrides the State's objection.

Coastal Effects

The determination of effects is based on whether effects to any land or water use or natural resource of the coastal zone is reasonably foreseeable. 16 USC § 1456; H.R. Conf. Rep. No. 964, 101st Cong., 2d Sess., at 970-71.¹ Location of the activity, whether within or outside the coastal zone, is not a determining factor. *Id.* Coastal effects are not limited to adverse environmental effects, as suggested by the City. The CZMA covers a comprehensive set of coastal management objectives. *See* 16 USC § 1452. State CMPs manage a broad range of coastal uses and resources. Thus, an activity that may have a beneficial environmental effect may effect public access, development, or other uses of the State's coastal zone. Moreover, purported beneficial effects may adversely affect other natural resources of the coastal zone, or the effects resulting from a permit may not be offset by conservation or mitigation plans in such a manner as to be consistent with the enforceable policies of the state's CMP.

The City and the FWS raised two primary arguments as to why OCRM should not approve the Commission's review. First, the City asserts that the HMP and the permit will not have adverse effects, but will have only beneficial environmental results. As discussed above, there may be other coastal effects and may be adverse coastal effects. Undoubtedly, the Commission will carefully consider the City's documentation and management and mitigation plans regarding beneficial effects when determining whether the incidental take permit is consistent with the enforceable policies of the California CMP.

Secondly, both the FWS and the City assert that Commission review is not timely given the extended amount of time spent on HMP development. The City further asserts that the Commission has waived its right to consistency review by not participating in other opportunities to participate in the north San Diego County's regional habitat management program. OCRM is very

¹ The CZMA was reauthorized and amended in 1990. *See* P.L. 101-508. The CZMA federal consistency regulations, 15 CFR part 930, pre-date the 1990 reauthorization. Thus the regulations are authoritative only to the extent that they are consistent with the 1990 changes.

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sympathetic to comments regarding the timeliness of the Commissions request; it would have been much more desirable for all of the parties to have addressed the need for CZMA consistency review at various points throughout the development of the HMP and its implementing mechanisms. Given the need to complete the HCP and begin its implementation, we urge the Commission to commit the necessary resources to complete its review of the Carlsbad incidental take permit as expeditiously as possible. With this letter, OCRM offers to facilitate a prompt resolution of this issue.

Notwithstanding the above, the CZMA and its federal consistency regulations provide the mechanism and timing for federal consistency reviews, which were triggered by the City's application to the FWS. Whether the Commission participated earlier or not does not remove the CZMA consistency requirement. The Commission could only waive its consistency rights if the Commission failed to meet the time frames provided in the CZMA and 15 CFR part 930, subpart D. The CZMA does not allow OCRM, another Federal agency or an applicant to impose a waiver on the State for other reasons, including failure to participate in other opportunities. The FWS permit would authorize incidental take of species protected under the ESA, the potential loss of habitat for the species, and mitigation activities in and outside the coastal zone which may affect the species for a period of 50 years. The Commission has adequately demonstrated that coastal effects are reasonably foreseeable and for this reason, OCRM grants its request to review the application of the City of Carlsbad for an incidental take permit from the U.S. Fish and Wildlife Service.

Please contact Mr. David W. Kaiser, Federal Consistency Coordinator, OCRM's Coastal Programs Division (CPD), at (301) 713-3098, extension 144, or Ms. Keelin Kuipers, Coastal Management Specialist, OCRM/CPD, at (301) 713-3155 x175, if you have any questions.

Sincerely,



Jeffrey R. Benoit
Director

cc: Mike Spear
U.S. Fish and Wildlife Service
California/Nevada Operations Office
2800 Cottage Way, Suite W2606
Sacramento, California 95825

Michael Holzmiller
Planning Director
City of Carlsbad
1635 Faraday Avenue
Carlsbad, California 92008-7314



Endangered Species



Habitat Conservation Planning Handbook

U.S. Fish and Wildlife Service
and
National Marine Fisheries Service

November 1996

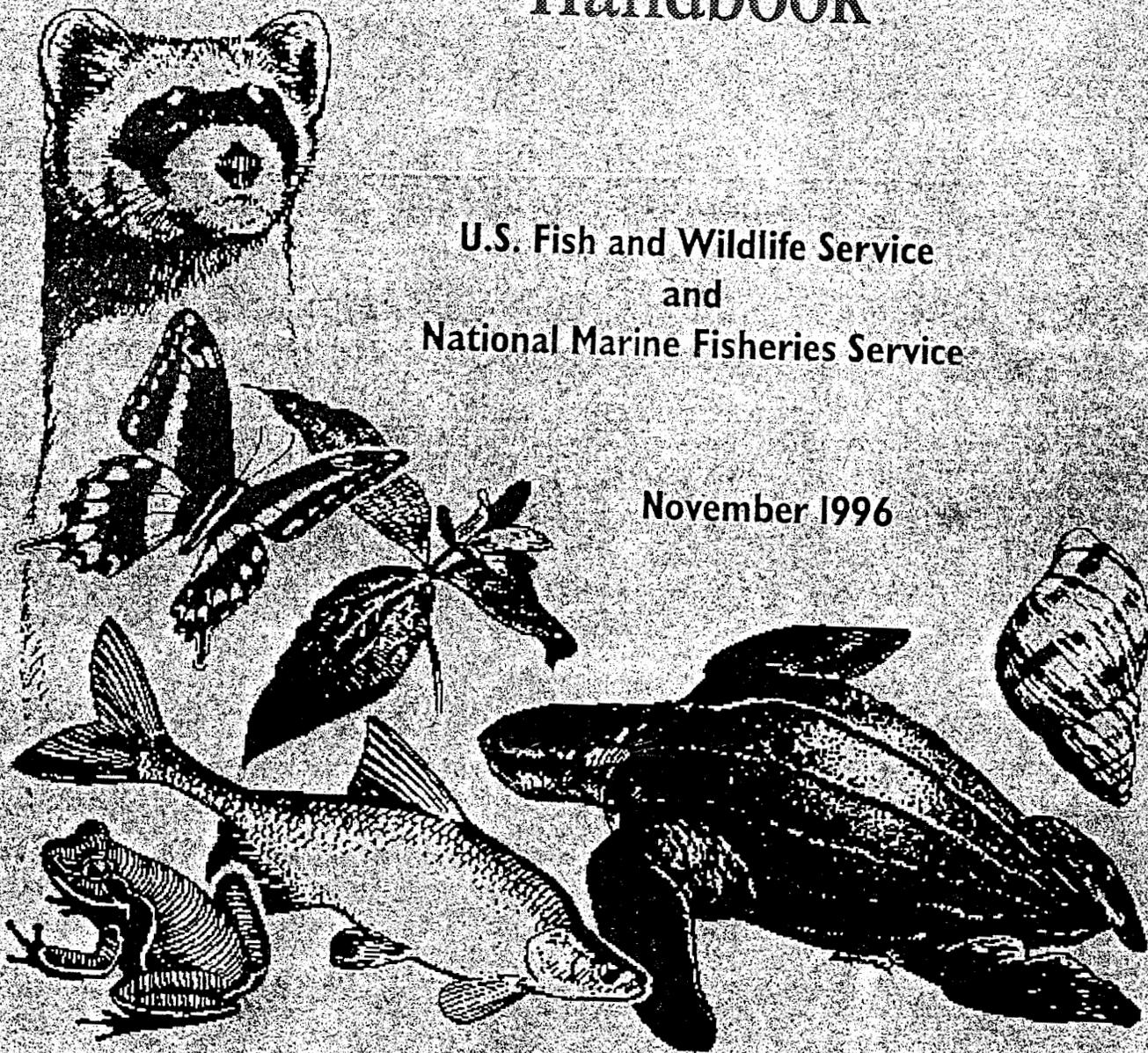


Exhibit 3





SEP 11 2000

U.S. DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT



FOREWORD

It gives us great pleasure to introduce this new Habitat Conservation Planning Handbook. It is the culmination of much hard work by dedicated U.S. Fish and Wildlife Service and National Marine Fisheries Service employees. It represents a great deal of collaboration with our conservation partners, and an important milestone in our ongoing efforts to make the Endangered Species Act (Act) more efficient and effective while providing voluntary opportunities for private landowners to be involved in conservation. With the streamlining measures and other innovations provided in this handbook, the Habitat Conservation Planning (HCP) process ranks as one of our greatest successes in seeking ways to reduce the Act's regulatory burden on private landowners while addressing the habitat needs of listed species.

HCPs reduce conflicts between listed species and economic use or development activities, allowing for the development of "creative partnerships" between the public and private sector which make the process work for both landowners and species. We have taken a process that was rarely used and have turned it into an increasingly utilized and successful way to provide private owners of natural resources with the creative flexibility and certainty they need to plan their activities while providing protection for listed species.

Species benefit too, and that is another strength of this process. It often expands the focus from conserving a single species to looking at the ecosystem as a whole, and that can often keep species from declining long before they may need to be considered for listing. Thus, the HCP process provides many opportunities for willing owners of natural resources to make positive contributions to the conservation of species and their habitats. This allows landowners to become true partners in the conservation of our precious natural heritage.

We would like to take this opportunity to express our heartfelt thanks for the hard work and dedication of all those who have made the development of the HCP process and this handbook possible. I especially want to thank those State, county and private natural resource owners who have become conservation partners with our Departments through this process. This document will be an important tool in threatened and endangered species conservation for our Nation.

Bruce Babbitt
Secretary
Department of the Interior

D. James Baker
Under Secretary for Oceans and Atmosphere
National Oceanic and Atmospheric Administration



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PREFACE

The habitat conservation planning (HCP) program under section 10(a)(1)(B) of the Endangered Species Act (ESA) has grown rapidly in recent years. In the first 10 years of the program (1983-1992), 14 incidental take permits were issued. As of the end of August, 1996, 179 incidental take permits had been issued and approximately 200 HCPs were being developed. In just a few years the HCP process has been transformed from a relatively little used option under the ESA to one of its most important and innovative conservation programs.

Another pattern has begun to emerge, as evidenced by the growing number of HCPs being developed and by the size of the conservation planning areas involved. As of late 1995, most HCPs approved were for planning areas less than 1,000 acres in size. However, of the HCPs being developed as of early 1996, approximately 25 exceed 10,000 acres in size, 25 exceed 100,000 acres, and 18 exceed 500,000 acres. This suggests that HCPs are evolving from a process adopted primarily to address single developments to a broad-based, landscape level planning tool utilized to achieve long-term biological and regulatory goals. It also suggests that the underlying spirit of the HCP process has begun to take hold.

These large-scale, regional HCPs can significantly reduce the burden of the ESA on small landowners by providing efficient mechanisms for compliance, distributing the economic and logistic impacts of endangered species conservation among the community, and bringing a broad range of landowner activities under the HCPs' legal protection. In addition, the Services have helped reduce the burden on small landowners and have made it easier for them to be involved in the HCP process through streamlining measures in the HCP process.

The HCP process was patterned after the San Bruno Mountain HCP--an innovative land-use planning effort in California's San Francisco Bay area that began in the mid-1970s with a classic conflict between development activities and endangered species protection and culminated in the issuance of the first incidental take permit in 1983. What made the San Bruno Mountain case unusual was that it attempted to resolve these conflicts through negotiation and compromise rather than continued litigation. This fundamental approach was endorsed and codified by Congress when it incorporated the HCP process into the ESA in 1982.

One of the great strengths of the HCP process is its flexibility. Conservation plans vary enormously in size and scope and in the activities they address--from half-acre lots to millions of acres, from forestry and agricultural activities to beach development, and from a single species to dozens of species. Another key is creativity. The ESA and its implementing regulations establish basic biological standards for HCPs but otherwise allow the creative potential of HCP participants to flourish. As a result, the HCP

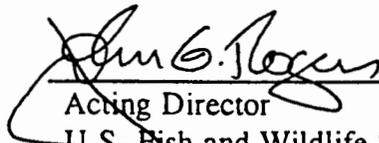
program has begun to produce some remarkably innovative natural resource use and conservation programs.

The challenge of balancing biology with economics is a complex one, but is fundamental to the HCP process. Policy and procedure have at times frustrated HCP users and hampered the program's ability to meet its full potential. The HCP process was historically viewed as procedurally difficult; permit approvals took too long in some cases and long-term regulatory certainty under HCPs was widely desired by applicants but rarely available.

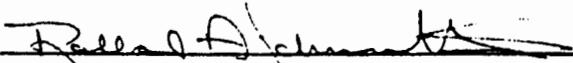
However, the U.S. Fish and Wildlife Service and National Marine Fisheries Service have made significant improvements in the HCP program in recent years. We have increased section 10 staff and improved guidance about section 10 objectives and standards, clarified and streamlined permit processing requirements, and substantially raised the certainty provided to HCP permittees. This handbook incorporates all these improvements and reflects updated policies and procedures in the HCP program.

The handbook is organized as follows. Chapter 1 provides a summary and overview of the HCP process. Chapter 2 summarizes the roles of the applicant and the Fish and Wildlife Service and National Marine Fisheries Services' Field, Regional, and Washington Offices. Chapter 3 explains the process of developing an HCP. Chapter 4 explains how unlisted species may be addressed in an HCP. Chapter 5 deals with section 10 NEPA requirements. Chapter 6 explains how to process and review an incidental take permit application. Chapter 7 explains the section 10 permit issuance criteria. Finally, Chapter 8 contains a glossary of important terms used throughout the handbook.

The handbook also contains numerous appendices, which include pertinent Federal regulations and policies; a reference list of publications about HCPs; "template" HCP documents that can be used as guides; and examples of HCP documents such as a permit application form and Federal Register notices. The handbook is organized to make information readily available. All important issues have labeled sections or subsections. The reader can find specific subjects of interest by scanning the Table of Contents and turning to the appropriate page.



Acting Director
U.S. Fish and Wildlife Service



Assistant Administrator for Fisheries
National Marine Fisheries Service

CHAPTER 1

THE ENDANGERED SPECIES ACT AND INCIDENTAL TAKE PERMITS

A. Purpose of the Habitat Conservation Planning Process

The purpose of the habitat conservation planning process and subsequent issuance of incidental take permits is to authorize the incidental take of threatened or endangered species, not to authorize the underlying activities that result in take. This process ensures that the effects of the authorized incidental take will be adequately minimized and mitigated to the maximum extent practicable.

B. Purpose of the Handbook

The purpose of this handbook is to guide the U.S. Fish and Wildlife Service (FWS) and National Marine Fisheries Service (NMFS) (collectively, the Services) in processing incidental take permit applications and participating in associated habitat conservation planning efforts. The goals of the handbook are threefold: (1) to ensure that the goals and intent of the conservation planning process under the Endangered Species Act are realized; (2) to establish clear standards that ensure consistent implementation of the section 10 program nationwide; and (3) to ensure that FWS and NMFS offices retain the flexibility needed to respond to specific local and regional conditions and a wide array of circumstances. Although intended primarily as internal agency guidance, this handbook is fully available for public evaluation and use, as appropriate.

C. Background and Legal Authority

Section 9 of the Endangered Species Act of 1973, as amended (ESA), prohibits the "take" of any fish or wildlife species listed under the ESA as endangered; under Federal regulation, take of fish or wildlife species listed as threatened is also prohibited unless otherwise specifically authorized by regulation. Take, as defined by the ESA, means "to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct."

In the 1982 amendments to the ESA, Congress established a provision in section 10 that allows for the "incidental take" of endangered and threatened species of wildlife by non-Federal entities. Incidental take is defined by the ESA as take that is "incidental to, and not the purpose of, the carrying out of an otherwise lawful activity." Prior to 1982, non-Federal parties undertaking otherwise lawful activities that were likely to result in take of listed species risked violating the section 9 prohibition but had no recourse under the law for exemption. Up to that time, only take occurring during scientific research and other conservation actions could be authorized under the ESA.

The "incidental take permit" process was established under section 10(a)(1)(B) of the ESA precisely to resolve this difficulty. Under this provision the Secretary of the Interior and Secretary of Commerce may, where appropriate, authorize the taking of federally listed wildlife or fish if such taking occurs incidentally during otherwise legal activities. The Secretaries of Interior and Commerce subsequently charged the Directors of the FWS and NMFS, respectively, with regulating the incidental taking of listed species under their jurisdiction.

Section 10(a)(2)(A) of the ESA requires an applicant for an incidental take permit to submit a "conservation plan" that specifies, among other things, the impacts that are likely to result from the taking and the measures the permit applicant will undertake to minimize and mitigate such impacts. Conservation plans under the ESA have come to be known as "habitat conservation plans" or "HCPs" for short. These terms are used interchangeably throughout this handbook. The terms incidental take permit, section 10 permit, and section 10(a)(1)(B) permit are also used interchangeably in the handbook. Section 10(a)(2)(B) of the ESA provides statutory criteria that must be satisfied before an incidental take permit can be issued.

Thus, section 10, as revised, provides a clear regulatory mechanism to permit the incidental take of federally listed fish and wildlife species by private interests and non-Federal government agencies during lawful land, water, and ocean use activities. However, Congress also intended this process to reduce conflicts between listed species and economic development activities, and to provide a framework that would encourage "creative partnerships" between the public and private sectors and state, municipal, and Federal agencies in the interests of endangered and threatened species and habitat conservation (H.R. Rep. No. 97-835, 97th Congress, Second Session).

This is critically important, for Congress was not instituting merely a permit procedure but a process that, at its best, would integrate non-Federal development and land use activities with conservation goals, resolve conflicts between endangered species protection and economic activities on non-Federal lands, and create a climate of partnership and cooperation.

Congress also intended that HCPs could include conservation measures for candidate species, proposed species, and other species not listed under the ESA at the time an HCP is developed or a permit application is submitted. This can benefit the permittee by ensuring that the terms of an HCP will not change over time with subsequent species listings. It can also provide early protection for many species and, ideally, prevent subsequent declines and in some cases the need to list such species.

Congress modeled the 1982 section 10(a) amendments after the conservation plan developed by private landowners and local governments to protect the habitat of two federally listed butterfly species on San Bruno Mountain in San Mateo County,

California. Congress also recognized that the circumstances surrounding the San Bruno Mountain HCP would not be universally applicable and that each HCP would be unique to its own factual setting.

The FWS published its final regulations for implementing the section 10 permit program in the Federal Register on September 30, 1985 (50 FR 39681-39691); NMFS published final regulations for the program on May 18, 1990 (55 FR 20603; see Appendix 1 for both regulations). However, because the process applies to a wide variety of projects and activities, the Services declined to promulgate "exhaustive, 'cookbook' regulations . . . detailing every possible element that could be required in conservation plans." Rather, the section 10 permit regulations reiterate ESA requirements and provide a framework for issuance and management of permits. Beyond that it is Service policy to promote "flexibility and ingenuity" in working with permit applicants and developing HCPs under the section 10 process.

In keeping with this policy, this handbook establishes detailed but flexible guidelines to be used in developing HCPs, processing section 10(a)(1)(B) permit applications, and managing ongoing HCP programs. It also attempts to correct the inevitable difficulties identified during the first 10 years of the section 10 program and to make it more efficient in the future. However, nothing in this handbook is intended to supersede or alter any aspect of Federal law or regulation pertaining to the conservation of endangered species.

D. Coordination Between FWS and NMFS

FWS and NMFS share joint authorities under the ESA for administering the incidental take permit program. Generally, the FWS is responsible for terrestrial and freshwater aquatic species while NMFS is responsible for listed marine mammals, anadromous fish, and other living marine resources. Thus, HCP efforts in which FWS is involved tend to be land-based, while HCPs in which NMFS is involved are generally aquatic, addressing either marine or anadromous species. NMFS also issues permits for incidental taking of listed fish species during other activities such as state-run hatchery operations and commercial or recreational fisheries. In some cases these responsibilities overlap and the agencies work closely together--for example, in the Pacific Northwest many HCPs are being developed which address terrestrial species and anadromous fish in the same planning effort.

This handbook is intended to serve the needs of each agency's incidental take permit program. Although to date the FWS has had a more active program, and some sections consequently are written more from the FWS's land-based perspective, it has been and is the intention of both agencies to develop and use the handbook jointly. It is also their intention to cooperate fully in joint administration of the section 10 program. However, there are procedural differences between the two agencies. Chapters 2 and 6 describe certain differences between FWS and NMFS with respect to organizational structure,

permit delegation authority, and applicable Federal regulations, and Chapters 3 and 4 contain some information applicable to FWS only. All such differences are clearly indicated and unless otherwise noted the policies and procedures described in the handbook apply jointly to FWS and NMFS.

E. Overview of the Incidental Take Permit Process

1. When is a Permit Needed?

The starting point for the section 10(a)(1)(B) permit process is a determination that "take" is likely to occur during a proposed non-Federal activity and a decision by the landowner or project proponent to apply for an incidental take permit. Federal activities and non-Federal activities that receive Federal funding or require a Federal permit (other than a section 10 permit) typically obtain incidental take authority through the consultation process under section 7 of the ESA. Thus, the HCP process is designed to address non-Federal land or water use or development activities that do not involve a Federal action that is subject to section 7 consultation.

In some cases, however, Federal agencies besides FWS or NMFS may be integrally involved in HCP efforts. In these cases, the action to be conducted by the Federal agency during the implementation of the HCP should be included as an additional element to be consulted on through the section 7 consultation conducted for the HCP. This allows the Services to conduct one formal consultation that incorporates the actions for the HCP and any related and supportive Federal actions into one biological opinion. The biological opinion developed for the HCP should also incorporate the necessary biological analysis on the Federal action as well as the actions in the HCP to help eliminate duplication. Thus, the single biological opinion issued by the Services would address both the Federal action and the non-Federal action, and it would include an incidental take statement that authorizes any incidental take by the Federal agency and an incidental take permit that authorizes any incidental take by the section 10 permittee. See Chapter 3, Section A.1 and A.6 for more information.

Before determining whether a section 10 permit is needed, the applicant, with Service technical assistance, should consider whether take during proposed project activities can be avoided. This is sometimes possible through relocation of project facilities, timing restrictions, or similar measures, depending on the nature and extent of the proposed activity and the biology of the species involved. If take cannot be avoided, the Services will recommend that an incidental take permit be obtained. The decision to obtain a permit lies with the prospective permit applicant. However, should the applicant ultimately elect not to obtain a permit, and an unauthorized take attributable to project activities occurs, the responsible individuals or entity would be liable under the enforcement provisions of the ESA.

2. What Kinds of Activities Can be Authorized?

A section 10(a)(1)(B) permit only authorizes take that is incidental to otherwise lawful activities. In this context, "otherwise lawful activities" means economic development or land or water use activities that, while they may result in take of federally listed species, are consistent with other Federal, state, and local laws. Take that occurs during other types of activities--i.e., take for scientific purposes, to enhance the propagation or survival of a listed species, or for purposes of establishment and maintenance of experimental populations--must be authorized by a permit under section 10(a)(1)(A) of the ESA (e.g., "Safe Harbor" or "recovery" permits). In some cases, however, take in the form of capture or harassment can be authorized under an incidental take permit, if the purpose of such actions is to minimize more serious forms of take (e.g., death or injury) or to conduct monitoring programs during activities authorized by the permit (see Chapter 7, Section B.1)

3. Phases of the Process.

Once the decision to obtain a permit has been made, the section 10 process consists of three phases: (1) the HCP development phase; (2) the formal permit processing phase; and (3) the post-issuance phase. The HCP development phase is the period during which the applicant's project or activity is integrated with species protection needs through development of the HCP. This phase is typically conducted by the applicant with technical assistance from FWS or NMFS Field Office and ends when a "complete application package" is forwarded to the appropriate permit issuing office. A complete application package consists of a permit application form, fee (if required), a completed HCP, a draft National Environmental Policy Act (NEPA) document (if required), and in some cases an Implementing Agreement (see Chapter 6, Section B.2).

The permit application processing phase involves review of the application package by the appropriate Regional Office or, in some cases, the NMFS Washington, D.C., office; announcement in the Federal Register of the receipt of the permit application and availability of the NEPA analysis for public review and comment; intra-Service consultation under section 7 of the ESA; and determination whether the HCP meets ESA statutory issuance criteria. If FWS or NMFS determines, after considering public comment, that the HCP is statutorily complete and that permit issuance criteria have been satisfied, it must issue the permit. The Field Office and Regional Office should coordinate regularly throughout these first two phases of the HCP process to avoid any renegotiation of the terms of the HCP by the Regional Office (see Chapter 6, Section C.1).

The post-issuance phase is the period during which the permittee and other responsible entities implement the HCP and its monitoring and funding programs. Service responsibilities, in addition to any identified in the HCP, are to monitor the permittee's

compliance with the conservation program and other terms and conditions of the permit, and the HCP's long-term progress and success. When a permit is issued, it is also Service policy to notify the public of the outcome of the permit application through a Federal Register notice. An individual notice may be published for each permit decision, or a quarterly or biannual list of permit decisions for that period may be published. There are also specific notification requirements under NEPA.

4. Compliance With NEPA and Section 7 of the ESA.

Issuance of an incidental take permit is a Federal action subject to National Environmental Policy Act compliance. The purpose of NEPA is to promote analysis and disclosure of the environmental issues surrounding a proposed Federal action in order to reach a decision that reflects NEPA's mandate to strive for harmony between human activity and the natural world. Although section 10 and NEPA requirements overlap considerably, the scope of NEPA goes beyond that of the ESA by considering the impacts of a Federal action on non-wildlife resources such as water quality, air quality, and cultural resources. Depending on the scope and impact of the HCP, NEPA requirements can be satisfied by one of the three following documents or actions: (1) a categorical exclusion; (2) an Environmental Assessment (EA); or (3) an Environmental Impact Statement (EIS).

An EIS is required when the project or activity that would occur under the HCP is a major Federal action significantly affecting the quality of the human environment. An EA is prepared when it is unclear whether an EIS is needed or when the project does not require an EIS but is not eligible for a categorical exclusion. An EA culminates in either a decision to prepare an EIS or a Finding of No Significant Impact (FONSI). Activities which do not individually or cumulatively have a significant effect on the environment can be categorically excluded from NEPA. Chapter 5 of the handbook discusses NEPA requirements.

Issuance of an incidental take permit is also a Federal action subject to section 7 of the ESA. Section 7(a)(2) requires all Federal agencies, in consultation with the Services, to ensure that any action "authorized, funded, or carried out" by any such agency "is not likely to jeopardize the continued existence of any endangered species or threatened species or result in the destruction or adverse modification" of critical habitat. Because issuance of a section 10 permit involves an authorization, it is subject to this provision. Although the provisions of section 7 and section 10 are similar, section 7 and its regulations introduce several considerations into the HCP process that are not explicitly required by section 10--specifically, indirect effects, effects on federally listed plants, and effects on critical habitat. Chapter 3, Sections B.2(e)-(h) discuss these issues in detail. Chapter 6, Section C.3 explains how section 7 consultation for issuance of section 10(a)(1)(B) permits is conducted.

5. Guiding Principles.

The section 10 process is an opportunity to provide species protection and habitat conservation within the context of non-Federal development and land and water use activities. Ideally, it may also allow for the conservation and recovery of federally listed, proposed, and candidate species as well as overall biological diversity. It thus provides a mechanism for allowing economic development that will not "appreciably reduce the likelihood of the survival and recovery of the species in the wild."

While species conservation is of course paramount, the section 10 process recognizes the importance of both biological and economic factors. Biologically, it provides FWS and NMFS with a tool to minimize and mitigate the incidental take of listed, proposed, and candidate species at the local, rangewide, or ecosystem level. For landowners and local governments, it provides long-term assurances that their activities will be in compliance with the requirements of the ESA. For both sides, the HCP process promotes negotiation and compromise and provides an alternative to conflict and litigation.

The Services recognize the importance of working in partnership with non-Federal interests under section 10 of the ESA. The Services are committed to facilitating such partnerships by participating in all phases of the HCP process, providing timely assistance to permit applicants, expeditiously processing permit applications, and generally undertaking all measures necessary to ensure that the section 10 program is able to meet the growing challenges and opportunities of integrating endangered species protection with economic activities and needs. These principles are discussed further throughout this chapter and the entire handbook.

F. Overview of Permit Processing Requirements

Processing an incidental take permit application consists of announcing the HCP and NEPA analysis in the Federal Register and making them available for public review and comment; evaluating comments received, if any; conducting a consultation under section 7 of the ESA; and determining whether the HCP meets statutory issuance criteria under section 10(a)(2)(B) of the ESA. These basic steps are required for all HCPs. However, specific document and processing requirements will vary depending on the size, complexity, and impacts of the HCP involved (see sections F.2-F.5 below). Other documents or actions that may be needed depending on the HCP include the Implementing Agreement (Chapter 3, Section B.8), Environmental Action Memorandum, a brief document that provides the Service's record of NEPA compliance for categorically excluded actions (Chapter 6, Section B.2), and legal review of the application package (Chapter 6, Section C.4).

1. Expeditious Processing of Permit Applications.

In the first ten years of the section 10 HCP program (1983-1992), 14 incidental take permits were issued. As of August, 1996, 179 incidental take permits have been issued, and approximately 200 are in development. To cope with this growing section 10 workload and anticipated continued increases in the program, the Services intend to streamline the HCP process to the maximum extent practicable and allowable by law.

To accomplish this, the handbook introduces numerous improvements to the section 10 program developed by the Services and the Departments of Interior and Commerce. First, the handbook establishes a category of HCPs called "low-effect HCPs" which will apply to activities that are minor in scope and impact; these HCPs will receive expedited handling during the permit application processing phase. Second, the handbook improves guidance to Service personnel about section 10 program standards and procedures. Third, the handbook institutes numerous mechanisms to expedite the permit processing phase for all HCPs. Fourth, the handbook establishes specific time periods for processing incidental take permit applications once an HCP is submitted to the FWS or NMFS for approval.

2. The Low-effect HCP Category.

For purposes of the section 10 program, the Services establish a special category for HCPs with relatively minor or negligible impacts. This "low-effect HCP" category is defined as follows:

Low-Effect HCPs -- Those involving: (1) minor or negligible effects on federally listed, proposed, or candidate species and their habitats covered under the HCP; and (2) minor or negligible effects on other environmental values or resources. "Low-effect" incidental take permits are those permits that, despite their authorization of some small level of incidental take, individually and cumulatively have a minor or negligible effect on the species covered in the HCP. Low-effect HCPs may also apply to habitat-based HCPs if the permitted activities have minor or negligible effects to the species associated with the habitat-types covered in the HCP. Factors relevant to the determination that an activity is a low-effect activity include, but are not limited to, the effect of the activity on the distribution or the numbers of the species.

The relationship between the geographic size of a project and the scope or severity of its impacts will not always be clear-cut. Projects that are large or small in size often will have commensurately high or low effects. However, a project may be large in size, but still be categorized as low-effect if it is expected to result in minor or negligible impacts. Similarly, a project could be small in size but capable of generating very significant impacts (e.g., if it affects a species with a highly-restricted range).

The Services must consider each HCP on a case-by-case basis in determining whether it belongs in the low-effect category, taking into account all relevant factors including biological factors. The determination of whether an HCP qualifies for the low-effect category must be based on its anticipated impacts prior to implementation of the mitigation plan. The purpose of this category is to expedite handling of HCPs for activities with inherently low impacts, not for projects with significant potential impacts that are subsequently reduced through mitigation programs. However, this determination should factor in actions taken by the applicant to avoid take, such as conducting activities during specific times to avoid the nesting season or by relocating project locations.

3. Processing Low-Effect Permit Applications.

Low-effect HCPs and permit applications often involve a single small land or other natural resource owner and relatively few acres of habitat. The impacts of such projects on federally listed species frequently are minor or negligible and the applicants often do not have the resources to withstand long delays.

Consequently, an important guiding principle of the handbook is that permit application processing requirements for low-effect HCPs, as defined above, will be substantially simplified and permit issuance for such HCPs will be expedited to the maximum extent possible, consistent with Federal law.

This will be accomplished by: (1) establishing clear processing standards for all HCP permit applications; (2) eliminating or standardizing section 10 documents for low-effect projects, wherever possible; (3) eliminating unnecessary review procedures; (4) categorically excluding low-effect HCPs from NEPA requirements; and (5) utilizing other techniques described throughout the handbook.

4. Summary of Permit Processing Requirements.

The primary documentation and processing requirements for HCPs by category are as follows. Both categories also require the permit document with applicable terms and conditions.

Low-effect HCPs require: (1) an HCP; (2) an application form and fee (\$25); (3) publication in the Federal Register of a Notice of Receipt of a Permit Application; (4) formal section 7 consultation; (5) a Set of Findings, which evaluates a section 10(a)(1)(B) permit application in the context of permit issuance criteria found at section 10(a)(2)(B) of the ESA; and (6) an Environmental Action Memorandum, a brief document that serves as the Service's record of NEPA compliance for categorically excluded actions by explaining the reasons the Services concluded that there will be no individual or cumulative significant effects on the environment. Implementing Agreements will not be prepared for a low-effect HCP, unless requested by the permit applicant. In such cases, acceptance

of the legal terms and conditions of the permit by the applicant will provide the necessary assurance that the plan will be implemented. Low-effect projects are categorically excluded from NEPA (see Chapter 5, Section A.2).

All other HCPs require: (1) an HCP; (2) an application form and fee (\$25); (3) an Implementing Agreement (optional, depending on Regional Director discretion); (4) the NEPA analysis, either an EA or EIS; (5) publication in the Federal Register of a Notice of Receipt of a Permit Application and Notice(s) of Availability of the NEPA analysis; (6) Solicitor's Office review of the application package; (7) formal section 7 consultation; and (8) a Set of Findings, which evaluates a section 10(a)(1)(B) permit application in the context of permit issuance criteria found at section 10(a)(2)(B) of the ESA and 50 CFR Part 17. Note: For NMFS, the NOAA General Counsel's Office (either in the Region or Headquarters) reviews all documents relating to all HCPs.

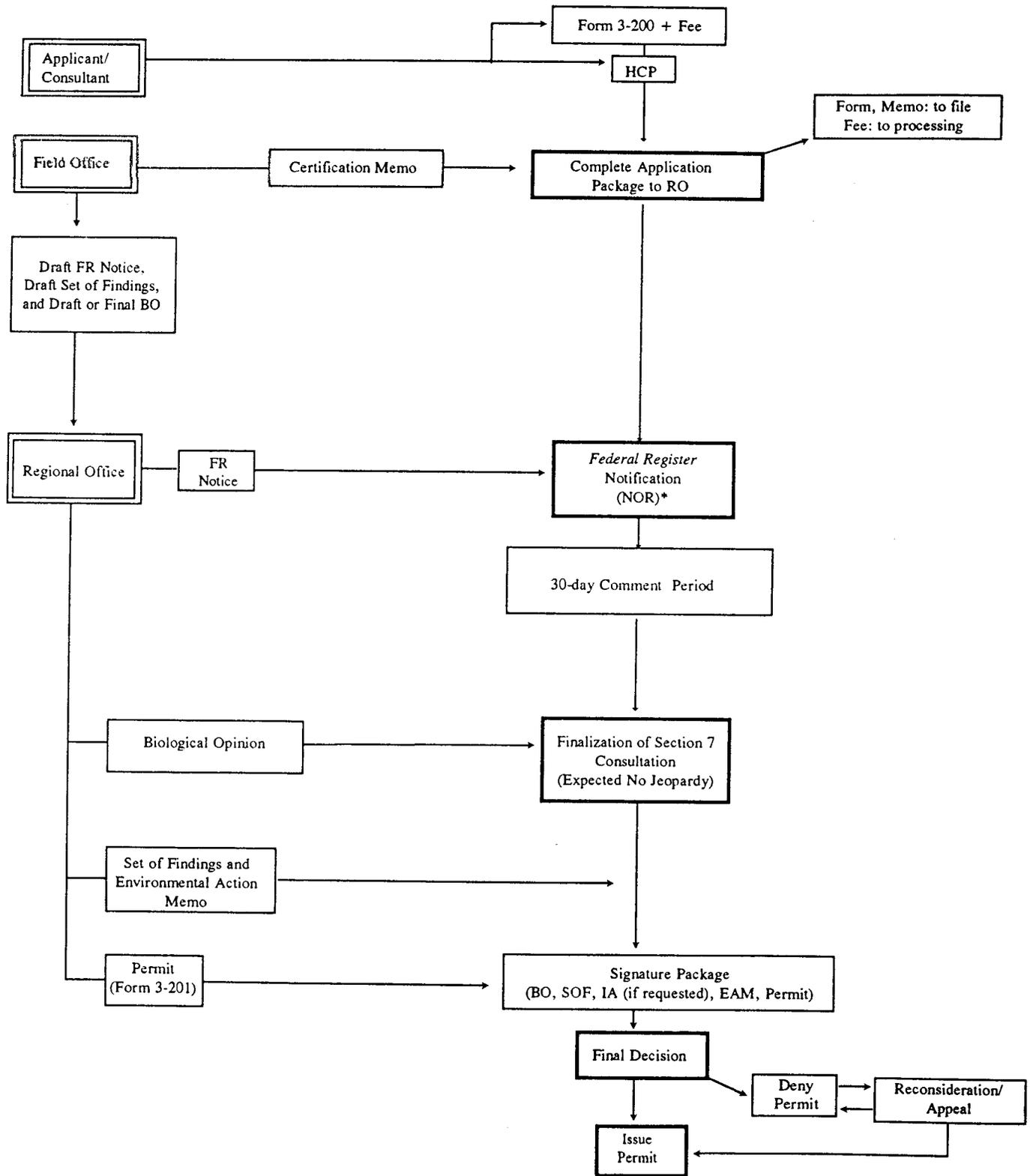
An EA will satisfy NEPA requirements for a section 10 permit application and will conclude with a Finding of No Significant Impact (FONSI), unless it is determined during preparation of the EA that approval of the project is a major Federal action significantly affecting the quality of the human environment. It is not necessary to prepare an EA first, if it is determined from the start that an EIS is necessary, although an HCP that requires an EIS should be uncommon. In the latter case, an EIS and Record of Decision (ROD) is required. For some HCPs, it may be possible to prepare the EA in accordance with 40 CFR 1501.4(e)(2), which requires that any Finding of No Significant Impact (FONSI) in an EA be made available for public review for 30 days before an agency makes its final decision and can eliminate the need for an EIS [see Chapter 5, Section A.3].

Figure 1 shows a diagram of the section 10 permit processing requirements from submission of the application package to permit issuance for a low-effect HCP that is categorically excluded from NEPA. Figures 2 and 3 show a diagram of the section 10 permit processing requirements from submission of the application package to permit issuance for an HCP that requires an EA and an EIS, respectively.

5. Target Permit Processing Times.

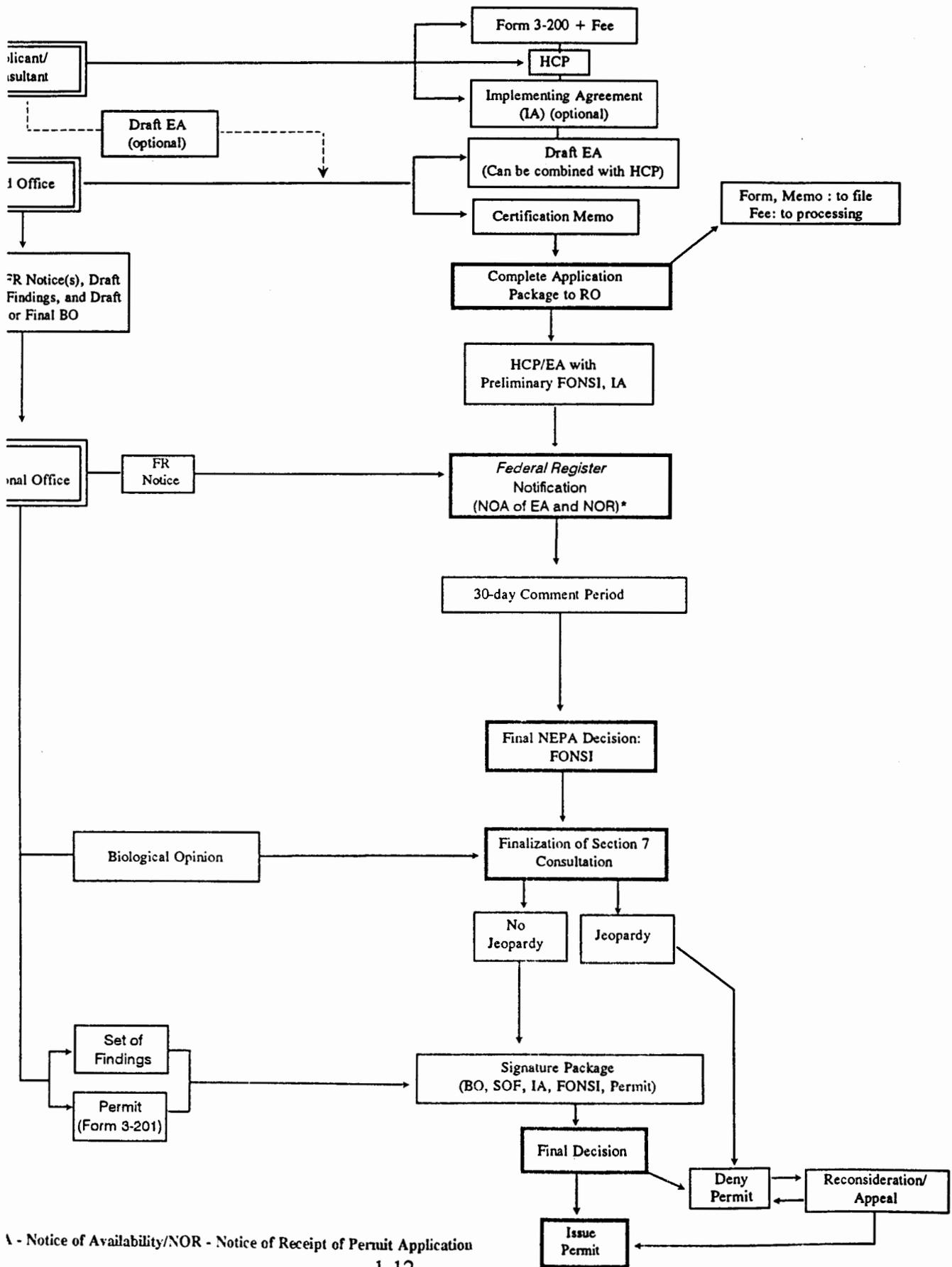
The time required to process an incidental take permit application will vary depending on the size, complexity, and impacts of the HCP involved. The Services will work to complete all steps as expeditiously as possible. Procedurally, the most variable factor in permit processing requirements is the level of analysis required for the proposed HCP under NEPA--whether an EIS, EA, or a categorical exclusion--although other factors such as public controversy can also affect permit processing times.

**Figure 1: Typical Processing Steps for Low-effect
Section 10(a)(1)(B) Incidental Take Permit
Applications**



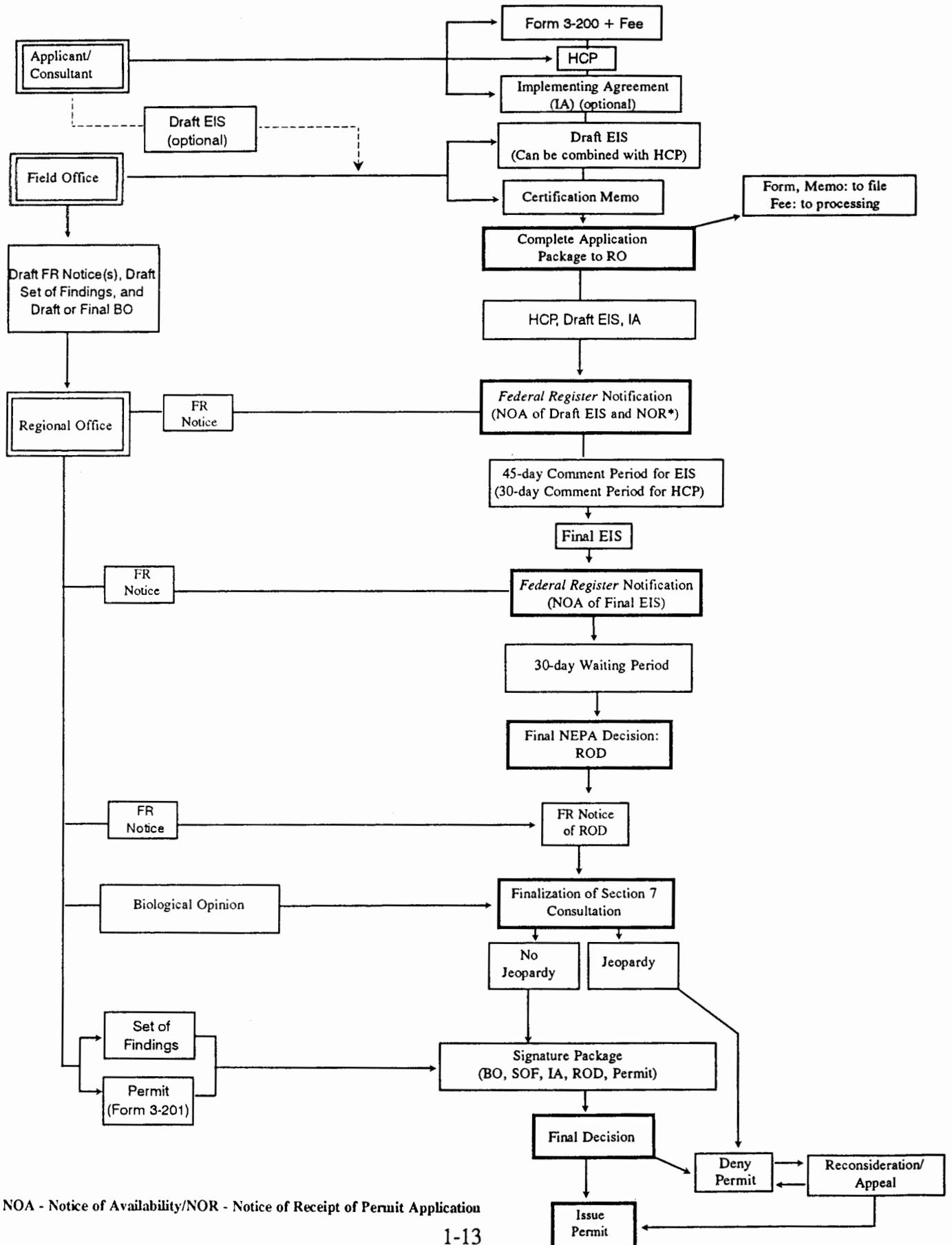
* NOR - Notice of Receipt of Permit Application

Figure 2: Typical Processing Steps for Section 10(a)(1)(B) Incidental Take Permit Applications Requiring an EA



* - Notice of Availability/NOR - Notice of Receipt of Permit Application

**Figure 3: Typical Processing Steps for Section 10(a)(1)(B)
Incidental Take Permit Applications Requiring an EIS**



* NOA - Notice of Availability/NOR - Notice of Receipt of Permit Application

The handbook establishes the following target permit processing requirements for HCPs based on the NEPA action. Although not mandated by law or regulation, these targets are adopted as FWS and NMFS policy and all Service offices are expected to streamline their incidental take permit programs and to meet these targets to the maximum extent practicable.

Permit processing times are defined as the period between receipt of a complete application package, as defined in Chapter 6, Section B.2(b), to the issuance of the incidental take permit, including Federal Register notifications and public comment. The targets do not include any portion of the HCP development phase.

Section 10(a)(1)(B) Permit Application Processing Times:

HCP With EIS	less than 10 months
HCP With EA	3 - 5 months
Low-effect HCP (Categorically Excluded)	less than 3 months

These targets will apply as maximum processing times unless project controversy, staff or workload problems, or other legitimate reasons make delays unavoidable. However, in many cases it is expected actual processing times will be less than these targets and all FWS and NMFS offices are encouraged to improve on the targets whenever possible.

6. Benefits of Regional or Multi-species Conservation Planning.

Some HCP applicants may be tempted to segment (or "piecemeal") a project into parts to take advantage of reduced processing requirements for low-effect HCPs as compared to larger ones. The Services do not endorse such segmentation and will not allow use of the low-effect HCP category to avoid processing requirements without commensurate reductions in project impacts. In addition, a low-effect HCP may not be available for a segmented project or one component of a regional HCP because in determining whether an action is categorically excluded from NEPA the Services must consider cumulative effects. The Services must also consider the interrelated, interdependent, and cumulative effects analyzed through the section 7 analysis.

Potential HCP applicants considering regional or multi-species HCPs may initially conclude that such efforts are undesirable in light of more streamlined processing requirements for low-effect projects. However, regional or multi-species HCPs have many benefits. They can, for example: (1) maximize flexibility and available options in developing mitigation programs; (2) reduce the economic and logistic burden of these programs on individual landowners by distributing their impacts; (3) reduce uncoordinated decision making, which can result in incremental habitat loss and inefficient project review; (4) provide the permittee with long-term planning assurances and increase the number of species for which such assurances can be given; (5) bring a

broad range of activities under the permit's legal protection; and (6) reduce the regulatory burden of ESA compliance for all affected participants.

The cumulative total of HCP processing requirements is far greater when regional or area-wide activities are permitted individually than when addressed comprehensively under a regional HCP.

Consequently, a second guiding principle of this handbook is that FWS and NMFS will continue to encourage state and local governments and private landowners to undertake regional and multi-species HCP efforts as appropriate and will assist such efforts to the maximum extent practicable.

G. Helpful Hints

A successful HCP often requires consensus building and integration of numerous interests, especially for large-scale, regional planning efforts. Also, biological issues are not always clear-cut and sometimes are subject to interpretation. Service biologists must combine flexibility, creativity, good science, and good judgement in providing technical assistance to HCP applicants and making the section 10 program successful. The following "rules of thumb" should be helpful in meeting these challenges.

- o Review recovery plans for affected species and assess the extent to which HCP mitigation programs are consistent with them. Although FWS or NMFS cannot mandate that HCPs contribute to recovery, applicants should be encouraged to develop HCPs that produce a net positive effect on a species (see Chapter 3, Section B.3). Recovery plans should be used to help identify strategies to minimize and mitigate the effects of the HCP. When recovery plans are not available, contact recovery teams or other species experts to obtain information pertinent to HCP development. When appropriate, the development of the HCP could involve more active participation by recovery team members and species experts by providing technical assistance to the applicant.
- o Keep up-to-date on applicable statutes and policies, including the ESA, its implementing regulations, this handbook, and court decisions. Understand the authorities and limitations of the ESA and NEPA. Be up-to-date on new biological developments and state-of-the-art techniques such as population viability analysis. Keep reference materials on hand concerning legal and biological issues applicable to the section 10 program (Appendix 2 contains a list of reference materials).
- o The HCP is initiated by the applicant and is the applicant's document, not FWS's or NMFS's. The Services should assist the applicant and help guide the process by providing sufficient staff and technical advice. However, if the applicant insists on measures that would not allow the HCP to meet the section 10 issuance criteria, the

Service will inform the applicant of the deficiencies in writing and offer assistance in developing a solution. If deficiencies are not corrected, the FWS or NMFS may ultimately have to deny the permit (see Chapter 6, Section F.1). Providing technical assistance early and continuously through the HCP development process will hopefully prevent such situations from occurring.

- o Help the applicant determine early in the process what species are to be addressed in the HCP. This will depend on what species occur in the project area, whether they are likely to be affected by project activities, their listing status (listed, proposed, or candidate), the applicant's objectives, and other factors (see Chapter 3, Section A.5). The Service will encourage permit applicants to address any species in the plan area likely to be listed within the life of the permit. This can benefit the permittee in two ways: (1) the "No Surprises" policy applies to unlisted species that are adequately addressed in an HCP (see Chapter 3, Section B.5(a)); and (2) it prevents the need to revise an approved HCP should an unlisted species that occurs within the plan area but was not addressed in the HCP subsequently be listed (see Chapter 4). The Services should advise the applicant on this issue, but ultimately the decision about what species to include in the HCP is always the applicant's.
- o Work with the applicant to get important issues on the table as early as possible in the HCP development stage. Make sure the applicant understands the section 10 issuance criteria and any regulatory or biological issues that will need to be addressed in the HCP. Avoid "eleventh-hour" surprises that result in delays and bad feelings on all sides.
- o HCP mitigation programs will be as varied as the projects they address. Some will be simple while those for large-scale, regional planning efforts may be quite complicated. There are few ironclad rules for mitigation programs but make sure they address specific needs of the species involved and that they are manageable and enforceable. A monitoring plan should be developed that establishes reporting requirements, biological criteria for measuring program success, and procedures for addressing deficiencies in HCP implementation (see Chapter 3, Sections B.3-B.5).
- o Service Field Offices and Regional Offices must coordinate regularly throughout the HCP process and work as a team, not as isolated, separate players. This is essential to ensure that FWS or NMFS, as applicable, provide consistent, dependable assistance to the applicant in developing the HCP and that internal differences in approach are resolved prior to the submission of an HCP proposal to the Regional office for formal processing (see Chapter 6, Section C.1).
- o The same principle cited immediately above applies to coordination between FWS and NMFS when an HCP includes the jurisdiction of both agencies. It is also

important to obtain the views of the state wildlife and conservation agencies early and to address their comments.

- o Make sure the Services' section 7 obligations as they apply to issuance of a section 10 permit are explained to the permit applicant(s) and that section 7 considerations are introduced into the HCP from the beginning of the planning process. Compliance of the HCP with section 7 and 10 of the ESA should be regarded as concurrent, integrated processes, not as independent and sequential. (see Chapter 3, Section B.2(e) and Chapter 6, Section C.3).
- o The activities addressed under an HCP may be subject to Federal laws other than the ESA, such as the Coastal Zone Management Act, Archeological Resource Protection Act, and National Historical Preservation Act. Service staff should check the requirements of these statutes and ensure that Service responsibilities under these laws, if any, are satisfied, and that the applicant is notified of these other requirements from the beginning. The Service's staff should, to the extent feasible for all HCPs other than low-effect HCPs, integrate analysis done in compliance with other environmental and cultural review requirements into the NEPA analysis prepared for the proposed HCP.
- o Work with the permit applicant in good faith but ensure that the HCP established clearly measurable and enforceable compliance standards, including written documentation of all applicable biological results.
- o Once an incidental take permit has been issued, monitor permit compliance, and make sure monitoring activities are conducted and monitoring reports are submitted as defined by the HCP. Develop a tracking and accountability system for issued permits. Report all violations of permit conditions to the appropriate law enforcement personnel.



CHAPTER 2 OVERVIEW OF FWS AND NMFS ROLES AND RESPONSIBILITIES

A. Delegation of Permit Authority

In the past, the FWS's Office of Management Authority (OMA) in the Washington, D.C. area processed and issued all section 10(a)(1)(A) and 10(a)(1)(B) permits. Effective February 12, 1992, the FWS Director delegated incidental take permit responsibilities to the Regional Directors. For NMFS, the responsibility for issuing incidental take permits is divided between the Office of Protected Resources in Silver Spring, Maryland (Washington, D.C. area), and its west coast Regions.

B. Roles and Responsibilities

FWS and NMFS offices at the regional, field, and Washington, D.C. level, and the permit applicant, all have specific responsibilities in implementing the HCP program. This section summarizes the roles and responsibilities of each of these participants.

Keep in mind that specific HCP procedures may vary somewhat between FWS Regions or between FWS and NMFS. This is because the circumstances faced by individual HCP participants may differ widely across regional boundaries or agency jurisdictions, and this handbook, while establishing consistent program standards, also seeks to maintain the flexibility to adjust to specific local needs. Thus, while fundamental legal and policy issues will be consistent nationwide, individual procedures (e.g., document handling requirements) may vary depending on the decisions of FWS Regional Directors or the NMFS Regional or Washington, D.C. Offices.

1. Applicant.

The applicant is responsible for compliance with the take prohibition and exceptions under sections 9, 4(d), and 10(a) of the ESA. Once the decision to obtain a permit has been made, the applicant is also responsible for preparing the HCP and, if approved, for implementing it. Requesting technical assistance from FWS, NMFS, and other interests during preparation of the HCP is strongly recommended to ensure the HCP ultimately submitted for approval is biological sound and meets statutory requirements. The applicant:

- o Should coordinate with FWS, NMFS, affected Federal and state agencies, tribal governments, and where appropriate, affected private interests and organizations in preparing an HCP that satisfies the requirements of section 10(a)(1)(B) of the ESA and Federal regulations.

- o Generally, develops a draft Environmental Assessment (EA) with technical assistance from the Services, and draft Federal Register notices for Service use during the permit processing phase. Normally, EISs are also prepared by the applicant, or through a contractor, or an HCP applicant, under certain circumstances and strict guidance from FWS or NMFS, can assist in developing an EIS. However, FWS or NMFS is ultimately responsible for the content of all section 10 NEPA documents.
- o Submits a permit application (Form 3-200), a \$25 application fee (unless applicant is fee exempt), a completed HCP, draft NEPA analysis (optional) and an IA (as needed) to the appropriate FWS Field or Regional Office or NMFS Regional or Washington, D.C. Office (see Chapter 6, Section B.3).

For FWS applications, note that Federal regulation [50 CFR 13.11(b)] calls for the application to be submitted to the Arlington, Virginia office; however, these regulations are being amended to reflect delegation of the permit program to the Regional Directors. NMFS regulations [50 CFR 222.22] state that applications should be sent to the Silver Spring, Maryland Office, but applications involving west coast anadromous fish should be submitted to the Southwest or Northwest Regional Directors.

- o During the permit processing phase, coordinates with the appropriate FWS or NMFS Field Office to amend or correct the HCP or associated documents, as necessary. Also should provide the Field Office with additional information necessary for the Services to respond to public comments when appropriate.
- o If the permit is issued, implements all measures and programs required by the HCP permit and submits all documentation, monitoring reports, etc. as required over the life of the permit.

2. Field Office.

FWS Responsible Party - Field Supervisor.

NMFS Responsible Party - Field Supervisor.

The Field Office is responsible for assisting the applicant in preparing the HCP; ensuring that the HCP and associated documents are complete; and coordinating with the appropriate Regional Office (or NMFS Washington, D.C. Office) throughout HCP development, approval, and implementation. The Field Office:

- o Provides technical assistance to the permit applicant and serves as applicant's point of contact for information concerning HCP, permit processing, and

NEPA requirements during the HCP development phase. Provides assistance to the applicant's HCP steering committee, if any, as requested (see Chapter 3, Section A.3).

- o Encourages permit applicant to include affected state and Federal agencies and tribal governments to participate in the HCP process. Other Federal agencies might be involved, for example, if they are involved in adjacent planning areas or would administer mitigation lands under the HCP. Inclusion of affected state agencies insures efficient consideration of any additional requirements of state law.
- o Coordinates review of HCP development with FWS or NMFS Law Enforcement agents involved in enforcing permit conditions.
- o Stays informed on planning progress, problems, significant issues, and decisions; routinely advises the Regional Office of HCP progress on key policy and substantive issues (see Chapter 6, Section C.1).
- o Reviews drafts of the HCP and IA for adequacy and comments as necessary. Draft HCPs should be returned to the permit applicant within 30 days of submission, to the maximum extent possible.
- o Prepares NEPA analysis, or reviews draft documents if prepared by the applicant or contractor. Draft NEPA analysis should also be returned to the permit applicant within 30 days of submission, to the maximum extent possible.
- o Certifies to the Regional Office in writing that HCP documents have been reviewed by Field Office staff and are found to be statutorily complete, when the "complete application package" is transmitted to the Regional Office (see Chapter 6, Section B.2).
- o Reviews public comments received, if any, and coordinates necessary changes to the HCP or IA with the FWS or NMFS Regional HCP Coordinator during the permit application processing phase; notifies applicant(s) of recommended revisions to the draft HCP or IA, if any, identified as a result of legal or public review; and discusses remedies. Coordinates with FWS or NMFS Regional Office Environmental Coordinator, NMFS Washington, D.C. Office HCP Coordinator, or the applicant or applicant's contractor to make revisions to the NEPA document, if necessary.
- o For FWS, briefs the Regional Director, appropriate Assistant Regional Director, ARD for Law Enforcement, and the Solicitor's Office concerning

HCP issues as requested. For NMFS, briefs the Regional Director, Deputy Director, Law Enforcement, and General Counsel's Office, as requested.

- o Drafts the following documents (see Chapter 6, Section B.2):

NEPA analysis, either an EA or EIS that is integrated with the proposed HCP (unless drafted by the applicant or contractor).

Federal Register Notice of Receipt of permit application and Notice(s) of Availability of EA or EIS.

Biological opinion concluding formal section 7 consultation. The biological opinion concluding formal section 7 consultation may be done by the FWS or NMFS office that assisted in HCP development or by another office. To avoid possible biases, the staff member conducting the section 7 consultation should not be the section 10 biologist providing technical assistance to the HCP applicant. This will help ensure that the intra-Service section 7 consultation is an independent analysis of the proposed HCP. If, because of staff time constraints, this is not possible, then the biological opinion should be reviewed by another knowledgeable biologist before it is signed by the approving official. It is very important that the staff member that completes the section 7 consultation be involved in the initial stages of the HCP process. This will help ensure that the section 7 requirements are addressed in the HCP and that the two processes are integrated which will help expedite the permitting process. If the Regional Director has delegated the authority, the biological opinion may be signed by an approving official in the Field Office.

Set of Findings (see Chapter 6. Section B.2).

An Environmental Action Memorandum for low-effect HCPs that are categorically excluded from NEPA, Finding of No Significant Impact (FONSI) for the EA, or Record of Decision (ROD) for the EIS.

News releases as appropriate or requested by the Regional Office.

Responses to comments, as necessary.

Permit Terms and Conditions for inclusion in the permit (FWS's Form 3-201), if requested by the Regional Office or NMFS Washington, D.C. Office.

- o Monitors compliance with HCP provisions and permit terms and conditions and evaluates success of the HCP at least annually. Arranges for independent biological peer review, as appropriate.

- o Provides an accounting of fund expenditures administering the section 10 program to the Regional Office as requested.

3. Regional Office.

FWS Responsible Parties - Regional Director (RD); Deputy Regional Director (DRD); appropriate Assistant Regional Director (ARD); and Assistant Regional Director for Law Enforcement (ARD-LE).

NMFS Responsible Parties - Regional Director (RD); Deputy Regional Director (DRD).

For FWS, the Regional Office oversees and administers the incidental take permit program for its respective region. For NMFS, this is true for the Northwest and Southwest Regions only, and only for activities concerning west coast anadromous fish species; the Washington, D.C. Office administers the balance of the permit program. Currently, the only HCPs in development in these NMFS regions are for anadromous species. The FWS and applicable NMFS Regional Office is responsible for coordinating with the Field Office throughout the HCP process, reviewing and processing the permit application; and issuing or denying the permit. It is also responsible for ensuring that permit processing targets described in Chapter 1 and Chapter 6 are met. The Regional Office:

- o Receives complete permit application package with supporting documents from the Field Office or applicant, and accounts for fee processing (see Chapter 6, Section B.3).
- o Processes application check.
- o Coordinates with ARD-LE to have permit number assigned through LEMIS (Law Enforcement Management Information System); coordinates review of permit application by ARD-LE, as necessary (FWS only).
- o Reviews permit application package for adequacy and reports any deficiencies to the Field Office (Section 10 Coordinator reviews HCP and IA; Environmental Coordinator reviews NEPA analysis) (see Chapter 6, Section B.4 and C.1). Prior periodic Field Office review and reporting on key policy and substantive issues should result in the identification and elimination of most deficiencies prior to formal Regional Office review.
- o Transmits Federal Register notices to the Office of the Federal Register for publication (see Chapter 6, Section D).

- o Files copies of any draft and final EIS with the Environmental Protection Agency [see Chapter 5, Section A.4].
- o Reviews draft and finalizes internal section 7 consultation, if the biological opinion was drafted by the Field Office that participated in HCP development, or incorporates biological opinion completed by the Field Office into the administrative record.
- o Reviews and finalizes Set of Findings (unless finalized by the Field Office).
- o Prepares the Environmental Action Memorandum (EAM) for low-effect HCP permit applications (see Chapter 6, Section B.2).
- o Coordinates with the Assistant Director for Ecological Services for major policy issues to ensure the interpretation of the policy is legally sufficient and within the overall National policy guidance for the HCP program.
- o Briefs the Director or Washington, D.C. Office on all significant HCP developments, permit application processing, and post-issuance efforts, as necessary. Reports HCPs in development and section 10 permits issued to Washington Office, as requested.
- o Coordinates with lead Region responsible for the species prior to issuance of the permit to ensure agency-wide consistency for species that overlap more than one FWS or NMFS Region.
- o Prepares permit and associated documents (IA, FONSI, ROD, EAM) for RD or DRD signature, as necessary or requested (see Chapter 6, Section C.5).
- o Issues or denies the permit and (FWS only) updates LEMIS. Sends the signed permit with terms and conditions or a denial letter to the permittee or applicant. Sends copies of these documents to the Field Office, other affected offices, and Division of Endangered Species (FWS) and Office of Protected Resources (NMFS) in Washington, D.C.
- o Sends Notice of Permit Issuance to the Office of the Federal Register for publication on a quarterly or biannual basis.
- o Coordinates Freedom of Information Act (FOIA) requests.

4. Washington Office.

FWS Responsible Parties - Director; Assistant Director of Ecological Services (AES); and Chief, Division of Endangered Species (DTE).

NMFS Responsible Parties - Director, Office of Protected Species; Chief, Endangered Species Division.

The FWS Washington Offices provide guidance and oversight to the Regional and Field Offices. It is responsible for nationwide administration of the program:

- o Develops regulations and national policy guidance.
- o Assists in resolving issues or disputes when requested by the Regional Offices.
- o Briefs Director or other authorities or coordinates such briefings as necessary.
- o Prepares HCP, NEPA, and other related training and technical assistance to Regional Offices and Field Offices, as needed.
- o Maintains and updates national list or data base of HCPs in development and permits issued.

The NMFS Washington, D.C. Office of Protected Resources has the same functions as described for FWS. It also processes all permit applications and issues or denies all permits, except for those concerning anadromous species in the Northwest or Southwest Regions. NMFS permits for activities such as state fish hatcheries, and commercial or recreational fisheries must comply with all statutory provisions of section 10(a)(1)(B) of the ESA, but may have fewer documentation requirements than other types of incidental take permits. (Refer to NMFS final regulations for the program contained in Appendix 1 (55 FR 20603)). The NMFS Washington, D.C. Office should be contacted for assistance in handling any such permits. Generally, all other NMFS-issued incidental take permits are subject to the documentation requirements described in this handbook.

5. Solicitor's Office/General Counsel Office.

FWS Responsible Parties - Solicitor's Office

NMFS Responsible Parties - General Counsel's Office

For FWS, the Solicitor's Office need review only those parts of the permit application package that the Regional Director request be reviewed--typically the HCP and Implementing Agreement. Coordination with the Regional Solicitor's

Office on a permit application package should begin as soon as possible in the permit processing phase and during the HCP development phase. After Solicitor review is complete, the Regional Solicitor's office should forward a memorandum to the RD or appropriate ARD stating that he or she has reviewed the IA and other documents, as applicable, and that they meet statutory and regulatory requirements. The Regional Solicitor's Office should review the documents, as necessary, throughout the HCP process to ensure regulatory and statutory compliance and to avoid "last minute" identification of problems in documents submitted for final approval. For NMFS, the General Counsel's Office (either in the Region or Headquarters) must review the entire application package and all supporting ESA and NEPA documentation.

The purpose of legal review of the permit application package is to ensure that the HCP and associated documents meet the strict requirements of the ESA and its regulations. This is especially important for the HCP, which has specific legal requirements, and the Implementing Agreement, which legally binds the applicant to complying with the HCP and permit terms. For NMFS, legal review of all documents must be conducted by either the Headquarters or Regional General Counsel's Office.

CHAPTER 3 PRE-APPLICATION COORDINATION AND HCP DEVELOPMENT

Congress intended the HCP process to be used to reduce conflicts between federally listed species and non-Federal development and land use, and to provide a framework for "creative partnerships" between the public and private sectors in endangered species conservation. Congress also intended the FWS and NMFS to be not just regulators of the HCP program, but active participants in providing technical assistance, and that "comprehensive" HCPs could be developed jointly by the FWS, NMFS, the private sector, and local, state, and Federal agencies, with the Services as a technical advisor (H.R. Rep. No. 97-835, 97th Congress, Second Session).

This chapter discusses the Services' roles in the HCP process during the pre-application and HCP development phase. From a technical standpoint, this involves advising the permit applicant on the biological needs of the species involved, statutory HCP requirements and permit issuance criteria, NEPA requirements, and other technical issues.

The Services also have an important "leadership" role to play in the HCP program, which involves not only technical expertise but attitude and philosophy. Although FWS or NMFS typically do not initiate HCP efforts, they can and should encourage them and once initiated support them to the maximum extent possible. This means being actively involved during HCP development; providing advice on mitigation programs, monitoring measures, and reserve designs; providing timely review of draft documents; helping find solutions to contentious issues; and generally helping bring the HCP together.

A. Getting Started

Once a private or non-Federal entity (or entities) has decided to obtain a section 10(a)(1)(B) permit the first task that it needs to undertake are determining the appropriate applicant, deciding whether or not to establish a steering committee, and preparing a list of species to be addressed in the HCP.

1. Who Can Apply For a Section 10 Permit?

Section 10 permits can be issued to state, municipal, or tribal governments, corporations or businesses, associations, and private individuals. They can also be issued to entities that are a combination of these, such as joint power authorities, watershed councils, and other planning authorities.

The standard method of authorizing take for Federal agencies is through the section 7 consultation process. Actions authorized, funded, or carried out by Federal Agencies

must go through the section 7(a)(2) consultation process. There are cases where a Federal agency is a partner in an HCP, and has a minor, but integral role in the HCP. Examples of these types of HCPs would include HCPs where a Federal agency is involved in a cooperative planning effort in which both Federal and private lands are addressed under a single HCP but the Federal agency is not the applicant or the primary partner in the plan. In these cases, the specific identified actions to be conducted by the Federal agency during the implementation of the HCP should be consulted on as part of the section 7 consultation conducted for the HCP. This allows the Services to conduct one formal consultation that incorporates the actions for the HCP and any specified or identified cooperative Federal action into one biological opinion. The biological opinion developed for the HCP should also incorporate the necessary biological analysis on the Federal action as well as the actions in the HCP to help eliminate duplication. Thus, the single biological opinion issued by the Services would address both the Federal action and the non-Federal action, and it would include an incidental take statement that authorizes any incidental take by the Federal agency and an incidental take permit that authorizes any incidental take by the section 10 permittee.

Before processing a section 10 permit application involving a Federal agency, Service staff should consult with the appropriate Regional Director's or Solicitor's Office (FWS), or the Regional Director's Office or Washington, D.C. Office of Protected Resources Office (NMFS).

2. Determining the Appropriate Applicant.

The first step is to determine who the applicant is who ultimately will hold the permit. In many cases this is relatively straightforward--the applicant is the land or other natural resource owner who proposes the project or activity and is responsible for implementing the HCP.

In regional HCPs, the plan often relies upon local or regional authorities to implement the plan and regulate the taking of listed species addressed in the plan. The permittee must therefore be capable of overseeing HCP implementation and have the authority to regulate the activities covered by the permit. For large-scale planning efforts involving only one or two landowners or types of activities, the landowners themselves are usually the appropriate permittee. For planning efforts involving numerous property owners and activities, the permittee is usually a local public agency--e.g., a city or county government or several local agencies acting jointly. In other cases, a state agency may obtain and hold a section 10 permit for certain types of state-regulated private activities (e.g., forestry activities).

When no government agency is available or interested in assuming the responsibility for an HCP, private groups wishing to obtain a permit for large-scale or multi-faceted projects may initiate an HCP without government involvement. They may, for example,

form a consortium to develop the HCP, in which case the consortium would be the permittee. Or, they may jointly fund development of the HCP but maintain their individual identities by applying for separate permits, using the same HCP or individual HCPs modified from a jointly-developed "template." Either approach is acceptable so long as the permittees have the authority to regulate or control all or applicable parts of the HCP program and the conditions of the HCP are enforceable.

3. Steering Committees.

An HCP "steering committee" is a group of persons who represent affected interests in a broad-scale HCP planning area and generally oversee HCP progress and development. Steering committees are not required by law and the Services do not require them, although they have proven useful to applicants in a variety of HCP settings. However, the Services cannot be the entities which establish them without compliance with the Federal Advisory Committee Act. It is important to remember that a steering committee's purpose is to advise the applicant in the development of the HCP, not to advise the Service on permit issuance.

The steering committee approach may not be appropriate for all situations. For some applicants, it may be too formal or complicated, or they may view it as giving "outside interests" too much access to proprietary data involving private lands. If this is the case during the pre-application phase, the Services should encourage the applicant to provide opportunities to brief or inform representatives of interested parties of key elements or issues to be addressed in the proposed HCP. This can be accomplished in several ways, such as formal or informal meetings, newsletters, etc.

When used in the HCP process, steering committees are usually appointed by the permit applicant and can fulfill several roles--they can assist the applicant in determining the scope of the HCP (size of the planning area, activities to include, etc.), help develop the mitigation program and other HCP conditions, provide a forum for public discourse and reconciling conflicts, and help meet public disclosure requirements. Steering committees are particularly useful in regional HCPs, especially those in which the prospective permittee is a state or local government agency, and are recommended for these types of HCP efforts. However, they are generally not utilized for low-effect HCPs or most single landowner projects.

Ideally, a steering committee should include representatives from the applicant; state agencies with statutory authority for endangered species; state or Federal agencies with responsibility for managing public lands within or near the HCP area (including other Service program areas such as the FWS's Refuges Division); tribal interests where applicable; affected industries and landowners (especially those with known or possible endangered species habitats); and other civic or non-profit groups or conservation organizations with an interest in the outcome of the HCP process.

For regional HCPs it is not practical to include every affected landowner or interest group on the steering committee. Instead, industry groups should be encouraged to assign a professional or trade organization to the committee to represent them--e.g., a farm bureau, cattlemen's association, or building industry association--though corporations with extensive land holdings in the plan area may want to represent themselves. The steering committee needs to be representative, but its size must be manageable.

Another way to control numbers of participants in the HCP process is by using sub-committees. Sub-committees act as small working groups on behalf of the main committee and are an excellent means of addressing specific issues and developing specific components of the HCP. Sub-committees are more efficient than the larger steering committee for conducting certain tasks and generally help move the HCP process forward.

Prior to initiating an HCP effort, the newly-appointed steering committee may elect to develop a Memorandum of Understanding (MOU) or similar document to record "up front" the goals of the HCP, the composition of the committee, expectations of HCP participants, and other information unique to the locality or defined by the committee. Appendix 3 shows the MOU developed by participants of the Kern County, California HCP.

The question of whether to establish a steering committee may be difficult for non-governmental applicants. State or local governments typically embrace the steering committee idea early in the process because of their desire to obtain consensus from the community. On the other hand, private landowner applicants may feel that creation of a steering committee will lead to confrontation or the intrusion of outside interests into proprietary or sensitive economic matters. However, applicants should be aware of the potential benefits of a steering committee. These include identification and resolution of issues before they cause delays later in the process, development of an HCP that enjoys greater support in the community, and the cooperation of agencies or private conservation organizations that may be needed to help implement the conservation program. Permit applicants ultimately must weigh the risks of establishing or not establishing a steering committee with the expected benefits.

For large-scale or regional HCPs, one of the main functions of the steering committee is to build consensus among diverse organizations and interests, so it is important to promote good working relationships among committee participants. This does not mean that reaching agreement in complex HCP efforts will be easy! Often it is not. However, development of the HCP will be most effective when all interests in the community are represented in steering committee activities and their views and needs are given a fair hearing. A few suggestions:

- o Steering committee meetings should be open to the public. This allows interested persons who do not actually sit on the committee to attend meetings, monitor progress, and generally feel they are part of the process.
- o HCP participants should avoid creating an impression that they are pursuing unstated agendas or negotiating in bad faith. The trust developed between diverse and sometimes antagonistic HCP participants can be fragile, and this impression can be damaging to a productive HCP even if untrue. Participants need to be sensitive to perception and avoid the impression of bad faith.
- o The FWS and NMFS should not assign inexperienced staff to provide technical assistance to large-scale or regional HCP steering committees. This can result in mistakes, lost opportunities, and suggests to the applicants that the agencies are disinterested in the planning process. Inexperienced staff should learn the HCP process by working on small HCPs and by assisting other staff on larger efforts. If no staff have specific HCP experience, then individuals who are otherwise seasoned FWS or NMFS professionals should be assigned. If such individuals are not available, other staff should be sent to monitor HCP progress but not to actively participate. In such cases, staff sent to monitor the HCP should make clear to the applicants the limitations of their participation and resist rendering advice on important issues. However, they can and should act as liaisons to more experienced staff in the Field Office in answering questions or obtaining advice.
- o The composition of the steering committee will depend on the type of HCP involved. Regional HCPs involving numerous activities and in which the applicant is a government entity ideally should include representatives from all affected interests. Steering committees for non-government HCPs can be organized according to the specific needs of the applicant, but at the least should include representatives from each permit applicant.
- o A good facilitator or consultant who is skilled at moderating committee meetings, building consensus, and handling uncooperative parties can help significantly to move the HCP process forward.

4. The Services' Roles on Steering Committees & HCP Efforts.

Neither the FWS nor NMFS is required by statute or regulation to serve on HCP steering committees. Nevertheless, it is strongly advised that section 10 applicants invite the Services to participate as technical advisors on their steering committees. This will help ensure that adequate biological standards are incorporated into the HCP and that the HCP and associated documents meet procedural requirements when the permit application is

submitted. An HCP prepared in the absence of Service technical participation could be judged inadequate late in the process and unnecessary delays could result. The same caveat applies to all HCPs, regardless of size or whether a steering committee is established.

However, a careful balance needs to be drawn between constructive Service involvement in HCP efforts and overly aggressive involvement. Too little involvement can leave the impression that FWS or NMFS are disinterested or unhelpful, while too much can create the perception that the Services are inflexible in their approach to the HCP process, rigidly dictating the mitigation program.

To avoid either impression, Service HCP representatives need to understand their role and make that role clear to the applicant and the steering committee. Their function as agency representatives is to provide guidance about statutory and policy standards and to help facilitate development of a suitable mitigation program that satisfies the requirements of section 10; it is not to dictate every element in the HCP. The option to ignore or modify Service recommendations remains with the applicant; of course, doing so might result in subsequent difficulties during the permit application processing phase and the disapproval of an inadequate HCP. Service representatives at the Field Office level cannot pre-approve an HCP because section 10 permits are issued by the Regional Office (or, for NMFS, the Washington, D.C. Office), and, although advance coordination between the Field and Regional Offices should ensure their agreement on the HCP's adequacy, the permit application must still be evaluated fully during the public comment period.

The Services' steering committee members should also abstain from formal voting procedures on HCP issues if the committee conducts such votes. This will prevent confusion and reinforce the Services' proper role as advisor. Until the HCP is completed and submitted for approval, specific HCP development decisions are up to the steering committee and the applicant.

During the HCP development phase, the Services should be prepared to advise section 10 applicants on the following (regardless of whether there is a steering committee):

- o Preparing the species list and identifying project scope and impacts.
- o Biological studies and data needed to assess project impacts;
- o NEPA requirements and the applicant's potential role in developing the NEPA analysis.
- o Applicability of state endangered species law and requirements, and any other Federal laws that may be applicable, if any.

- o Project modifications that would minimize take and reduce impacts, or, ideally, and with concurrence of the applicant, would generate an overall measurable net benefit to the affected species;
- o Design of mitigation, habitat enhancement, or mitigation programs;
- o Reserve design criteria and assistance in population viability assessments, if desired.
- o Methods for monitoring HCP progress and project impacts on affected species;
- o Biologically acceptable take limits and how to define them;
- o Criteria to track or determine success of the HCP; and,
- o Procedural and other HCP issues as requested by the committee.

5. Preparing the HCP Species List.

In many HCPs, there are one or two primary species that "trigger" the need for an incidental take permit (e.g., the northern spotted owl or salmon in the Pacific Northwest, desert tortoise in southwestern deserts, or red-cockaded woodpecker in the southeast), though other listed species may occur in the same planning areas. After the decision has been made to obtain a permit, one of the first decisions an HCP applicant must make is what species to address in the plan. Generally, permit applicants should be advised to include all federally listed wildlife species likely to be incidentally taken during the life of the project or permit. If the applicant does not address such species, it may not be possible to issue the permit (if the issuance of a more limited permit would violate section 7(a)(2) for the listed species not covered) or the project activities could be stopped or delayed after the permit has been issued if a listed species that was not addressed in the HCP is likely to be taken during project activities.

There are also advantages in addressing unlisted species in the HCP (proposed and candidate species as a minimum), particularly those that are likely to be listed within the foreseeable future or within the life of the permit. Doing so can protect the permittee from further delays--e.g., having to revise the HCP and amend the permit--should species that were not listed at the time the original HCP was approved subsequently become listed. In addition, the "No Surprises" policy (see below, Section B.5(a)), applies to listed as well as unlisted species if they are adequately addressed in the HCP.

The more species addressed in the HCP, the more potentially complicated the HCP may become. For example, in most state systems, primary jurisdiction over candidate species rests with the affected State fish and wildlife agency, thereby increasing the advisability

of that agency's participation in the HCP process. Thus, selecting the species list can become an exercise in balancing the need to obtain maximum regulatory certainty, with practical considerations such as manageability, availability of biological information, and cost. The Services should be prepared to advise the applicant about which listed species should be highest priority in the HCP, which unlisted species are most likely to be listed in the future, and which species, listed or unlisted, can otherwise be advantageously addressed in the HCP. Ultimately, the decision about what species to address in the HCP lies with the applicant. In any case, the species list should be developed and agreed upon early in the HCP process, since it forms much of the basis for future plan development.

When preparing the species list the applicant should be informed that the ESA generally does not prohibit the incidental take of federally listed plants. Nevertheless, the Services should encourage the applicants to consider including listed plants in HCPs because, although incidental take of plants may not be prohibited by section 9, the section 7(a)(2) prohibition against jeopardy does apply to plants. If the section 7 consultation on a section 10 permit application concludes that issuance of the HCP permit for wildlife species would jeopardize the existence of a listed plant species, the permit could not be issued. To avoid this outcome, the applicant should ensure that actions proposed in the HCP are not likely to jeopardize any federally listed plant species. In addition, not all species under the jurisdiction of NMFS listed as threatened are subject to the section 9 take prohibitions. Such prohibitions are applied through regulation, on a case-by-case basis. Therefore, an incidental take permit may not be required for these species. Specific regulations are provided at 50 CFR Part 227.

6. Involving Other Federal and State Agencies.

During the development stage of an HCP, the Services will provide technical assistance and information concerning regulatory and statutory requirements to the applicants to ensure completeness of the application. Throughout this developmental process, the Services will encourage applicants to invite and include other Federal and State agencies who can utilize their existing authorities, expertise, or lands, in support of the HCP development and implementation process. It is particularly important to encourage participation of other Federal and State agencies that manage nearby lands into the HCP development process, if the applicant is willing to do so. However, the Service must ensure that activities are not identified in the HCP that obligate other agencies to conduct mitigation or minimization activities for species covered by the HCP, unless specifically negotiated with the agency, and the agency was a partner in the development and implementation of the HCP.

The "No Surprises" policy, which provides the applicant with regulatory certainty, calls for the Services to assist with correcting any unforeseen circumstance that may arise. This means that in the face of unforeseen circumstances the FWS and NMFS will not require additional mitigation in the form of additional lands or funds from any permittee who is

adequately implementing or has implemented an approved HCP. Once the permit is issued and its terms are being complied with, the applicant will not be required to accept additional obligations of this type. The policy also protects the permittee from other forms of additional mitigation except in cases where "extraordinary circumstances" exist.

The Services can, however, encourage other Federal or State agencies to assist with any unforeseen circumstances. Other agencies will be better able to assist if they have been involved throughout the entire HCP development. Any Federal or State agency that could ultimately be affected by the implementation of an HCP will be notified during the developmental process, and once the HCPs are completed and the incidental take permit is issued the Services will provide copies to the affected agencies. This will help these agencies effectively manage their lands in a way that could support the HCP and promote the conservation and recovery of listed and unlisted species.

7. Treaty Rights and Trust Responsibilities.

A unique and distinctive relationship exists between the United States and Native American Tribes, as defined by treaties, executive orders, statutes, court decisions, and the United States Constitution. This relationship differentiates tribes from other entities that deal with, or are affected by, the Federal government.

Indian tribes are recognized under Federal law as separate sovereigns with governmental rights over their lands and people. These governmental rights and authorities extend to natural resources that are reserved by or protected in treaties, executive orders, and Federal statutes. Such reserved rights may include off-reservation rights to hunt, fish, or gather trust resources.

The United States has a Federal trust obligation towards Indian tribes to preserve and protect these rights and authorities. The Federal Indian trust responsibility is a legally enforceable fiduciary obligation, on the part of the United States, to protect tribal lands, assets, resources, and treaty rights, as well as a duty to carry out the mandates of Federal law with respect to American Indian tribes and Alaskan Natives.

During habitat conservation planning negotiations with non-Federal landowners, the Services must consider whether proposed plans might affect tribal rights to trust resources. Whenever the Services have a reasonable basis for concluding that such effects might occur, they must notify the affected tribes and consult government to government in a meaningful way. Consultation with the affected tribe shall be completed within a timely manner. After careful consideration of the tribe's concerns, the Services must clearly state the rationale for the recommended final decision and explain how the decision relates to the government's trust responsibilities. In light of this obligation, it is important that the Services identify and evaluate during the planning process, any anticipated effects of a proposed HCP upon Indian trust resources.

B. Developing the HCP

1. Mandatory Elements of an HCP.

Under the Endangered Species Act [Section 10(a)(2)(A)] and Federal regulation [50 CFR 17.22(b)(1), 17.32(b)(1), and 222.22], a conservation plan submitted in support of an incidental take permit application must detail the following information.

- o Impacts likely to result from the proposed taking of the species for which permit coverage is requested;
- o Measures the applicant will undertake to monitor, minimize, and mitigate such impacts; the funding that will be made available to undertake such measures; and the procedures to deal with unforeseen circumstances;
- o Alternative actions the applicant considered that would not result in take, and the reasons why such alternatives are not being utilized; and,
- o Additional measures FWS or NMFS may require as necessary or appropriate for purposes of the plan.

Each of these conservation plan elements are discussed in detail in the sections below. NMFS regulations (50 CFR 222.22) also require a list of all sources of data used in preparation of the plan.

Section 10 HCP requirements and permit issuance criteria must be clearly explained to any prospective permit applicant at the outset of an HCP effort. This is essential to ensure that the applicant understands the HCP process and that the HCP is developed within required legal parameters.

2. Identifying Project Impacts.

Four subtasks must be completed to determine the likely effects of a project or activity on federally listed or candidate species: (a) delineation of the HCP boundaries or plan area; (b) collection and synthesis of biological data for species to be covered by the HCP; (c) identifying activities proposed in the plan area that are likely to result in incidental take; and (d) quantifying anticipated take levels. To help expedite the section 7 process, the HCP should also assist the Services in: (e) satisfying the requirements of section 7 of the ESA; (f) addressing significant indirect effects of the project on federally listed species, if any; (g) addressing jeopardy to federally listed plants, if anticipated; and (h) addressing effects on critical habitat, if any. Section 7 should be addressed as early as is practicable in the HCP development process.

a. Delineation of HCP Boundaries. HCP boundaries should encompass all areas within the applicant's project, land use area, or jurisdiction within which any permit or planned activities likely to result in incidental take are expected to occur. HCP boundaries should also be as exact as possible to avoid later uncertainty about where the permit applies or where permittees have responsibilities under the HCP. For low-effect and many other HCPs, the plan area is usually synonymous with the project or land use site or the landowner's property. For regional HCPs, the size and configuration of the plan area will depend on various factors. Sometimes a regional HCP boundary will simply be a county line because a county government is the applicant. In other cases, it will be drawn to deliberately include or exclude certain areas or activities, depending on the participants' objectives [see Section B.2(c) below].

Generally, HCP applicants should be encouraged to consider as large and comprehensive a plan area as is feasible and consistent with their land or natural resource use authorities. Regional and other large-scale HCPs allow the permittee to address a broad range of activities and to bring them under the "umbrella" of the permit's legal protection. They also allow analysis of a wider range of factors affecting listed species, maximize flexibility needed to develop innovative mitigation programs, and minimize the burden of ESA compliance by replacing individual project review with comprehensive, area-wide review.

On the other hand, considering a large and complicated planning area has its own potential difficulties. Attempts to satisfy too many land use or endangered species issues in one effort can be frustrated by excessive complexity, shortages of biological information, and difficulties in securing the consensus of HCP participants. However, these are judgment calls, and the final size and configuration of an HCP planning area will often be a compromise between the need to be as comprehensive as possible and the inherent risks of an over-extended, protracted HCP effort.

Regional HCPs sometimes can be simplified by dividing the planning area into separate planning units with different conditions and requirements for each area. This approach was adopted in the San Bruno Mountain HCP. Coordination with individual landowners and local land use authorities will help determine when subdivision of a plan area will yield substantial advantages.

In any case, neither the ESA nor its implementing regulations limits the size of an HCP planning area. No matter how large or small, HCP areas are acceptable so long as the HCP is statutorily complete and meets the section 10 issuance criteria. With respect to small projects, the FWS section 10 regulations state that, "The Service believes that Congress did not intend to exclude projects from the incidental take provisions of section 10(a) merely because the projects were of more limited duration or geographical scope [than the San Bruno Mountain HCP]" (50 FR 39681-39691).

The HCP plan area might also include areas necessary for the mitigation. The exception to this general rule may be where the mitigation consists of reserves apart from the area in which incidental take is authorized. This will entail various considerations--e.g., the distance from permitted activities to reserve areas (see below, Section B.2(c)) and the ability of the permit applicant or its designee to regulate activities inside the reserve. Private, state, or locally-owned lands should never be considered for inclusion in HCPs as reserves without the concurrence of the landowners or their representatives.

b. Collection and Synthesis of Biological Data. Preparing an acceptable HCP requires the availability of up-to-date biological information on the species being considered within the plan area. First, the applicant should collate and review existing information about species distribution, occurrence, and ecology. FWS or NMFS can assist in this process by directing the applicant to available information. Second, the applicant should determine whether the available information is adequate to proceed with the planning process. If not, FWS or NMFS should recommend the type, scope, and design of biological studies that can reasonably be developed to support the HCP. However, research efforts on behalf of an HCP should be confined to distribution studies or other studies with a direct bearing on the needs of the HCP. Permit applicants should not be expected to undertake studies that do not directly affect the outcome of the HCP. Determining the availability of existing information is especially important for regional HCPs, since they may involve species whose biology is not well known. Low-effect HCPs typically will not require additional studies beyond surveys needed to determine the distribution of the species within the plan area.

Another approach to consider for HCPs is habitat-based HCPs (see Chapter 3, Section C.1) in which the presence of a particular species can be assumed based on the presence of its habitat type; if that habitat type is then addressed in the HCP and included in the mitigation program, additional distribution studies may not be necessary.

c. Determination of Proposed Activities. The applicant should be encouraged to include in the HCP a description of all actions within the planning area that: (1) are likely to result in incidental take; (2) are reasonably certain to occur over the life of the permit; and (3) for which the applicant or landowner has some form of control. For many HCPs, this will usually involve a specific well-defined project (e.g., home construction; water use development) or land use activity (e.g., forestry). For regional and other large-scale planning efforts, the applicants will need to determine what activities they wish to include in the HCP and, if necessary, which ones they wish to exclude. Generally, applicants should be encouraged to include as comprehensive a set of activities in the HCP as is practicable. This will maximize the permittee's long-term planning assurances, broaden legal coverage, and minimize the possibility that some future activity will not be covered by an issued permit.

What is being authorized in a section 10 permit is incidental take, not the activities that result in the take. Similarly, a violation of the permit occurs only if the amount or extent of

authorized take is exceeded or if the terms and conditions of the HCP or the permit are not implemented, not necessarily because some unspecified activity has occurred. The legality of an incidental take occurring during a specific activity will depend on how the HCP is structured. In some regional HCPs, the permit may specify that a certain number of habitat acres may be modified during construction activities, but the specific types of construction are unspecified--in which case the construction type *per se* would not affect the legality of any resulting incidental take. However, other HCPs may analyze incidental take in the context of a specified activity to be conducted across the HCP area, such as forest management. In such cases, incidental take is only authorized in association with specifically analyzed activities.

Even in the former case, an activity type that is not implicitly or explicitly covered by an HCP should not be allowed to "use" portions of the incidental take authorization at the expense of activities that are described. Unless broadly defined types of activities are described in the HCP (e.g., timber harvest, agriculture, or construction activities), then incidental take occurring during such activities within the plan area generally would not be authorized. In any case, the specificity with which activities are described in the HCP will depend on the applicant's objectives. They should be sufficiently described (as included or excluded) that the permittee or landowners subject to the permit can determine the applicability of the incidental take authorization to the activities they undertake.

Determining appropriate activities to include in the HCP can involve the same considerations as those described in Section B.2(a) concerning the HCP boundary. Here again the desire for a comprehensive HCP must be balanced against the risk of over-complicating the plan. Also a factor is the willingness of any particular group to participate in the HCP process. No group can be forced to participate. Of course, not participating in the responsibilities of the HCP also means not enjoying the benefits of protection from the incidental take prohibition and regulatory streamlining.

In some cases, specific landowners or industries may be reluctant to become involved in the HCP process. In such cases, Service representatives should assist the remaining participants in good faith, while encouraging "sideliners" to observe the benefits of the program. Of course, "non-participants" should understand that if their activities are not addressed in the HCP, either specifically or generically, they will not be covered by the incidental take permit. Moreover, if the permit applicant is a state, regional, or local governmental agency, "non-participants" may ultimately be affected by the terms and conditions of an HCP once the permittee begins to implement the HCP through the exercise of its regulatory powers. In other cases, a landowner may elect not to participate in an HCP for other reasons--for example, if they are negotiating a separate agreement or are operating under an existing permit.

These factors can result in HCPs with unusual inclusions and exclusions. For example, in the Metropolitan Bakersfield HCP in California, oil development activities are specifically

excluded from the planning area but are proposed for inclusion in the Kern County HCP, which overlays the Bakersfield HCP (see Appendix 3). Sometimes a new HCP will overlay multiple existing HCPs, or some applicants may elect to pursue an HCP on their own even though a regional HCP is being developed in the same area. Also, more than one regional HCP may occur near each other within the same bio-regional province, or two such HCPs may occur within the range(s) of the same species. Such inclusions and exclusions are perfectly acceptable. Nevertheless, participants should be aware of coordination problems that can develop between HCPs in these types of cases. For example, it is important to ensure that mitigation programs for the same species are identical in adjacent HCPs. Also, the Services should not issue more than one permit for identical activities in the same area at the same time, since this could result in two differing sets of conditions for the same activities. In cases where a new HCP overlays an existing one, neither the Services nor the new permit-holder can force existing permittees to adopt conditions of the new permit without their consent--(however, there may be exceptions, such as when the new permittee is a state or local government with its own regulatory authority). Generally, however, the Services will not seek additional mitigation from existing HCP permit holders for the same activities affecting the same species under a broad regional plan.

d. Determining Anticipated Incidental Take Levels. In determining the amount of incidental take that will be authorized during the life of the permit, three things must be determined: (1) how incidental take will be calculated; (2) the level of incidental take and related impacts expected to result from proposed project activities; and (3) the level of incidental take that the section 10 permit will actually authorize.

The first depends on the ability of HCP participants to determine, to the extent possible, the number of individual animals of a covered species occupying the project or land use area or the number of habitat acres to be affected. Depending on this information, proposed incidental take levels can be expressed in the HCP in one of two ways: (1) in terms of the number of animals to be "killed, harmed, or harassed" if those numbers are known or can be determined; or (2) in terms of habitat acres or other appropriate habitat units (e.g., acre-feet of water) to be affected generally or because of a specified activity, in cases where the specific number of individuals is unknown or indeterminable. The latter is typically expressed as all individuals occupying a given area of habitat, in whatever habitat unit is being used.

The next aspect depends on the number of animals or habitat units that occur in the project or planning area, and the likelihood that any given activity will result in take. This can be determined by first "overlaying" data on proposed activities--often in the form of maps--with biological data compiled from existing sources and collected in the field by the applicant. When this is completed, the effects of particular activities on species occupying project areas can be analyzed.

Under Federal regulation (50 CFR 17.3), "harm" in the definition of take can include "significant habitat modification or degradation where it actually kills or injures wildlife by significantly impairing essential behavioral patterns, including breeding, feeding, or sheltering." Therefore, habitat modification or destruction, to the extent the above effects occur, can constitute take and must be detailed in the HCP and authorized by the permit.

"Harassment" is defined by regulation as "an intentional or negligent act or omission which creates the likelihood of injury to wildlife by annoying it to such an extent as to significantly disrupt normal behavioral patterns which include, but are not limited to, breeding, feeding, or sheltering." As with "harm," any action qualifying as harassment under this definition must be described in the HCP and authorized by the permit (see Chapter 7, Section B.1).

After expected take levels have been estimated based on a comparison of proposed activities with species distribution in the plan area, the applicant and the Services can begin to determine the final outcome of the HCP. In general terms, this is done by determining what incidental take levels can be authorized that are consistent with the section 10 issuance criteria (i.e., that will not "appreciably reduce the likelihood of the survival and recovery of the species in the wild"), and developing a mitigation program that is also consistent with the issuance criteria (i.e., that will minimize and mitigate "to the maximum extent practicable"). If, in the Services' judgment, initially anticipated incidental take levels exceed what can be permitted under the section 10 issuance criteria, additional take avoidance and other mitigation measures must be developed.

These processes--determining anticipated incidental take, development of the mitigation program, and establishing authorized incidental take levels--are dynamic and do not necessarily occur in consecutive order as the above description might infer.

e. Coordinating the HCP With Section 7 of the ESA. Section 7(a)(2) of the ESA requires all Federal agencies "in consultation with and with the assistance of the Secretary" to ensure that "any action authorized, funded, or carried out by such agency is not likely to jeopardize the continued existence of any endangered species or threatened species or result in the destruction or adverse modification" of designated critical habitat. The section 7 implementing regulations (50 CFR Part 402) require, among other things, analysis of the direct and indirect effects of a proposed action, the cumulative effects of other activities on listed species, and effects of the action on critical habitat, if applicable.

Consultation under section 7 of the ESA is the Federal agency's responsibility, not the applicant's. In the case of issuance of a section 10(a)(1)(B) permit, FWS or NMFS must conduct an intra-Service (or internal) consultation to ensure compliance of permit issuance with the provisions of section 7. However, although the consultation responsibilities is not the permit applicants, the applicant should help ensure that those considerations required of the Services by section 7 have been addressed in the HCP. Otherwise, the Services' section

7 consultation on proposed permit issuance might result in a jeopardy or adverse modification finding with respect to indirect or cumulative effects, listed plants, or critical habitat if the HCP has inadequately considered these issues.

However, despite these additional considerations, in most cases the applicant will not actually experience a significant increase in responsibilities under the HCP because of the Services' associated section 7 responsibilities. This is because there are relatively high thresholds under section 7 (i.e., jeopardy), and many of the same relevant biological considerations are already integrated into the HCP process [see Sections B.2(f)-(h) below].

In many cases, the procedural aspects of the section 7 consultation are more important to the applicant's interests than its substantive outcome. In the past, some have viewed the section 7 consultation for a section 10(a)(1)(B) permit as an independent review process that occurs after the HCP has been prepared and during the permit application processing phase. However, this approach left the permit applicant with no guarantee that the process of meeting the requirements of section 10(a)(1)(B) would result in issuance of the permit, since a section 7 consultation conducted late in the process could result in the discovery of unresolved issues, the return of an inadequate HCP to the applicant, or a jeopardy biological opinion.

To avoid this, it is now Service policy to begin integrating the section 7 and section 10 processes from the beginning of the HCP development phase, and to regard them as concurrent and related, not independent and sequential, processes.

In procedural terms, this means that considerations of section 7 consultation requirements should start at the beginning of the HCP development phase, not during the permit processing phase. It also means that if the Services and the applicant work together to develop an adequate HCP--one that meets the section 10 issuance criteria as well as the Services' applicable section 7 standards--then a "no jeopardy" biological opinion at the close of the section 7 consultation should be virtually assured. Service representatives should explain to HCP applicants at the outset of any HCP effort the Services' section 7 obligations, how those obligations affect the applicant, and how the two processes (sections 7 and 10) will be integrated.

f. Addressing Indirect Project Effects. In some cases, it may be determined that activities being considered in an HCP would be likely to result in indirect effects to listed species. The implementing regulations of section 7 of the ESA define indirect effects as "those that are caused by the proposed action and are later in time, but still are reasonably certain to occur." In the HCP context, this would typically mean that activities under the HCP are expected to affect species outside the HCP plan area, or species that are inside the plan area but are not otherwise directly covered by the terms of the HCP. If expected indirect effects are serious enough to result in jeopardy or result in adverse modifications to critical habitat, and they have not been adequately treated in the HCP, the Services would have to deny the

permit. Thus, indirect effects issues must be treated carefully during any HCP negotiation process.

From a practical standpoint, one problem is that large-scale projects of the type addressed in many HCPs can have "ripple" effects that continue long past their point of origin. Following a causation chain of indirect effects from their point of origin to some specific effect, or vice versa, can be difficult, and assigning responsibility for all potential subsequent effects to the originator of a particular action may not be justified or practical. For example, some species addressed in HCPs occupy small habitat areas or have narrow habitat requirements and are therefore unusually vulnerable to biotic and abiotic factors such as fire, vegetation succession, predation, and interspecific competition. In these cases, human alteration of the landscape in and around such habitats can have heightened adverse effects or specific indirect effects that must be addressed if the habitats are to be considered viable and affected populations are to persist. A good example is development in endangered beach mice habitat, which results in increased pet populations and then increased predation on beach mice. The HCP in such cases must address these types of effects. In the southeast, for example, some approved HCPs have been predicated on the successful control of post-project, human-induced effects on endangered species populations that remain or are protected after development of adjacent areas. Permittees have agreed to provide funding to control predators and competitors of listed species, nuisance or exotic vegetation, or pollution, and to meet education and information needs in the local community.

With these considerations in mind, the following guidance is provided about how to address indirect effects issues in HCPs. If a species is likely to be jeopardized as a result of the indirect effects of activities proposed in an HCP, the Services may not issue the permit unless these effects are adequately addressed. However, before an HCP is required to contain additional requirements to adequately address indirect effects under section 7: (1) the risk of jeopardy should be clear and reasonably certain to occur; and (2) the indirect effects in question must be reasonably foreseeable and a proximate consequence of the activities proposed under the HCP. The standard for imposing additional requirements on an HCP is the likelihood of jeopardy, not just the existence of indirect effects.

g. Consideration of Plants in the HCP and Permit. The take prohibition for federally listed plants under the ESA is more limited than for listed animals. Section 9(a)(2)(B) prohibits the removal of listed plants or the malicious damage of such plants on areas under Federal jurisdiction, or the destruction of listed plants on non-Federal areas in violation of state law or regulation. Thus, the ESA does not prohibit the incidental take of federally listed plants on private lands unless the take or the action resulting in the take is a violation of state law (which in most cases eliminates the need for an incidental take permit for plants).

Nevertheless, the Services recommend that permit applicants consider listed plants in HCPs. This is because the section 7(a)(2) prohibition against jeopardy applies to plant as well as

wildlife species; and if the section 7 consultation on a section 10 permit application concludes that issuance of the permit for wildlife species would jeopardize the existence of a listed plant species, the permit could not be issued. To avoid this outcome, the applicant should ensure that actions proposed in the HCP are not likely to jeopardize any federally listed plant species.

However, if it is determined that the proposed HCP is not likely to jeopardize the continued existence of any federally listed plant species, then any such plants present within the HCP area that are on private or other non-Federal lands are protected against incidental take only to the extent that state law applies. Beyond that the applicant has no further responsibility with respect to listed plants. In the spirit of the conservation planning process, however, the Services will encourage applicants to address endangered or threatened plants in their HCPs.

Although take of listed plants does not require a section 10 permit in most cases, the names of any plants addressed in the HCP can be placed on the permit at the request of the applicant when it is issued. This might be done: (1) because a particular plant is protected by state law and is subject to the section 9 take prohibition; or (2) to protect the permittee's interests should the legal status of any plant change during the life of the permit as a result of changes to the ESA. This approach is acceptable and is encouraged if the permit applicant requests it or it otherwise increases the applicant's confidence in the long-term assurances under the permit. It is also consistent with the treatment of unlisted wildlife species in section 10 permits as described in Chapter 4.

h. Addressing Effects on Critical Habitat. Section 7(a)(2) prohibits the "destruction or adverse modification" of designated critical habitat by any action authorized, funded, or carried out by a Federal agency. The section 7 regulations define "destruction or adverse modification" as "a direct or indirect alteration that appreciably diminishes the value of critical habitat for both the survival and recovery of a listed species." The regulations for section 4 of the ESA (50 CFR 424.12) describe the "constituent elements" of critical habitat as "those that are essential to the conservation of the species" including, but not limited to, "roost sites, nesting grounds, spawning sites, feeding sites, seasonal wetland or dryland, water quality or quantity, host species or plant pollinator, geological formation, vegetation type, tide, and specific soil types."

Thus, in issuing section 10 permits, the Services must ensure that the constituent elements of critical habitat will not be altered or destroyed by proposed activities to the extent that the survival and recovery of affected species would be appreciably reduced. However, these section 7 obligations typically impose few restrictions on the HCP applicant in addition to those required by section 10, because the section 10 issuance criteria also prohibit appreciably reducing the "likelihood of the survival and recovery of the species in the wild" [section 10(a)(2)(B)]. In other words, the inherent biological value of areas designated as critical habitat typically would prevent significantly greater alteration of their constituent habitat elements under section 10 than would be permissible under section 7. Nevertheless,

to the extent that a proposed HCP might result in impacts to critical habitat, such impacts should be described and evaluated in the biological opinion concluding section 7 consultation on the permit application.

Some HCPs encompass areas that have been or have the potential to be designated as critical habitat. To fulfill the Service's section 7 compliance responsibilities, all HCPs must be reviewed to determine whether they are likely to jeopardize the continued existence of the species or cause adverse modification to designated critical habitat. The Services will provide technical assistance and work closely with the applicant throughout the development of the HCP to reduce the probability of developing an HCP that would not meet these criteria.

It is possible to approve an HCP that authorizes land use or development activities within an area designated as critical habitat. The activities approved under an HCP could include a variety of land or natural resource use activities that modify critical habitat on a large scale without the activities being deemed an adverse modification contrary to the requirements of section 7(a)(2). The authorization of activities in critical habitat through the HCP process is possible because the adverse modification of critical habitat is analyzed by determining the effects on the entire area designated as critical habitat or an administrative part or unit of the critical habitat, not on a smaller scale of particular individual acres. In addition, the HCP permittee must minimize and mitigate for any effects caused by the authorized activity, which would offset or reduce the significance of adverse effects to the critical habitat. Thus, the overall net affect of authorized land use activities for a particular HCP can be brought within the range of effects which is allowable under section 7.

3. Mitigation Programs & Standards.

Mitigation programs under HCPs and section 10 permits are as varied as the projects they address. Consequently, this handbook does not establish specific "rules" for developing mitigation programs that would limit the creative potential inherent in any good HCP effort. On the other hand, the standards used in developing HCPs must be adequate and consistent regardless of which Service office happens to work with a permit applicant. Mitigation programs should be based on sound biological rationale; they should also be practicable and commensurate with the impacts they address. This section sets forth some fundamental standards for mitigation programs and suggests some broad mitigation strategies, but leaves the development of specific programs to individual applicants and Service personnel.

Mitigation actions under HCPs usually take one of the following forms: (1) avoiding the impact (to the extent practicable); (2) minimizing the impact; (3) rectifying the impact; (4) reducing or eliminating the impact over time; or (5) compensating for the impact. For example, project effects can be (1) avoided by relocating project facilities within the project area; (2) minimized through timing restrictions and buffer zones; (3) rectified by restoration and revegetation of disturbed project areas; (4) reduced or eliminated over time by proper

management, monitoring, and adaptive management; and (5) compensated by habitat restoration or protection at an onsite or offsite location. In practice, HCPs often use several of these strategies simultaneously or consecutively. Other types of mitigation not mentioned may also be used.

a. Regulatory Standards & Relationship to Recovery.

Issuance criteria under section 10 of the ESA require that the HCP applicant "minimize and mitigate" the impacts of any incidental taking authorized by a section 10 permit, and that issuance of the permit not "appreciably reduce the likelihood of the survival and recovery of the species in the wild" (see Chapter 7). Section 7(a)(2) of the ESA requires that issuance of a permit does not "jeopardize the continued existence of" any federally listed species, or result in "destruction or adverse modification" of designated critical habitat. The implementing regulations of section 7 define "jeopardize" as "to engage in an action that reasonably would be expected, directly or indirectly, to reduce appreciably the likelihood of both the survival and recovery of the species in the wild by reducing the reproduction, numbers, or distribution of that species"--this is essentially identical to the section 10 issuance criterion cited above. Section 7(a)(2) also requires use of "the best scientific and commercial data available" in fulfilling its provisions. No other specific mitigation standards for HCPs are specified under the ESA.

Issuance of a section 10 permit must not "appreciably reduce" the likelihood of the survival and recovery of the species in the wild. Note that this does not explicitly require an HCP to recover listed species, or contribute to their recovery objectives outlined in a recovery plan. This reflects the fact that HCPs were designed by Congress to authorize incidental take, not to be mandatory recovery tools.

However, recovery is nevertheless an important consideration in any HCP effort. This is because, some HCPs may encompass all or much of a species' range and address crucial biological issues; because of the inherent biological significance of such planning areas, a poorly designed HCP could readily trigger the "appreciably reduce" or "jeopardize" standard. Second, many HCPs, even smaller ones, can be said to contribute to recovery to the extent that individually or collectively they provide for dependable conservation actions and long-term biological protections. Thus, contribution to recovery is often an integral product of an HCP, but it is not an explicit statutory requirement.

To put this in practical terms, applicants should be encouraged to develop HCPs that produce a net positive effect for the species or contribute to recovery plan objectives. The Services should also assess the extent to which an HCP's mitigation program is consistent with recovery plans. In general, conservation plans that are not consistent with recovery plan objectives should be discouraged.

Similarly, HCPs that might preclude a significant recovery option, unless they otherwise contribute substantially to the goal of recovery should also be discouraged. In cases where a recovery plan is not available, the Services must use other available biological information and its best judgement to encourage the development of HCPs that would aid in a species' recovery.

b. Must An HCP Benefit the Species?

Whether or not an HCP must benefit a species is similar to its relationship to recovery objectives. No explicit provision of the ESA or its implementing regulations requires that an HCP must result in a net benefit to affected species. However, just as they can contribute to recovery, HCPs can also benefit the species they address because of the conservation programs they establish and the long-term assurances they provide. This is especially true of regional and other large-scale HCPs that address all or much of a species' range. Wherever feasible, the FWS and NMFS should encourage HCPs that result in a "net benefit" to the species.

c. Mitigation for Habitat Loss.

Activities conducted under HCPs frequently involve permanent habitat losses (or temporary habitat disturbances), for which the permittee mitigates by acquiring or otherwise protecting replacement habitat at an onsite or offsite location. Commonly referred to as "habitat mitigation," this strategy is acceptable under the HCP process so long as such mitigated habitat losses are consistent with the section 10 issuance criteria.

One form of habitat mitigation is the "habitat bank" approach, in which habitats are "banked" (protected through conservation easement or other means) prior to a project. These lands are then utilized as needed for mitigation purposes. A variation on this scheme is the "mitigation credit" system--in which "banked" habitats are established as "credits" (usually on a per-acre basis), and the habitat banker then uses the credits as needed or sells them to other parties requiring mitigation lands at a fair market price. The latter system has considerable promise as a mitigation strategy because: (1) it allows owners of endangered species habitat to derive economic value from their land as habitat; (2) it allows parties with mitigation obligations to meet their obligations rapidly (mitigation lands are simply purchased as credits); and (3) the mitigation lands are provided prior to the impact (eliminating uncertainty about whether a permittee might fail to fulfill the HCP's obligations after the impact has occurred). Still another approach is the "mitigation fund," in which a permittee pays a cash amount as determined by the HCP into an account administered by a suitable entity, and where other such contributions are pooled into a habitat acquisition fund.

The type of mitigation habitat and its proximity to the area of impact will need to be considered. Generally, the location of replacement habitats should be as close as possible to

the area of impact; it must also include similar habitat types and support the same species affected by the HCP. However, there may be good reason to accept mitigation lands that are distant from the impact area--e.g., if a large habitat block as opposed to fragmented blocks can be protected or if the mitigation lands are obtained through a mitigation fund. Ultimately, the location of mitigation habitat must be based on individual circumstances and good judgement.

Potential types of habitat mitigation include, but are not limited to: (1) acquisition of existing habitat; (2) protection of existing habitat through conservation easements or other legal instruments; (3) enhancement or restoration of disturbed or former habitats; (4) prescriptive management of habitats to achieve specific biological characteristics; and (5) creation of new habitats. Here again, the specific strategy or combination of strategies used will depend on the species and type of habitat involved. In some cases, acquisition of high-quality existing habitat will be the best approach--for example, where the habitat type takes years to develop (e.g., old-growth forest). However, if such habitat is continually being lost, a strategy based on this method alone could result in net loss of habitat value. In other cases, restoring degraded habitat or creating new ones is the best strategy--for example, where the habitat type is relatively easy to manipulate (e.g., grasslands). Where affected species depend on natural disturbance regimes that can be replicated through management regimes (e.g., prescribed fire or flooding), prescriptive management may be preferable to habitat acquisition or protection alone.

Certain caveats may apply to these strategies, however. For example, when a mitigation program involves creation of new habitat or restoration of degraded habitats, HCP participants should ensure that techniques used are proven and reliable or, if relatively new, that contingency measures or adaptive management procedures are included to correct for failures.

Sometimes, the HCP applicant may need to conduct activities prior to the time when replacement habitats can be provided. This is acceptable so long as the HCP provides legal or financial assurances that the permittee will fulfill the HCP's obligations. One way to accomplish this is through Letters of Credit controlled by the government until the mitigation lands have been provided. Another method is requiring a specified cash payment into a mitigation fund prior to commencement of HCP activities. However, such payments alone are not regarded as acceptable mitigation. Unless the fund is ultimately used and habitat is otherwise acquired. Mitigation funds have often been used in regional HCPs in which the responsible party for habitat mitigation under the HCP is a state or local government agency. Other examples are mitigation funds or other well-established mitigation programs utilized by small-landowners [see below, Section B.3(d)]. In such cases, the responsibilities of individual contributors may end with the payment, and any additional performance requirement would either be waived or would belong to the permitted agency.

One common issue raised during HCP negotiations is how long mitigation lands must be conserved. When habitat losses permitted under an HCP are permanent, protection of mitigation lands normally should also be permanent (i.e., "in perpetuity"). Mitigation for temporary habitat disturbances can be treated more flexibly; however, management logistics and other considerations may still dictate permanent mitigation for temporary impacts, though typically at a lesser rate than for permanent ones.

d. Funding Recovery Measures as Mitigation.

Another issue in cases where habitat is lost during HCP activities is whether funds contributed for purposes other than habitat acquisition or protection--e.g., species research--can serve as habitat mitigation. First and foremost, mitigation should address compensate for habitat lost through the permitted activities of the HCP by establishing suitable habitat for the species that will be held in perpetuity, if possible. For example, the mitigation requirement for low-effect HCPs that have a negligible effect on habitat could be to enhance existing habitat so that it meets the species' requirements. Generally, research is not considered a preferred mitigation strategy, since the type of mitigation is usually related directly to the type of effect.

It is acceptable in some cases for funding to be provided to State or Federal agencies to implement recovery actions within critical habitat, to restore degraded habitat, to address anthropogenic influences, and for conservation actions on larger, more secure populations of the affected species on public lands. In some cases, matching Federal/private funding has been developed under HCPs for such purposes.

e. Mitigation for Small-Scale, Low-Effect Projects.

It is important that methods be established by state and Federal wildlife agencies and other organizations that allow proponents of small projects or small-scale land use proposals to participate in larger HCPs, or that make convenient mitigation strategies accessible to low-effect HCPs. For example, it is often difficult for an individual to locate and acquire a few acres of mitigation habitat, since lands are usually sold by the lot or in large segments. A good way to accommodate this problem is to establish mitigation fund accounts that accumulate funds until relatively large-scale acquisitions can be effected [see above, Section B.3(c)]. Habitat banks are another good way to handle this situation. Avoid requiring permittees to meet habitat mitigation requirements without a practical, accessible means of meeting that requirement. In general, flexibility is needed in addressing the unique circumstances often associated with small landowners and small-scale, low-effect HCPs.

f. Consistency in Mitigation Standards.

Mitigation measures required by individual FWS or NMFS offices should be as consistent as possible for the same species. This can be challenging when a species encompasses

multiple offices or regions, but is essential. The first step is good communication between offices. The next is establishment of specific standards--e.g., for survey methods, buffer zones, or mitigation methods--and consistent implementation of those standards. Field Offices should coordinate these standards between biologists in the same office; Regional Offices should ensure consistency among Field Offices. Mitigation standards should also be developed in coordination with state wildlife agencies. The Service should not apply inconsistent mitigation policies for the same species, unless differences are based on biological or other good reasons and are clearly explained. Consistent mitigation strategies help streamline the HCP development process--especially for smaller HCPs--by providing readily available standards which applicants can adopt in their HCPs.

g. Adaptive Management.

The Services often incorporate adaptive management concepts into the HCP process to minimize the uncertainty associated with listed or unlisted species where there are gaps in the scientific information or their biological requirements. Over the years, there has been an increase in the diversity and geographical size of HCPs. As of late 1995, most HCPs approved were for planning areas of less than 1,000 acres. However, of the 200 HCPs being developed as of early 1996, approximately 25 exceed 10,000 acres, 25 exceed 100,000 acres, and 18 exceed 500,000 acres. This suggests that HCPs are evolving from a process developed primarily to address single developments to broad-based, landscape level planning tools utilized to achieve long-term conservation goals for listed and unlisted species, while allowing applicants to proceed with their land use and development.

For some species, not all of the scientific information needed to develop comprehensive long-term conservation strategies to conserve species may be available at the time of HCP development. Where these data gaps occur, not all of the questions regarding the long-term effects of implementing these HCPs can be answered. When significant uncertainty exists, it can be addressed through the incorporation and implementation of adaptive management measures into HCPs. For those HCPs with significant uncertainty, incorporating adaptive management provisions into the HCP becomes important to the planning process and the long-term interest of affected species. For example, an applicant's commitment to conduct watershed analyses (scientifically examining the conditions within watersheds and making site-specific recommendations) and then adjusting management strategies based on the results of the analyses for part or all of their lands is one form of adaptive management that has been applied to HCPs in the Pacific Northwest.

Through adaptive management, the biological objectives (or goals) of a conservation strategy are defined using techniques, such as models of the ecological system that includes its components, interactions, and natural fluctuations. If existing data makes it difficult to predict exactly what mitigation is needed to achieve a biological objective, then an adaptive management approach can be used in the HCP. The primary reason for using adaptive management in HCPs is to allow for changes in the mitigation strategies that may be

necessary to reach the long-term goals (or biological objectives) of the HCP, and to ensure the likelihood of survival and recovery of the species in the wild. Under adaptive management, the mitigation activities of the HCP could be monitored and analyzed to determine if they are producing the required results (e.g., properly functioning riparian habitats). If the desired results were not being achieved, then adjustments in the mitigation strategy could be considered through an adaptive management clause of the HCP.

Research can fill data gaps and/or test the effectiveness of management and mitigation strategies, which can then be modified as new information is obtained. Adaptive management, if used, can provide a reliable means for assessing the mitigation and minimizing strategies outlined in HCPs, producing better ecological knowledge, and developing appropriate modifications that would improve the mitigation strategy for a species.

The base mitigation strategy or initial minimization and mitigation measures which are implemented must be sufficiently vigorous so that the Service may reasonably believe that they will be successful. An adaptive management approach is particularly useful when significant questions remain regarding an HCP's initial mitigation strategy. The Services should not approve an HCP using conservation strategies that have a low likelihood of success.

Monitoring is an important tool in an adaptive management approach and should be designed in a way that ensures data will be properly collected, analyzed, and used to adjust mitigation strategies, as appropriate. A key element of adaptive management is the establishment of testable hypotheses linked to the conservation strategies and their biological objectives. If monitoring determines that biological conditions are outside specific parameters or thresholds, which are defined in the HCP, the conservation strategies should be reviewed. The "thresholds" for review should be linked to key elements of the HCP and should be obtainable through monitoring data collected during the implementation of the HCP. These "threshold" levels should be clearly defined in the HCP and should be based upon measurable criteria, and monitoring should be clearly linked to those measurable criteria. The establishment of measurable criteria would dictate the type of monitoring including the number of samples, distribution of samples, and use of controls.

Prior to the issuance of a permit, there should be a clear understanding and agreement between the Services and the permittee as to the mitigation range of adjustments which might be required as a result of any adaptive management provisions. A mechanism for determining the magnitude of strategy change to be employed, based upon the results of the monitoring and the level of deviation significance from the desired condition, should be developed in advance so all parties are clear in this regard and can react at the appropriate time.

Corrective actions to any of the conservation strategies in the HCP should be based on significant "non-achievement" of the HCP's base mitigation. This does not preclude the Services from working with the applicant to develop a strategy to compensate for external factors (e.g., catastrophic fires) or requesting the applicant to voluntarily increase the base mitigation strategy because of these external factors.

4. Monitoring Measures.

The section 10 regulations require that an HCP specify the measures the applicant will take to "monitor" the impacts of the taking resulting from project actions [50 CFR 17.22(b)(1)(iii)(B) and 50 CFR 222.22(b)(5)(iii)]. Monitoring measures described in the HCP should be as specific as possible and be commensurate with the project's scope and the severity of its effects.

For regional and other large-scale HCPs, monitoring programs should include periodic accountings of take, surveys to determine species status in project areas or mitigation habitats, and progress reports on fulfillment of mitigation requirements (e.g., habitat acres acquired). Monitoring plans for HCPs should establish target milestones, to the extent practicable, or requirements throughout the life of the HCP, and where appropriate, adaptive management options (see Chapter 3, Section B.3(g)).

The following steps are logical elements for consideration in developing HCP monitoring programs for regional or other large-scale HCPs:

- o Develop objectives for the monitoring program. Any monitoring program associated with HCPs should answer specific questions or lead to specific conclusions. If the objectives are well-developed, they will help shape a complete monitoring program.
- o Describe the subject of the monitoring program--e.g., effects on populations of affected species, effects on the habitat of the species, or effects on both.
- o Describe variables to be measured and how the data will be collected. Make sure these are consistent with the objectives of the monitoring program.
- o Detail the frequency, timing, and duration of sampling for the variables. Determining how frequently and how long to collect data is important to the success or failure of the monitoring program. If the interval between samples is too long or too short, the monitoring program may not detect an effect. The frequency, timing, and duration of the sampling regimen should also relate to the type of action being evaluated, the species affected by the action, and the response of the species to the effects produced by the action.

- o Describe how data are to be analyzed and who will conduct the analyses. A monitoring program is more effective when analytical methods are integrated into the design. For example, parametric and non-parametric statistical analyses require different sample sizes, which affect the frequency, timing, and duration of sampling.
- o Monitoring must be sufficient to detect trends in species populations in the plan area but should be as economical as possible. Avoid costly monitoring schemes that divert funds away from other important HCP programs, such as mitigation.
- o Monitoring programs can be carried out by a mutually-identified party other than the permittee, so long as this is specified in the HCP, funding is provided, and the party is qualified.

The FWS and NMFS also have a responsibility to monitor the implementation and success of HCPs. The Services may agree to specific monitoring responsibilities under the HCP, Implementing Agreement, or as part of the incidental take statement issued in conjunction with the section 7 biological opinion. Even if not specified in this manner, the agency still has the responsibility to monitor compliance with the terms of particular HCPs, including any adaptive management commitments incorporated into the HCP, and the section 10 program generally. One way to achieve this is to ensure that requirements for monitoring and status reports are included in HCPs where needed and by ensuring that such reports are submitted by permittees and reviewed by FWS or NMFS staff.

For regional HCPs, another way is to establish technical review teams to periodically evaluate HCP compliance and the success of adaptive management programs. Such teams could include species experts and representatives of the permittee, FWS, NMFS, and other affected public agencies. To maintain the credibility of the HCP, it may be beneficial to submit the technical team's findings to occasional review by recognized experts in pertinent fields (e.g., conservation biologists, re-vegetation specialists, etc.).

Not all of the above steps are necessary for small-scale, low-effect HCPs, and should only be used as appropriate.

5. Unforeseen Circumstances/Extraordinary Circumstances.

Congress recognized in the section 10 amendments that "...circumstances and information may change over time and that the original plan might need to be revised. To address this situation the Committee expects that any plan approved for a long-term permit will contain a procedure by which the parties will deal with unforeseen circumstances." (H.R. Rep. No. 97-835, 97th Congress, Second Session). Accordingly, Federal regulation requires such procedures to be detailed in the HCP [50 CFR 17.22(b)(1)(iii)(C)]. At the same time the legislative history states that:

The Committee intends that the Secretary may utilize this provision to approve conservation plans which provide long-term commitments regarding the conservation of listed as well as unlisted species and long-term assurances to the proponent of the conservation plan that the terms of the plan will be adhered to and that further mitigation requirements will only be imposed in accordance with the terms of the plan. In the event that an unlisted species addressed in the approved conservation plan is subsequently listed pursuant to the Act, no further mitigation requirements should be imposed if the conservation plan addressed the conservation of the species and its habitat as if the species were listed pursuant to the Act." (H.R. Report No. 97-835, 97th Congress, Second Session, and 50 FR 39681-39691.)

This Congressional history illustrates the potential tension between two primary goals of the HCP program: (1) adequately minimizing and mitigating for the incidental take of listed species, and (2) providing regulatory assurances to section 10 permittees that the terms of an approved HCP will not change over time, or that necessary changes will be minimized to the extent possible, and will be agreed to by the applicant. How to reconcile these objectives remains one of the central challenges of the HCP program.

"Unforeseen circumstances," also referred to as "extraordinary circumstances," in the past have been broadly defined to include a variety of changing circumstances that may occur over the life of an ongoing HCP. However, it is important to distinguish between the terms "unforeseen circumstances," or "extraordinary circumstances," versus "changed circumstances." "Changed circumstances" are not uncommon during the course of an HCP and can reasonably be anticipated and planned for (e.g., the listing of new species, modifications in the project or activity as described in the original HCP, or modifications in the HCP's monitoring program). "Unforeseen circumstances" or "extraordinary circumstances" however, means changes in circumstances surrounding an HCP that were not or could not be anticipated by HCP participants and the Services, that result in a substantial and adverse change in the status of a covered species.

With respect to anticipated and possible changed circumstances, the HCP should discuss measures developed by the applicant and the Services to meet such changes over time, possibly by incorporating adaptive management measures for covered species in the HCP. HCP planners should identify potential problems in advance and identify specific strategies or protocols in the HCP for dealing with them, so that adjustments can be made as necessary without having to amend the HCP.

The "Unforeseen/Extraordinary Circumstances" section of the HCP should be more limited. It should discuss how those changes in the circumstances surrounding the HCP that cannot effectively be anticipated by HCP negotiators will be dealt with in the future. It must also be consistent with the Department of Interior's and Department of Commerce's "No Surprises" policy.

a. The "No Surprises" Policy.

To address the problem of maintaining regulatory assurances and providing regulatory certainty in exchange for conservation commitments, the Department of the Interior (DOI) and Department of Commerce (DOC) have jointly established a "No Surprises" policy for HCPs.

The "No Surprises" policy sets forth a clear commitment by the FWS, NMFS, DOI, and DOC that, to the extent consistent with the requirements of the Endangered Species Act and other Federal laws, the government will honor its agreements under an approved HCP for which the permittee is in good faith implementing the HCP's terms and conditions. The specific nature of these provisions will vary among HCPs depending upon individual habitat and species needs.

The "No Surprises" policy provides certainty for private landowners in ESA Habitat Conservation Planning through the following assurances:

- o In negotiating "unforeseen circumstances" provisions for HCPs, the Fish and Wildlife Service and National Marine Fisheries Service shall not require the commitment of additional land or financial compensation beyond the level of mitigation which was otherwise adequately provided for a species under the terms of a properly functioning HCP. Moreover, FWS and NMFS shall not seek any other form of additional mitigation from an HCP permittee except under extraordinary circumstances.

This means that if unforeseen circumstances occur during the life of an HCP, the FWS and NMFS will not require additional lands, additional funds, or additional restrictions on lands or other natural resources released for development or use, from any permittee, who in good faith, is adequately implementing or has implemented an approved HCP. Once a permit has been issued and its terms are being complied with, the permittee may remain secure regarding the agreed upon cost of mitigation, because no additional mitigation land, funding, or land use restrictions will be requested by the Services. The policy also protects the permittee from any other forms of additional mitigation, except where extraordinary circumstance exist.

Other methods of responding to the needs of the affected species, such as government action and voluntary conservation measures by the permittee, remain available to assure the requirements of the ESA are satisfied.

Consequently, the "No Surprises" policy also provides that:

- o If additional mitigation measures are subsequently deemed necessary to provide for the conservation of a species that was otherwise adequately covered under the

terms of a properly functioning HCP, the obligation for such measures shall not rest with the HCP permittee.

This means that in cases where the status of a species addressed under an HCP worsens, the primary obligation for implementing additional conservation measures would be borne by the Federal government, other governmental agencies, private conservation organizations, or other private landowners who have not yet developed an HCP.

"Adequately covered" for listed species refers to any species addressed in an HCP which has satisfied the permit issuance criteria under section 10(a)(2)(B) of the ESA. For unlisted species, the term refers to any species which is addressed in an HCP as if it were listed pursuant to section 4 of the ESA, and in which HCP conditions for that species would satisfy permit issuance criteria under section 10(a)(2)(B) of the ESA if the species were listed. "No Surprises" assurances apply only to species that are adequately covered in the HCP. Species should not be included in the HCP permit if data gaps or insufficient information makes it impossible to craft conservation/mitigation measures for them. Such data gaps can be overcome, however, through the inclusion of adaptive management clauses in the HCP (See Chapter 3, Section 3.B(g)).

- o If extraordinary circumstances warrant the requirement of additional mitigation from an HCP permittee who is in compliance with the HCP's obligations, such mitigation shall maintain the original terms of the HCP to the maximum extent possible. Further, any such changes shall be limited to modifications within Conserved Habitat areas or to the HCP's operating conservation program for the affected species. Additional mitigation requirements shall not involve the payment of additional compensation or apply to parcels of land available for development or land management under the original terms of the HCP without the consent of the HCP permittee.

This means that if extraordinary circumstances are found to exist, the Services will consider additional mitigation measures; however, such measures must be as close as possible to the terms of the original HCP and must be limited to modifications within Conserved Habitat areas or the HCP's operating conservation program or to lands that are already protected by the HCP. New mitigation measures should not include requirements for additional land protection, payment of funds, or apply to lands available for development or use under the HCP, unless the permittee consents to such additional measures. "Modifications within Conserved Habitat areas or to the HCP's operating conservation program" means limiting such changes to plan areas explicitly designated for habitat protection or other conservation uses, or redirecting or increasing the intensity, range, or effectiveness of conservation efforts in such areas, provided that any such changes do not impose new restrictions or financial compensation on the permittee's activities. For example, if a developer had agreed to dedicate a certain amount of funding annually in support of a particular conservation program (e.g., habitat restoration) but subsequent research demonstrated that greater

conservation benefits could be achieved by redirecting funding into depredation control, and extraordinary circumstances warranted such a shift, the No Surprises policy would allow the modification since it would impose no new funding burden on the permittee.

The policy also sets out criteria for determining whether and when extraordinary circumstances arise where the government could request review of certain aspects of the HCP's conservation program.

- o The FWS and NMFS shall have the burden of demonstrating that such extraordinary circumstances exist, using the best scientific and commercial data available. Their findings must be clearly documented and based upon reliable technical information regarding the status and habitat requirements of the affected species.
- o In deciding whether any extraordinary circumstances exist which might warrant requiring additional mitigation from an HCP permittee, FWS and NMFS shall consider, but not be limited to, the following factors: (a) size of the current range of affected species; (b) percentage of range adversely affected by the HCP; (c) percentage of range conserved by the HCP; (d) ecological significance of that portion of the range affected by the HCP; (e) level of knowledge about the affected species and the degree of specificity of the species' conservation program under the HCP; (f) whether the HCP was originally designed to provide an overall net benefit to the affected species and contained measurable criteria for assessing the biological success of the HCP; and (g) whether failure to adopt additional conservation measures would appreciably reduce the likelihood of survival and recovery of the affected species in the wild.

The first of these two measures, on the burden of proof, is self-explanatory. The second identifies some factors to be considered by the Services in determining whether extraordinary circumstances exist. Generally, the primary focus of inquiry would be level of biological peril to species covered by the HCP in question, and the degree to which the welfare of those species is tied to a particular HCP. For example, if the species is declining rapidly, and the HCP in question encompasses an ecologically insignificant portion of the species' range, then extraordinary circumstances typically would not exist. Conversely, if the HCP in such circumstances encompasses a majority of the species' range, then extraordinary circumstances justifiably could be said to exist.

- o The FWS and NMFS shall not seek additional mitigation for a species from an HCP permittee where the terms of a properly functioning HCP agreement were designed to provide an overall net benefit for that species and contained measurable criteria for the biological success of the HCP which have been or are being met.

This provision means that the Services will not attempt to impose additional mitigation measures of any type where and HCP was intentionally designed to have a net positive impact upon a species. It is intended to encourage HCP applicants to develop HCPs that provide an overall net benefit to affected species. It does not mean that any HCP must in fact have already achieved a net benefit before the "No Surprises" policy applies. Rather, the achievement of such benefits should be measured through a clearly articulated set of biological goals and an adequate monitoring program for measuring progress for achieving those goals.

"Properly functioning HCP" means any HCP whose provisions have been or are being fully implemented by the permittee and in which the permittee is in full compliance with the terms and conditions of the permit.

- o Nothing in this policy shall be construed to limit or constrain the Services or any other governmental agency from taking additional actions at its own expense to protect or conserve a species included in an HCP.

This means the Services can intercede on behalf of a species at their own expense at any time and be consistent with the assurances provided the permittee under this policy and the permit. Neither is there anything in the "No Surprises" policy that prevents the Services from requesting a permittee to voluntarily undertake additional mitigation on behalf of affected species, though of course the permittee is under no obligation to comply.

FWS and NMFS have a wide array of authorities and resources that can be utilized to provide additional protection for threatened or endangered species included in an HCP. Therefore, in meeting their commitment under the "No Surprises" policy (consistent with their obligations under the ESA), it is extremely unlikely that the Services would have to resort to protective or conservation action requiring new appropriations of funds by Congress. In such an unlikely event, such actions would necessarily be subject to the requirements of the Anti-Deficiency Act and the availability of funds appropriated by the Congress.

Sample language for including "No Surprises" assurances in the HCP or Implementing Agreements is provided in Sections 8.4 and 13.3(a) of the "template" Implementing Agreement in Appendix 4.

b. HCP Amendments.

Amendment of a section 10(a)(1)(B) permit is required when the permittee wishes to significantly modify the project, activity, or conservation program as described in the original HCP. Such modifications might include significant boundary revisions, alterations in funding or schedule, addition of a species to the permit that was not addressed in the original HCP, or adjustments to the HCP necessitated by unforeseen circumstances. A

permit amendment consists of the same process as the original permit application, requiring an amendment to the HCP addressing the new circumstance(s), a Federal Register notice, NEPA compliance, and an intra-Service section 7 consultation.

Some amendments to an HCP commonly needed over the life of a permit are minor and can be incorporated in a more expedited fashion. These types of amendments include corrections in land ownership; minor revisions to survey, monitoring, or reporting protocols; and minor changes in reserve boundaries that result in no net loss of reserve land or do not otherwise alter the effectiveness of the HCP. They can be incorporated into the HCP in one of two ways.

First, the HCP and permit can be formally amended just as with more significant changes. However, documentation requirements are often less for a permit amendment than for the original permit application. For example, the NEPA analysis for the amendment can be tiered off the NEPA analysis for the original permit (40 CFR 1502.20), or the original NEPA analysis can be incorporated by reference into the amendment's supporting documents (50 CFR 1502.21). Also, where an original permit application required an EIS, the amendment application might require an EA only. Where appropriate, a permit amendment can also be treated as a low-effect HCP, which is categorically excluded from NEPA [see Chapter 1, Section F.2].

The HCP can also be amended administratively without formal amendment of the permit itself. This type of expedited amendment procedure is encouraged, but only when: (1) the amendment has the unanimous consent of the permittee and FWS or NMFS; (2) the original HCP established specific procedures for incorporating minor amendments so that the public had an opportunity to comment on the process, and such amendments are consistent with those procedures; (3) the HCP defines what types of amendments are considered minor; (4) a written record of any such amendments is prepared; and (5) the net effect on the species involved and level of take resulting from the amendment is not significantly different than analyzed under the original HCP and the Service's decision documents.

It is important to distinguish between amendments to the HCP and amendments to the permit itself. Changed circumstances might require an amendment to both, but an amendment to either the HCP or the permit without an associated amendment to the other is possible. Minor changes in the HCP can be completed administratively without amending the permit. Similarly, amendment to the permit without a change in the HCP can also occur--for example, when an unlisted species that was addressed in the HCP is subsequently listed and is added to the permit, though permit amendments in such cases are not always necessary. Chapter 4 describes the procedures for addressing unlisted species in section 10 permits. Chapter 6, Section G contains further discussion about permit amendments generally.

6. Funding.

The ESA requires that the HCP detail the funding that will be made available to implement the proposed mitigation program. Measures requiring funding in an HCP typically include onsite measures during project implementation or construction (e.g., pre-construction surveys, biological monitors, exclusion fences, etc.), as well as onsite and offsite measures required after completion of the project or activity (e.g., revegetation of disturbed areas and acquisition of mitigation lands). Large-scale, regional HCPs should require funds for long-term needs such as biological monitoring and habitat acquisition programs. Some will even require perpetual funding mechanisms to support long-term management of mitigation lands or for monitoring. For low-effect HCPs with minor impacts, funding needs may be limited to activities such as pre-construction, post-construction, habitat restoration, or surveys and payment into a mitigation fund; longer-term funding measures typically are not needed.

For relatively small- to medium-sized projects involving only one or two applicants, the funding source is usually the permittee and funding is provided immediately before project activities commence, immediately after, or in stages. However, when habitat modification or other take occurs before mitigation measures (e.g., acquisition of mitigation lands) are implemented, completion of the mitigation requirements should be ensured through a Letter of Credit or other means [see above, Section B.3].

Funding of regional HCPs can be more complicated because they generally cover large areas, many activities, and require significant budgets. Consequently, regional HCPs usually are funded jointly rather than by any single contributor. Funding strategies for regional HCPs can include: (1) development fees paid on a per-acre (or other) basis; (2) other types of mitigation fees (e.g., water surcharges, fees targeted to specific activities or industries); (3) funds contributed by non-profit or private interests; (4) state or Federal funds; (5) assessment districts under state law or county ordinance; and (6) tax check-off programs.

Because of their size and scope, regional HCPs often face two funding challenges--the costs of developing and implementing the HCP. Funding problems for these HCPs can be especially difficult during the HCP development phase, which typically occurs before funding mechanisms for the completed HCP are in place. Where appropriate, FWS and NMFS personnel should assist local governments in seeking out HCP funding assistance. However, the demand for such funds is likely to grow and the availability of funds to be limited; consequently, guarantees cannot be provided to any particular HCP applicant that funding would be available. Consistent with the requirements of the Anti-Deficiency Act, any commitment of Federal funding is always subject to the availability of appropriated funds.

When perpetual funding is needed, the HCP must establish programs or mechanisms to generate such funds. One way of achieving this is through payment of development fees by

the applicant or other affected parties into an interest-bearing bank account, from which the interest, not the principal, is used to fund the program. The HCP should detail fund collection and management mechanisms for this purpose, as well as remedies for failure to meet funding obligations by signatory members. The IA must always contain a provision stating that any Federal funding is subject to the requirements of the Anti-Deficiency Act and the availability of appropriated funds.

Whatever the proposed funding mechanism is, failure to demonstrate the requisite level of funding prior to permit approval or to meet funding obligations after the permit is issued are grounds for denying a permit application or revoking or suspending an existing permit, respectively.

In some cases, conservation funds may be transferred to a government agency to be utilized in furthering the purposes of the HCP. FWS or NMFS can accept contributed funds for mitigation purposes, monitoring, research, permit administration, and other activities. However, because of Federal procedural requirements in administering such funds and the potential for an appearance of a conflict of interests, the FWS Administrative Services Division and Department of the Interior Solicitor's Office (or equivalent office for NMFS) should be consulted before agreeing to any such mechanism.

7. Alternatives Analyzed.

Some applicants find this a difficult element of the HCP because they are uncertain about which or how many alternatives to consider. In some cases, the HCP process may not be initiated until the applicant has planned the project, only to discover that endangered species are present on the project site and an incidental take permit is needed.

The Act requires a description of "alternative actions to such taking." Thus two alternatives commonly included in the "Alternatives Analyzed" section of the HCP are: (1) any specific alternative, whether considered before or after the HCP process was begun, that would reduce such take below levels anticipated for the project proposal; and (2) a "no action" alternative, which means that no permit would be issued and take would be avoided or that the project would not be constructed or implemented. For low-effect HCPs in which the project or impact on endangered or threatened species is minor or negligible, a "no action" alternative alone may suffice.

For some HCPs, several alternatives may have been considered during project development. Each should be discussed in the "Alternatives Analyzed" section; or, where they are too numerous, the principal ones should be discussed. The applicant also must explain in this section why these alternatives were not adopted. If the applicant ultimately selects an alternative that the FWS or NMFS agrees will not result in take, no section 10 permit or NEPA compliance is needed. Chapter 3, Section B.7 explains how the alternatives analysis requirements under section 10 and NEPA compare.

Permit applicants commonly ask whether economic considerations can be cited as a reason for rejecting project alternatives. Such considerations are permissible, especially when the effects on the applicant would be significantly adverse or economically infeasible. However, if economic considerations are the basis for rejecting alternatives, data supporting this decision must be provided to the extent that it is reasonably available and non-proprietary. While applicants may be hesitant to provide such information, it can be important in making the required finding that the HCP represent minimization and mitigation to the maximum extent practicable.

Neither the FWS nor NMFS have the authority to impose a choice among the alternatives analyzed in the HCP. The Services' role during the HCP development phase is to advise the applicant in developing an acceptable HCP, and, when necessary to try to dissuade the applicant from selecting alternatives not consistent with permit issuance criteria. Nevertheless, if the applicant proceeds with such an alternative, recognizing the increased chance of denial of the permit, the Services must process the application and provide an opportunity for Federal Register notice and public comment (see Chapter 6, Section D).

8. Additional Measures - Implementing Agreements.

Whether or not an Implementing Agreement should be prepared for a given HCP will depend on the size and scope of the HCP and the wishes of either the Services or the applicant. Implementing agreements are not required for low-effect HCPs, and should be done only when one is requested by the permit applicant. In other HCPs, the development of the IA is left to the discretion of the Regional Director. Implementing Agreements are recommended for regional or other large-scale HCPs that address significant portions of a species range or involve numerous activities or landowners, for HCPs with long-term mitigation and monitoring programs, or where habitat protection programs are complicated or have other special features.

Section 10(a)(2)(B) of the ESA--which describes issuance criteria for incidental take permits--authorizes the Services to obtain "such other assurances as [they] may require that the plan will be implemented." This provision allows the Services broad latitude to require measures as necessary to accommodate the wide variety of circumstances often encountered in HCPs.

Implementing Agreements can help assure the government that the applicant will implement the mitigation program and other conditions of the HCP, while assuring the applicant that agreed upon procedures will be followed for any changes in the conditions of the permit or the conservation measures for species addressed in the HCP. Although the Services and permit applicant possess these rights and responsibilities under the permit, both sides may prefer the additional specificity of an Implementing Agreement because the Agreement is tailored for the HCP in question, can be more detailed than the permit conditions, and is

signed by all parties, thus providing the explicit consent of each party to abide by the terms of the HCP.

Implementing Agreements can also strengthen a Finding of No Significant Impact under NEPA by ensuring implementation of the mitigation program. This can be especially important for "mitigated EAs" [see Chapter 5, Section A.3(a)]. They can also extend responsibilities under an HCP beyond the life of the permit itself (e.g., by requiring perpetual protection of mitigation lands) and can set out a process for implementing the assurances under the "No Surprises" policy [see above, Section B.5(a)].

Typically, an Implementing Agreement includes one or more of the following elements: (1) defines the obligations, benefits, rights, authorities, liabilities, and privileges of all signatories and other parties to the HCP; (2) assigns responsibility for planning, approving, and implementing specific HCP measures; (3) specifies the responsibilities of the FWS, NMFS, or other state and Federal agencies in implementing or monitoring the HCP's conservation program; (4) provides for specific measures when habitat acquisition, transfer, or other protections are part of the HCP's mitigation program; (5) establishes a process for amendment of the HCP, where necessary; and (6) provides for enforcement of HCP measures and for remedies should any party fail to perform on its obligations under the HCP.

The handbook delegates to the Regional Directors (or, where appropriate, the NMFS Director, Office of Protected Resources in Washington, D.C.) the discretion to decide if HCP Implementing Agreements are beneficial on a case-by-case basis. IAs are not done for low-effect HCPs unless requested by the applicant. Each Regional Director or the NMFS Office of Protected Resources Director shall determine the circumstances under which Implementing Agreements may be required for HCPs under his or her respective jurisdiction.

Chapter 6, Section B.2(g) provides further information about developing and processing Implementing Agreements. Appendix 4 contains a "template" Implementing Agreement that can be used to develop Agreements for individual projects. The template is intended to expedite development of Implementing Agreements for HCPs, because it identifies the basics needed for developing Agreements. The template has all necessary legal elements for Agreements for HCPs except project-specific information, which can be filled in as indicated.

C. Alternative HCPs

1. Addressing Species Through Habitat-Based HCPs.

Most of the HCPs that are being developed address the requirements of section 10(a)(2) on a species-by-species basis. A smaller number of HCPs, however, have focused on specific

types of habitat rather than on a particular listed species. The rationale for a habitat-based approach is that if certain habitat-types are scientifically selected and assessed, and adequately protected under the terms of the HCP, the HCP could protect a broader range of species than the few "target" species that might otherwise be addressed by a conventional HCP. This approach may address all species within habitat-types within the plan area, or habitat-types in conjunction with a specific list of species that will be covered by the permit.

HCPs developed in conjunction with the Natural Communities Conservation Program in Southern California are examples of habitat-based HCPs. The State of California, under the Natural Community Conservation Planning Act of 1991 (NCCP), has initiated a program to conserve populations of California native animal and plant species and their habitats in areas large enough to ensure their long-term viability. The initial NCCP effort is focusing on the coastal sage scrub community in southern California for the development of subregional HCPs.

In the habitat-based approach, a particular habitat type within a planning area is selected and then adequately addressed in the HCP, based on criteria agreed to by the Services and the applicant. The Service and the applicant generally use indicator species to set management parameters for the covered habitat in the HCP. A further test must be completed to ensure that the needs of all endemic and sensitive species (listed, proposed, candidate, or species of concern) associated with the covered habitat types are adequately addressed in the HCPs.

An entire list of known covered species (listed and unlisted) adequately addressed in the habitat-based HCP could also be included on a permit. This list may include proposed and candidate species; however, since such species are only subject to State--as opposed to Federal--jurisdiction, there should be a delayed effective date for the permit for such species. That delayed effective date should be the date the affected species is subsequently listed. Including an unlisted species on the permit in this way requires that the Services analyze the effects of the proposed HCP on that species under sections 7 and 10 of the ESA, just as if that species were listed. Under this method, the assurances of the "No Surprises" policy would apply to all covered species associated with the habitat-type as described in the list of species that are adequately covered in the HCP. If an unlisted species, which was adequately covered by the HCP and listed on the permit, is subsequently listed after permit issuance, the HCP permit would not have to be formally amended because all procedural permit requirements for these species were met when the permit was originally issued and the species was included on the permit with the delayed effective date (the subsequent date of listing). However, if an unlisted species associated with a habitat-type adequately covered in the HCP is subsequently listed, and it was not originally included on the permit, the Services would have to formally amend the permit and satisfy all procedural permit amendment requirements before it could authorize incidental take.

Prior to amending the permit, the applicant would have to make sure the species was adequately addressed in the HCP, and the Services would have to conduct independent

assessments of the proposed actions under section 7 of the Act, make findings under section 10 of the ESA, and also ensure that the HCP complies with NEPA. Including covered species (listed and unlisted) in the original permit will help eliminate additional work associated with amending the permit, minimize duplication of effort, and minimize the cost associated with developing an HCP.

Habitat-based HCPs are new to the section 10 program and the Service is exploring this approach carefully. Adaptive management clauses (see Chapter 3, Section B.3(g)) may be helpful in defining where data gaps or uncertainty exists and, thus, areas where the Service and the applicant agree future modifications to the HCP may be needed. For further information about habitat-based HCPs, contact the Washington, D.C. Division of Endangered Species Section 10 Coordinator (FWS) or the Washington, D.C. Office of Protected Resources (NMFS).

2. Programmatic HCPs.

The programmatic HCP is a relatively new concept that has begun to emerge recently in HCPs developed with the FWS. The FWS has begun to develop programmatic HCPs for County and State governments, such as the "state-wide" HCP being developed with the State of Georgia for the red-cockaded woodpecker. The programmatic HCP allows numerous entities to be involved in the HCP through "Certificates of Inclusion" or "Participation Certificates," which convey the take authorization of the official section 10(a)(1)(B) permit to the certificate recipient. A programmatic HCP can be used to address a group of actions as a whole, rather than one at a time in separate HCPs. For example, a programmatic HCP might address a single related action occurring in many different places (e.g., the development of single family houses in the same vicinity or the harvesting of trees in the presence of red-cockaded woodpeckers), or address a group of different actions occurring in the same place. Programmatic HCPs can reduce staff and preparation time, but are appropriate only in certain types of situations.

The central problem in preparing a programmatic HCP is having sufficient information to determine and evaluate effects when the exact number and scope of actions taking place may be uncertain. As a result, programmatic HCPs will be successful only when the activities being addressed are well-defined, similar in nature, and occur within a described geographical area or at similar points in time.

Because this is a relatively new concept, the Service strongly encourages that programmatic HCPs be developed in conjunction with the Regional and Washington Office. In addition, this type of a section 10(a)(1)(B) permit should not be issued to representatives of Federal agencies since section 7 is the correct avenue for dealing with "may effect" situations and possible incidental take by Federal agencies.

NMFS provides for "Certificates of Inclusion" in its regulations (50 CFR 222.22(f)). Certificates are issued by NMFS to any individual who wishes to conduct an activity covered by a general incidental take permit. The general permit can be applied for by any group or organization whose members conduct the same or similar activity and have the same or similar impacts on endangered marine species. For example, a fisheries organization or a state regulatory agency may apply for a general incidental take permit so that "Certificates of Inclusion" would then be required by its members or regulated entities. These groups also may apply for a standard permit. Applicants should discuss the alternatives with NMFS to determine which is the most appropriate.

D. Addressing Migratory Birds and Eagles (FWS Only)

In the past, section 10 applicants faced an additional issue when listed migratory birds or bald eagles occurred in an HCP planning area. The Migratory Bird Treaty Act (MBTA) and Bald and Golden Eagle Protection Act (BGEPA) prohibit the take of migratory birds and bald eagles, respectively. Consequently, questions have arisen as to whether a section 10 permittee remained legally liable for the incidental take of listed species protected by the MBTA and BGEPA, if take of the same species was authorized by an ESA section 10 permit.

This situation has now been clarified. The FWS has concluded that under certain conditions, a section 10 permit for listed migratory birds is sufficient to relieve an HCP permittee from liability under the MBTA and BGEPA for those species covered by the HCP permit. For the MBTA, this is accomplished by having the HCP permit double as a Special Purpose Permit authorized under 50 CFR § 21.27. For BGEPA, it is accomplished by utilizing the FWS's prosecutorial discretion to state that FWS would not prosecute an incidental take under the BGEPA if such take is in compliance with an ESA section 10 permit. However, the following conditions must be satisfied before either of these protections apply: (1) any species to be so treated with respect to the MBTA and BGEPA must also be listed under the ESA; and (2) the incidental take of any such species must be authorized, subject to applicable terms and conditions, under section 10(a)(1)(B) of the ESA (see Appendix 5). The Service believes that this approach is warranted because the permittee already would have agreed to a package of mitigation measures designed to minimize and mitigate the take of the listed species of migratory birds to the maximum extent practicable.

In qualifying cases, the following language concerning MBTA- and BGEPA-protected species shall be included in the terms and conditions of a section 10 permit when the above conditions have been satisfied:

[For listed species other than the bald eagle] This permit also constitutes a Special Purpose Permit under 50 CFR § 21.27 for the take of [provide species' common and scientific names; species must be ESA-listed and may not include the bald eagle] in

the amount and/or number and subject to the terms and conditions specified herein. Any such take will not be in violation of the Migratory Bird Treaty Act of 1918, as amended (16 U.S.C. §§ 703-712).

[For the bald eagle] The Service will not refer the incidental take of any bald eagle, *Haliaeetus leucocephalus*, for prosecution under the Migratory Bird Treaty Act of 1918, as amended (16 U.S.C. §§ 703-712), or the Bald and Golden Eagle Protection Act of 1940, as amended (16 U.S.C. §§ 668-668d), if such take is in compliance with the terms and conditions (including amount and/or number) specified herein.

E. Coordinating HCPs With National Wildlife Refuges (FWS Only)

National Wildlife Refuges (NWRs) occur nationwide, and HCPs are now being developed in most areas of the country. When planning efforts under these two programs occur in the same geographic vicinity, it creates significant opportunities for joint NWR/HCP habitat protection programs in which the two programs can support and complement each other. However, it also raises important questions regarding the relationship between the two programs--e.g., what are the government's and permittee's respective roles and responsibilities in such joint NWR/HCP efforts, and how should such programs be jointly managed?

The FWS has developed a policy to assist its offices and staff in integrating the NWR and HCP programs. In brief, the policy states that the primary objective of integrating any NWR with an HCP is to increase benefits to the species involved, and that a NWR is not to be established or integrated with an HCP merely to substitute for the mitigation responsibilities of the section 10 permittee. This policy and additional guidance about integrating HCPs with National Wildlife Refuges is provided in Appendix 6.

F. "Safe Harbor" Policy: Linking Safe Harbor Assurances to Habitat Conservation Plans

The "Safe Harbor" approach is a strategy that provides private landowners, who undertake voluntary conservation actions on their lands, assurances that their future land-use activities will not be restricted further as a result of these proactive conservation efforts. If a landowner voluntarily enters into an agreement to manage his or her lands in a manner that attracts endangered or threatened species or otherwise increases their presence, the "Safe Harbor assurances" guarantee no additional regulatory requirements for those lands will be imposed on the landowners as a result of the proactive conservation measures. The purpose of the "Safe Harbor" approach is to reduce the disincentives (e.g., fear of regulatory restrictions) that often cause landowners to avoid or prevent land use practices that would otherwise benefit endangered species.

If it is determined that it is appropriate to link Safe Harbor assurances with HCPs, specific directions for incorporating will be described in a forthcoming final Safe Harbor policy (see Appendix 7). [Note: If the draft Safe Harbor policy has not been published in the Federal Register by the time this guidance is published, Appendix 7 will be reserved for this policy.]

The Services are currently considering whether, and if so, under what circumstances, it may be appropriate to allow a landowner to link a Safe Harbor Agreement to an HCP. The Services intend to submit this issue for further public analysis and comment.

CHAPTER 5 ENVIRONMENTAL ANALYSIS AND DOCUMENTATION

The National Policy Act of 1969 as amended (NEPA), is this country's basic charter for the protection of the environment. It established policies, goals, and a mechanism for reaching these goals. The Council on Environmental Quality (CEQ) regulations implementing the procedural provisions of NEPA (at 40 CFR §§ 1500-1508) require all agencies to analyze the impacts of their proposed actions and to include other agencies and the public in the process.

A. General Information

The goals and mechanisms of NEPA and the ESA, as they relate to incidental take permits and HCPs are similar and functionally compatible in many respects. It is important to recognize the similarities and differences in the requirements and to integrate those requirements in a manner that provides useful information to the decisionmaker and to the public. While some NEPA compliance for proposed HCPs has been well integrated with the HCP process and the HCP documentation, in other cases, NEPA compliance has been treated as a process requiring separate public meetings and separate documentation that in large part is duplicative of work already done. Such practices are neither useful or efficient. The FWS's amended procedures implementing NEPA and this handbook provide important new direction on implementing the requirements of these two environmental statutes.

1. Scope of the NEPA Analysis.

When thinking about the NEPA analysis as it relates to an incidental take permit and an HCP, it is important to be precise about the nature of the underlying action. The purpose of an HCP process is to provide an incidental take permit to the applicant that authorizes the take of federally listed species in the context of a conservation plan. The HCP will specify the impacts that will likely result from the taking, what steps the applicant will take to minimize and mitigate such impacts, what alternative actions are not being utilized and such other measures as may be required by the Services.

The scope of the NEPA analysis therefore covers the direct, indirect, and cumulative effects of the proposed incidental take and the mitigation and minimization measures proposed from implementation of the HCP. The specific scope of the NEPA analysis will vary depending on the nature of the scope of activities described in the HCP. In some cases, the anticipated environmental effects in the NEPA analysis that address the HCP may be confined to effects on endangered species and other wildlife and plants, simply because there are no other important effects. In other cases, the NEPA analysis will focus on the effects of the minimization and mitigation actions on other wildlife and plants and will examine any alternatives or conservation strategies that might not otherwise have been

considered. In other cases, the minimization and mitigation activities proposed in the HCP may affect a wider range of impacts analyzed under NEPA, such as cultural resources or water use. It is important to keep in mind, however, that the NEPA analysis for an HCP should be directed towards analyzing direct, indirect, and cumulative impacts that would be caused by the approval of the HCP, that are reasonably foreseeable, and that are potentially significant.

2. Categorical Exclusions.

CEQ regulations (40 CFR 1508.4) define categorical exclusions as "...a category of actions which do not individually or cumulatively have a significant effect on the human environment and which have been found to have no such effect in procedures adopted by a Federal agency in implementation of these regulations (§ 1507.3) and for which, therefore, neither an environmental assessment nor an environmental impact statement is required."

U.S. Fish and Wildlife Service procedures for implementing categorical exclusions are found in the Department of Interior Manual (516 DM 6, Appendix 1; and 516 DM 2, Appendix 1 & 2). The Departmental manual categorically excludes the issuance of permits involving fish, wildlife, or plants, when such permits cause no or negligible environmental disturbance. National Marine Fisheries Service procedures for implementing categorical exclusions are found in the NOAA Administrative Order Series 216-6, Sections 602b.3 and 602c.3. That order categorically excludes permits for scientific research and public display under the ESA and Marine Mammal Protection Act, and other categories of actions which would not have significant environmental impacts including routine operations, routine maintenance, actions with short-term effects, or actions of limited size or magnitude. However, a memo for the record should be made listing the categorical exclusion.

Low-effect HCPs are defined as those involving: (1) minor or negligible effects on federally listed and candidate species and their habitats; and (2) minor or negligible effects on other environmental values or resources. "Low-effect" incidental take permits are those permits that, individually or cumulatively, have a minor or negligible effect on the species covered in the HCP. Low-effect HCPs may also apply to habitat-based HCPs if the permitted activities have minor or negligible effects to the species associated with the habitat-types covered in the HCP.

Another consideration in meeting the requirements of this categorical exclusion is cumulative impacts. CEQ regulations define a cumulative impact as "the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions" (50 CFR 1508.7). Once the draft NEPA procedures (516 DM 6, Appendix 1) are revised, section 10 permits developed with technical assistance from the FWS may be categorically excluded from NEPA, subject to meeting specific criteria. The current NEPA procedures in 516 DM 6, Appendix 1 shall

remain in effect, until the final revised procedures are published in the Federal Register. When categorically excluding a section 10 permit application, the Services must ensure that the impacts of the project, considered together with the impacts of other permitted projects, will not be "significant." For example, if numerous low-effect projects in a given species' habitat are categorically excluded, the Services must ensure that issuance of section 10 permits for these projects does not result, over time, in cumulative habitat losses to the extent that such losses become significant.

3. Environmental Assessments.

The FWS has also determined in the proposed revised NEPA procedures that most HCPs, other than those that are low-effect, will normally require preparation of analysis that meets the requirements for an EA [516 DM 6, Appendix 1]. The purpose of an EA is to briefly analyze the impacts of a proposed action to determine the significance of the impacts and to determine whether an EIS is needed, to analyze alternatives for proposals which involve unresolved conflicts concerning uses of available resources, and to aid an agency's compliance with achieving NEPA's purposes when preparation of an EIS is not necessary.

An EA consists of a brief discussion or description of: (1) the purpose and need for the proposed action; (2) the nature of the proposed action; (3) alternatives to the proposed action that were considered; (4) the environmental impacts of the proposed action and its alternatives; and (5) a list of agencies and persons consulted in the NEPA review process. Public review procedures for EAs vary depending on the scope of the proposed action [see this chapter, Section A.3 and A.5]. The culmination of the EA process is a Finding of No Significant Impact (FONSI) or a decision to prepare an EIS.

a. Use of EAs When Mitigation Reduces Significant Impacts.

Normally, the Service believes that analysis at the level of an EA will be sufficient for HCPs. At times, an HCP that might otherwise require an EIS can be analyzed with an EA, if mitigation measures that would ensure that environmental impacts do not reach the significant level are part of the original project proposal (in this case, part of the HCP) and are enforceable. This type of EA can be used when an HCP would otherwise be expected to have significant environmental impacts but, with mitigation, those impacts can be reduced to less than significant levels. The basis for this type of EA is found at 40 CFR 1501.3(b), 1501.4(e)(2), and 1508.9(a)(2). A brief discussion of the subject also occurs in the CEQ publication, "Forty Most Asked Questions Concerning CEQ's National Environmental Policy Act Regulations" (46 FR 18026-18038, Nos. 39 and 40).

Under the right conditions, EAs of this type are a useful tool for complying with NEPA and saving paperwork and time. In fact, HCPs are excellent candidates for this type of EA since most of the requirements ("up front" mitigation and enforceability) are already standard HCP components. The main differences between this type of EA and other EAs prepared

for HCPs are that: (1) the impact of the project would result in significant environmental impacts but for the mitigation program (in many EAs, the environmental effects would be less than significant even without the mitigation program); and (2) a 30-day public comment period must be observed before the decision is made not to prepare an EIS (CEQ regulations otherwise require no delay in deciding not to prepare an EIS). This 30 day period should be combined with the 30 day public notice of the proposed section 10 permit.

If the Services decide to use this provision to issue an EA and a FONSI for a particular proposed HCP, they should be able to make a clear finding that the HCP, considered together with mitigation measures that are part of the HCP submitted with the permit application and would be enforceable, will not result in significant environmental effects.

FWS and NMFS encourage preparation of this type of EA as a way of streamlining the section 10 and NEPA processes. However, FWS and NMFS staff should consult the Regional Director's Office, Environmental Coordinators in the Regional Office, or the Washington, D.C. Office before initiating this type of EA for the first time.

b. Programmatic EAs.

A programmatic EA is an EA that addresses a group of actions by different applicants as a whole, rather than one at a time in separate EAs. For example, a programmatic EA might address a group of different actions occurring in the same place, or a single action occurring in many different places. Programmatic EAs can save great amounts of staff and preparation time, but are appropriate only in certain types of situations.

The central problem in preparing a programmatic EA is having sufficient information to determine and evaluate effects when the exact number and scope of actions taking place may be uncertain. As a result, programmatic EAs typically will be successful only when the activities being addressed in proposed HCPs are relatively well-defined and not overly conjectural, are similar in nature or geography, and occur at similar points in time or within a predictable time line. Programmatic EAs can be prepared at the time a group of actions is proposed. To expedite small-scale actions, they can also be prepared prior to specific project proposals if the proposals can be defined in advance and are reasonably foreseeable.

Because of the problem of analyzing effects, FWS and NMFS staffs should consult their Regional Office Environmental Coordinator or other NEPA experts when preparing a programmatic EA.

4. Environmental Impact Statements.

If the conclusion is reached that a particular HCP will have a significant environmental impact and thus requires preparation of an EIS, refer to the procedures outlined in the FWS's NEPA guidance (30 AM 2-3 and 550 FW 3), and Director's Order No. 11, dated

April 18, 1985 or for NMFS the NEPA procedures are found in the NOAA Administrative Order Series 216-6, dated June 21, 1991. For further assistance, consult the appropriate Regional Office or NMFS, Washington Office D.C. Environmental Coordinator.

B. Techniques for Streamlining Section 10 and NEPA Planning

CEQ regulations encourage agencies to focus on the purpose of the NEPA process; making better decisions. Amassing needless detail is discouraged; integration of the analysis with the other planning and environmental review requirements so that all procedures run concurrently rather than consecutively is explicitly encouraged. The Services fully endorse these goals. All FWS and NMFS offices are expected to streamline their section 10 permit and NEPA analyses to the maximum extent practicable, while ensuring compliance with both ESA and NEPA. The process should be streamlined by integrating the analyses in the same document, to the extent possible, by running the processes concurrently, not consecutively, and by conducting joint processes with state and local agencies as applicable.

1. Combining HCP/NEPA Analysis.

The CEQ regulations specifically permit NEPA documents to be combined with other agency documents to reduce duplication and paperwork (40 CFR§§1506.4). The Services policy is to combine the HCP and NEPA analysis into a single document titled, "Proposed HCP and Environmental Assessment for the [insert name of the HCP document]."

This technique should not be viewed as preparation of two separate documents that are then published under the same cover, but rather one integrated analysis that meets the requirements of both NEPA and ESA. For example, the alternatives section of the combined document should include alternatives that satisfy both the requirements of section 10 and NEPA. Similarly, the discussion of effects should include analysis of both the impacts of the proposed HCP as well as other environmental effects that should be analyzed under NEPA.

FWS and NMFS should work closely with the applicant(s) so that any environmental documents they draft meet NEPA and section 10 permit application requirements. Appendix 8 contains a example of an integrated HCP/EA. This is one way of integrating the two documents. Another way of integrating the analysis even more would be to include the full text of the proposed HCP in the alternative section as the preferred alternative.

2. Joint Federal-State Processes.

Some states have enacted laws that parallel or expand NEPA requirements at the state or local level (e.g., the California Environmental Quality Act). CEQ regulations (40 CFR 1506.2) and Department of Interior procedures (516 DM 4.18) and NOAA require its agencies to cooperate, to the fullest extent possible, with the applicant and state and local

officials to reduce duplication between NEPA, state and local environmental requirements, and ESA requirements.

FWS and NMFS should cooperate with state and local agencies to avoid duplication and reduce the time and costs of planning by:

- o Conducting joint planning;
- o Conducting joint environmental research and studies;
- o Conducting joint public hearings; and
- o Producing joint environmental documents (however, FWS or NMFS is responsible for submitting Federal Register notices).

3. Incorporation By Reference.

Incorporation by reference can be used in an EA or EIS to avoid including bulky documents or written material in support of conclusions. Material incorporated by reference from another source into the NEPA analysis must be cited and its contents briefly described. It should not be incorporated by reference unless it is reasonably available for inspection by interested parties within the time allowed for public comment.

C. Internal Service Guidance and Assistance

FWS procedures for complying with NEPA are found in 30 AM 2-3, and 550 FW3. The Regional Environmental Coordinator should be familiar with these techniques and be able to assist Regional and Field Office personnel on NEPA matters. NMFS procedures are found in the NOAA Administrative Order Series 216-6, dated June 21, 1991.

CHAPTER 8 - DEFINITIONS

Candidate species - Under FWS's ESA regulations, "...those species for which the Service has on file sufficient information on biological vulnerability and threat(s) to support proposals to the list them as endangered or threatened species. Proposal rules have not yet been issued because this action is precluded..." (See Federal Register, Volume 61, No. 49, page 7598.) For those species under the jurisdiction of NMFS, candidate species means a species for which concerns remain regarding their status, but for which more information is needed before they can be proposed for listing.

Categorical exclusion - Under NEPA regulations, a category of actions that does not individually or cumulatively have a significant effect on the human environment and have been found to have no such effect in procedures adopted by a Federal agency pursuant to NEPA. (40 CFR 1508.4)

Complete application package - Section 10 permit application package presented by the permit applicant to the Field Office or Regional Office for processing. It contains an application form, fee (if required), HCP, EA or EIS. In order to begin processing, the package must be accompanied by a certification by the Field Office that it has reviewed the application documents and finds them to be statutorily complete.

Conservation plan - Under section 10(a)(2)(A) of the ESA, a planning document that is a mandatory component of an incidental take permit application, also known as a Habitat Conservation Plan or HCP.

Conservation plan area - Lands and other areas encompassed by specific boundaries which are affected by the conservation plan and incidental take permit.

"Covered species" - Unlisted species that have been adequately addressed in an HCP as though they were listed, and are therefore included on the permit or, alternately, for which assurances are provided to the permittee that such species will be added to the permit if listed under certain circumstances. "Covered species" are also subject to the assurances of the "No Surprises" policy.

Cumulative impact or effect - Under NEPA regulations, the incremental environmental impact or effect of the action together with impacts of past, present, and reasonably foreseeable future actions, regardless of what agency or person undertakes such other actions. (40 CFR 1508.7) Under ESA section 7 regulations, the effects of future state or private activities not involving Federal activities, that are reasonably certain to occur within the action area of the Federal action subject to consultation (50 CFR 402.02).

Delist - To remove from the Federal list of endangered and threatened species (50 CFR 17.11 and 17.12) because such species no longer meets any of the five listing factors provided under section 4(a)(1) of the ESA and under which the species was originally listed (i.e., because the species has become extinct or is recovered).

Development or land use area - Those portions of the conservation plan area that are proposed for development or land use or are anticipated to be developed or utilized.

Downlist - To reclassify an endangered species to a threatened species based on alleviation of any of the five listing factors provided under section 4(a)(1) of the ESA.

Effect or impact - Under NEPA regulations, a direct result of an action that occurs at the same time and place; or an indirect result of an action which occurs later in time or in a different place and is reasonably foreseeable; or the cumulative results from the incremental impact of the action when added to other past, present and reasonably foreseeable future actions regardless of what agency or person undertakes such other actions (40 CFR 1508.8). Under ESA section 7 regulations, "effects of the action" means "the direct and indirect effects of an action on the species or critical habitat, together with the effects of other activities that are interrelated or interdependent with that action, that will be added to the environmental baseline (50 CFR 402.02).

Endangered species - "...any species [including subspecies or qualifying distinct population segment] which is in danger of extinction throughout all or a significant portion of its range." [Section 3(6) of ESA]

Endangered Species Act of 1973, as amended - 16 U.S.C. 1513-1543; Federal legislation that provides means whereby the ecosystems upon which endangered species and threatened species depend may be conserved, and provides a program for the conservation of such endangered and threatened species.

Environmental Action Memorandum (EAM) - A FWS document prepared to explain the Service's reasoning in finalizing an action that is categorically excluded from NEPA; decisions based on EAs for which a notice is not published in the Federal Register; emergency actions under CEQ's NEPA regulations (40 CFR 1506.11); EAs which conclude that an EIS is necessary (since no FONSI is prepared in such cases); and any decision where additional documentation of the Service's decision is desirable (Director's Order No. 11).

Environmental Assessment (EA) - A concise public document, prepared in compliance with NEPA, that briefly discusses the purpose and need for an action, alternatives to such action, and provides sufficient evidence and analysis of impacts to determine whether to prepare an Environmental Impact Statement or Finding of No Significant Impact (40 CFR 1508.9).

Environmental impact statement (EIS) - A detailed written statement required by section 102(2)(C) of NEPA containing, among other things, an analyses of environmental impacts of a proposed action and alternative considered, adverse effects of the project that cannot be avoided, alternative courses of action, short-term uses of the environment versus the maintenance and enhancement of long-term productivity, and any irreversible and irretrievable commitment of resources (40 CFR 1508.11 and 40 CFR 1502).

Finding of no significant impact (FONSI) - A document prepared in compliance with NEPA, supported by an EA, that briefly presents why a Federal action will not have a significant effect on the human environment and for which an EIS, therefore, will not be prepared (40 CFR 1508.13).

Formal permit application phase - The phase of the section 10 process that begins when the Regional Office receives a "complete application package" and ends when a decision on permit issuance is finalized.

Habitat - The location where a particular taxon of plant or animal lives and its surroundings, both living and non-living; the term includes the presence of a group of particular environmental conditions surrounding an organism including air, water, soil, mineral elements, moisture, temperature, and topography.

Habitat conservation plan (HCP) - See "conservation plan."

"Harm" - Defined in regulations implementing the ESA promulgated by the Department of the Interior as an act "which actually kills or injures" listed wildlife; harm may include "significant habitat modification or degradation where it actually kills or injures wildlife by significantly impairing essential behavioral patterns, including breeding, feeding, or sheltering." (50 CFR 17.3) NMFS has not defined "harm" by regulation.

"Harass" - Defined in regulations implementing the ESA promulgated by the Department of the Interior as "an intentional or negligent act or omission which creates the likelihood of injury to wildlife by annoying it to such an extent as to significantly disrupt normal behavioral patterns which include, but are not limited to, breeding, feeding, and sheltering." (50 CFR 17.3) NMFS has not defined "harass" by regulation.

Implementing Agreement - An agreement that legally binds the permittee to the requirements and responsibilities of a conservation plan and section 10 permit. It may assign the responsibility for planning, approving, and implementing the mitigation measures under the HCP.

Incidental take - Take of any federally listed wildlife species that is incidental to, but not the purpose of, otherwise lawful activities (see definition for "take") [ESA section 10(a)(1)(B)].

Incidental take permit - A permit that exempts a permittee from the take prohibition of section 9 of the ESA issued by the FWS or NMFS pursuant to section 10(a)(1)(B) of the ESA. In this handbook, also referred to as a section 10(a)(1)(B) or section 10 permit.

Listed species - Species, including subspecies and distinct vertebrate populations, of fish, wildlife, or plants listed as either endangered or threatened under section 4 of the ESA.

Mitigation - Under NEPA regulations, to moderate, reduce or alleviate the impacts of a proposed activity, including: a) avoiding the impact by not taking a certain action or parts of an action; b) minimizing impacts by limiting the degree or magnitude of the action; c) rectifying the impact by repairing, rehabilitating or restoring the affected environment; d) reducing or eliminating the impact over time by preservation and maintenance operations during the life of the action; e) compensating for the impact by replacing or providing substitute resources or environments (40 CFR 1508.20).

National Environmental Policy Act (NEPA) - Federal legislation establishing national policy that environmental impacts will be evaluated as an integral part of any major Federal action. Requires the preparation of an EIS for all major Federal actions significantly affecting the quality of the human environment (42 U.S.C. 4321-4327).

Person - "...an individual, corporation, partnership, trust association, or any other private entity; or any officer, employee, agent, department or instrumentality of the Federal government, of any State, municipality, or political subdivision of a State, or of any foreign government; any State, municipality, or political subdivision of a State; or any other entity subject to the jurisdiction of the United States" [Section 3(12) of the ESA].

Plan area - See "conservation plan area."

HCP development phase - The period in the section 10 process during which the applicant works with the FWS or NMFS Field Office to develop the HCP and associated documents. This phase ends when the Field Office forwards a "complete application package" to the Regional Office.

Proposed action - Under NEPA regulations, a plan that has a goal which contains sufficient details about the intended actions to be taken or that will result, to allow alternatives to be developed and its environmental impacts to be analyzed (40 CFR 1508.23).

Proposed species - A species for which a proposed rule to add the species to the Federal list of threatened and endangered species has been published in the Federal Register.

Record of Decision - Under NEPA regulations, a concise public record of decision prepared by the Federal agency, pursuant to NEPA, that contains a statement of the decision, identification and discussion of all factors used by the agency in making its decision,

identification of all alternatives considered, identification of the environmentally preferred alternative, a statement as to whether all practical means to avoid or minimize environmental harm from the alternative selected have been adopted (and if not, why they were not), and a summary of monitoring and enforcement measures where applicable for any mitigation (40 CFR 1505.2).

Section 7 - The section of the ESA which describes the responsibilities of Federal agencies in conserving threatened and endangered species. Section 7(a)(1) requires all Federal agencies "in consultation with and with the assistance of the Secretary [to] utilize their authorities in furtherance of the purposes of this Act by carrying out programs for the conservation of endangered species and threatened species." Section 7(a)(2) requires Federal agencies to "ensure that any action authorized, funded, or carried out by such agency...is not likely to jeopardize the continued existence of any endangered species or threatened species or result in the destruction or adverse modification of..." designated critical habitat.

Section 9 - The section of the ESA dealing with prohibited acts, including the "take" of any listed species without specific authorization of the Fish and Wildlife Service or the National Marine Fisheries Service for species under the jurisdiction of each agency.

Section 10 - The section of the ESA dealing with exceptions to the prohibitions of section 9 of the ESA.

Section 10(a)(1)(A) - That portion of section 10 of the ESA that allows for permits for the taking of threatened or endangered species for scientific purposes or for purposes of enhancement of propagation or survival.

Section 10(a)(1)(B) - That portion of section 10 of the ESA that allows for permits for incidental taking of threatened or endangered species.

Set of Findings - FWS document (also used by NMFS) that evaluates, for the administrative record, a section 10(a)(1)(B) permit application in the context of permit issuance criteria found at section 10(a)(2)(B) of the ESA and 50 CFR Part 17.

Species - "...any subspecies of fish or wildlife or plants, and any distinct population segment of any species of vertebrate fish or wildlife which interbreeds when mature" [Section 3(15) of the ESA].

Steering committee - Group or panel of individuals representing affected interests or stakeholders in a conservation planning program, the private sector, and the interested public, which may be formed by the applicant to guide development of the HCP, recommend appropriate development, land use, and mitigation strategies, and to communicate progress to their larger constituencies. FWS and NMFS representatives may

participate to provide information on procedures, statutory requirements, and other technical information.

Take - Under section 3(18) of the ESA, "...to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct" with respect to federally listed endangered species of wildlife. Federal regulations provide the same taking prohibitions for threatened wildlife species [50 CFR 17.31(a)].

Threatened species - "...any species which is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range" [Section 3(19) of the ESA].

NCCP Act

Fish and Game Code Section 2800-2840

California Fish and Game Code

2800. This chapter shall be known and may be cited as the Natural Community Conservation Planning Act.

2805. The definitions in this section govern the construction of this chapter.

(a) "Natural community conservation plan" means the plan prepared pursuant to an agreement entered into in accordance with subdivision (a) of Section 2810. The plan identifies and provides for the regional or areawide protection and perpetuation of natural wildlife diversity, while allowing compatible and appropriate development and growth.

(b) "Wildlife" has the same meaning as defined in Section 711.2.

(c) "Person" has the same meaning as defined in Section 711.2.

2810. The department may enter into agreements with any person for the purpose of preparing and implementing a natural community conservation plan to provide comprehensive management and conservation of multiple wildlife species, including, but not limited to, those species listed pursuant to Article 2 (commencing with Section 2070) of Chapter 1.5. The agreement shall include cost reimbursement provisions pursuant to Section 2840.

2820. Natural community conservation planning may be undertaken by local, state, and federal agencies independently or in cooperation with other persons. The plan shall be consistent with the agreement entered into pursuant to Section 2810 and shall be approved by the department for implementation upon meeting the standards established by the department for natural community conservation.

2825. (a) The department may prepare nonregulatory guidelines for the development and implementation of natural community conservation plans. The guidelines are exempt from Chapter 3.5 (commencing with Section 11340) of Division 3 of Title 2 of the Government Code. The guidelines may include, but are not limited to, all of the following:

- (1) Defining the scope of a conservation planning area.
- (2) Determining conservation standards, guidelines, and objectives for the planning area.
- (3) Appointing one or more advisory committees to review and make recommendations regarding the preparation and implementation of natural community conservation plans. The advisory committee membership may include representation from the local community near the plan area.
- (4) Coordinating with local, state, and federal agencies, including the Trade and Commerce Agency.
- (5) Incorporating public input.
- (6) Ensuring compatibility with the federal Endangered Species Act (16 U.S.C. Sec. 1531 et seq.).
- (7) Obtaining approval of the natural community conservation plan by the department.
- (8) Provisions for implementation of the plan.
- (9) Monitoring and reporting on plan implementation.

(10) Amending the plan consistent with the initial intent of the plan.

(b) Nothing in this chapter exempts projects proposed in a natural community conservation planning area from the requirements of the California Environmental Quality Act (Division 13 (commencing with Section 21000) of the Public Resources Code).

(c) Natural community conservation plans, as appropriate, shall be implemented pursuant to Section 2081.

(d) To the extent practicable, implementation of natural community conservation plans shall use the services of either the California Conservation Corps or local community conservation corps.

2830. Upon recommendation of the department, the commission may authorize, pursuant to Section 2084, the taking of any candidate species whose conservation, protection, restoration, and enhancement is provided for in a department approved natural community conservation plan consistent with paragraph (6) of subdivision (a) of Section 2825.

2835. The department may permit the taking, as provided in this code, of any identified species whose conservation and management is provided for in a department approved natural communities conservation plan.

2840. (a) The department shall be compensated for the actual costs incurred in participating in the preparation and implementation of natural community conservation plans. These costs may include consultation with other parties to agreements authorized by Section 2810, providing and compiling wildlife and wildlife habitat data, reviewing and approving the final plan, monitoring implementation of the plan, and other activities necessary to the preparation and implementation of a plan.

(b) The department shall be compensated for those expenses identified in subdivision (a) according to a schedule in the agreement authorized by Section 2810.

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Natural Community Conservation Planning General Process Guidelines

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I. Introduction

A. What is an NCCP? A Natural Community Conservation Plan (NCCP or "plan") is a plan for the conservation of natural communities that takes an ecosystem approach and encourages cooperation between private and government interests. The plan identifies and provides for the regional or areawide protection and perpetuation of plants, animals, and their habitats, while allowing compatible land use and economic activity. An NCCP seeks to anticipate and prevent the controversies caused by species' listings by focusing on the long-term stability of natural communities.

B. Legal Authority. NCCPs are authorized by the NCCP Act of 1991, codified as Chapter 10 of Division 3 of the California Fish and Game Code (2800 et. seq.). Approved NCCPs provide the basis for issuance of state authorizations for the take of species specifically identified in the plan, whether or not a species is listed as threatened or endangered, and may provide the basis for issuance of federal endangered species permits.

An NCCP will be approved by the Department for implementation upon meeting the statutory standards for natural community conservation (Fish and Game Code 2820 et. seq.) and other applicable laws and regulations. It is important to note that the NCCP process must ensure consistency with the federal and state Endangered Species Acts.

C. Purpose of the Guidelines. These guidelines, adopted pursuant to 2825 of the Fish and Game Code for the general application of the NCCP Act, are designed to help planners provide for regional protection and perpetuation of biological diversity, meet NCCP regulatory requirements and to allow for flexibility in plan development. Further guidelines may be adopted in the future for the application of the NCCP Act to specific ecosystems or regions of the state.

II. Characteristics of an NCCP

An NCCP is defined by the following characteristics and these combined characteristics may distinguish an NCCP from other types of conservation planning efforts.

- A. **Scope.** The scope of the plan is regional or area wide (Fish and Game Code 2805). Within the planning region, effective NCCP "subregional planning units" may be delineated to reflect both biological and administrative boundaries. An NCCP is based on a scientific and procedural framework that can effectively address cumulative impact concerns and integrate them with multi-jurisdictional or subregional planning efforts.
 - B. **Ecosystem Conservation.** The plan promotes wildlife diversity through conservation of habitat on an ecosystem level. "Wildlife" means and includes all wild animals, birds, plants, fish, amphibians, and related ecological communities, including the habitat upon which wildlife depend for their continued viability (Fish and Game Code 711.2).
 - C. **Science.** The plan provides a conservation strategy that is based on recognized principles of conservation biology, as well as the best available scientific information about species and habitats.
 - D. **Coordination.** The plan promotes coordination and cooperation among public agencies, landowners, other private interests, and members of the public, and includes a mechanism by which private interests can participate in the planning process.
 - E. **Economic Activity.** The plan allows compatible economic activity including resource utilization and development.
-

III. Components of an NCCP

A. Planning Agreement

1. The Department of Fish and Game (Department) may enter into agreements with any person for the purpose of preparing and implementing an NCCP. A planning agreement identifies the scope of the plan to be prepared and the participating parties. More specifically, the planning agreement:
 - a. shall be entered into by, and binding upon, all parties, including, but not limited to, the department, other participating federal, state, or local agencies, and participating private landowners;
 - b. shall identify those natural communities, and the endangered, threatened, proposed, candidate, or other species known, or reasonably expected to be found in those communities, which will be the focus of the plan;
 - c. should establish a process for the identification of target species, which may include listed species, and which shall collectively serve as indicators of the natural communities which are the focus of the plan;
 - d. shall establish a process for the collection of data, information, and independent input necessary to meet scientifically sound principles for the conservation of species coverage in the plan;
 - e. shall establish a process for public participation throughout plan development and review;
 - f. should establish an interim process (during plan development) for project review, by wherein projects which potentially conflict with goals of the plan are discussed with the Department prior to formal processing by the jurisdiction.
 - g. shall provide that draft documents associated with a natural community conservation plan shall be available for public review and comment for at least 45 days prior to adoption. The review period specified in this paragraph may run concurrent with the review period provided for the California Environmental Quality Act (CEQA) document associated with the natural community conservation plan, however, nothing in this paragraph limits the discretion of a city or county to revise any draft documents at a public hearing.
2. The Department may also enter into a Memorandum of Understanding (MOU) with the appropriate federal and state agencies to set up a joint program by which state and federal participation in the development and implementation of one or more NCCPs may be coordinated. Pursuant to 2095 of the Fish and Game Code, the Department encourages consistent and compatible findings between state and federal agencies on biological opinions.

B. Planning Document. The plan should be tailored to meet the resource needs of a particular region or subregion. The plan must specify a strategy for achieving the required objectives of natural community conservation and compatible land use and economic activity. The strategy might include such techniques as reserve assembly or watershed management. Planning considerations and key plan elements should include, but are not limited to, the following:

1. Planning Considerations

- a. Research. Take into account, and coordinate with, ongoing scientific research that will be helpful in future management adaptations.
- b. Agricultural Land Protection. Consider the impact of the plan on the use of existing agricultural lands and on conversion of agricultural land to non-agricultural purposes. The conservation value of the types of agriculture in the plan area should be recognized in the plan. NCCPs should distinguish between areas that are intended to remain in agriculture in perpetuity, areas expected to be converted to urban development, and areas to be restored to a natural state when current commitments have expired. An NCCP may be developed in connection with, or to aid in, an agricultural program created under Article 3.5 of Chapter 1.5 of the Fish and Game Code.
- c. Aquatic Ecosystem Responsibilities. Consider methods by which the Department's responsibilities under Chapter 6 of Division 2 of the Fish and Game Code (1600 et. seq.) can be integrated with future NCCP planning processes and with the responsibilities of various federal agencies for regulation of waterways and wetlands.

2. Key Plan Elements

- a. Scope. Describe the natural communities and geographic area of the plan. Also identify the conservation goals for the plan area.
- b. Covered Species. Identify those species to be conserved and managed within the plan area and may therefore be authorized for taking pursuant to Section 2835 and summarize how the ecological needs of those species are met by the plan.
- c. Anticipated Activities. Describe the activities or categories of activities anticipated to be authorized by plan participants, which will result in the taking of species pursuant to Section 2835 within the plan area. Activities shall be described in sufficient detail to allow the department to evaluate the impact of such activities on the ecosystems, natural communities, and species identified in the plan. The combined effect of these activities must not negate the conservation benefits of the plan for any covered species.
- d. Principles of Conservation Biology. Delineate the scientifically sound principles of conservation biology used in formulating those provisions of the plan to protect, restore, or enhance the ecosystems, natural communities and habitat types within the plan area. Demonstrate accepted principles of conservation biology for species covered have been used in formulating the plan.
- e. Conservation Strategy
 - *Conservation Measures*. Identify those actions to be undertaken to protect, restore or enhance the natural communities within the plan area.
 - *Compatible Uses*. Identify appropriate activities, and any restrictions on activities, within the conserved areas.
 - *Schedule*. Set forth a schedule for the implementation of conservation measures.
 - *Measurable Goals*. Set forth objective, measurable goals to ensure that the conservation measures identified in the plan are carried out in accordance with the schedule and goals set forth in the plan.

f. Monitoring. The plan must include a monitoring program that provides periodic evaluations of monitoring results and other new information to be used to:

- evaluate compliance with plan implementation mechanisms;
- evaluate biological performance of the plan; and
- determine whether management objectives remain appropriate and whether new or different techniques could be utilized to better achieve management goals.

g. Adaptive Management. Each plan will develop a management plan which will provide for adaptive management. The plan will provide for the implementation of an adaptive management program which establishes a flexible, iterative approach to long-term management of natural communities, habitat types, and species within the plan area. Management will be refined and improved over time based upon the results of ongoing monitoring activities and other relevant information. Elements of a management plan subject to adaptive management may include, but are not limited to, habitat management and enhancement, fire management, management of human impacts, and exotic species control.

h. Funding. Set forth an adequate funding source or sources to ensure that the conservation actions identified in the plan are carried out in accordance with the schedule and goals set forth in the plan.

i. Assurances. An NCCP may include, in both the plan and in a separate implementing agreement, assurances that provide for the long-term reconciliation of new land development in the planning area and the conservation and protection of endangered species. Departmental assurances will be determined for individual plans according to the level of conservation each plan affords. If warranted, the Department will provide its assurance that the NCCP provides measures sufficient to conserve the species addressed in the plan and that no further land dedications, land use restrictions, water use commitments, or financial compensation will be required by the Department of plan participants, except in defined extraordinary circumstances.

C. Implementation Agreement. NCCP participants commit to implementing the NCCP by preparing and signing an Implementation Agreement. The Implementation Agreement:

- o defines the obligations of the signatories and other parties;
- o provides legally binding and enforceable assurances that the plan will be implemented and adequately funded; and
- o provides a process for amendment of the plan.

The Implementation Agreement may provide that a separate management plan or plans will be adopted in the future or at periodic intervals provided that the management plan(s) meets criteria set forth in the NCCP. Where appropriate, the Department may require additional memoranda of understanding that the Department believes would assist in the implementation of the plan.

D. Take Authorization

1. **Section 2835.** Section 2835 of the Fish and Game Code allows the Department to authorize incidental take in an NCCP. Take may be authorized for any identified species whose conservation and management is provided for in the plan, whether or not the species is listed as threatened or endangered under the federal or state Endangered Species Acts.

a. Identified species that are not listed shall be treated as if listed pursuant to the

California Endangered Species Act (CESA) either by addressing the species themselves or by addressing species whose habitat and survival needs are demonstrably similar to those of the identified species.

- b. Within the area subject to the plan, should demonstrate that it contributes to the recovery of listed species authorized for take.

2. Section 2081 Compliance. To ensure compliance with CESA, authorization for taking of species identified in the plan shall also meet the following conditions required by 2081(b) of the Fish and Game Code:

- a. The taking is incidental to an otherwise lawful activity.
- b. The impacts of the authorized take shall be minimized and fully mitigated. Impacts of taking include all impacts on the identified species that result from any act that would cause the proposed taking.
 - The measures required to meet this obligation shall be roughly proportional in extent to the impact of the authorized taking on the species.
 - Where various measures are available to meet this obligation, the measures required shall maintain the applicant's objectives to the greatest extent possible.
 - All required measures shall be capable of successful implementation.
- c. The authorization is consistent with any regulations adopted pursuant to Sections 2112 and 2114 of the Fish and Game Code (Recovery Strategies).
- d. The applicant shall ensure adequate funding to implement the measures required and for monitoring with, and effectiveness of, those measures.

E. Environmental Documentation. NCCPs shall provide for appropriate compliance with CEQA as required by 2825(b) of the Fish and Game Code and, to the extent applicable, with the National Environmental Policy Act (NEPA). The CEQA document for the plan shall include a specific mitigation and implementation monitoring program, consistent with the requirements of Division 13 (commencing with Section 21000) of the Public Resources Code. Ordinarily, the Department will act as a CEQA responsible agency for the purpose of approving an NCCP. In certain circumstances, the Department may act as a CEQA lead agency. In either case, CEQA review of NCCPs must be coordinated with the Department.

IV. Relationship to Other Guidelines

- A. Coastal Sage Scrub Guidelines.** The Department has previously adopted both process guidelines and conservation guidelines for the Southern California Coastal Sage Scrub (CSS) NCCP pilot project. Those guidelines remain in effect. NCCPs within the CSS planning region, that incorporate CSS habitat, will comply with those guidelines.
- B. Further Guidelines.** Further guidelines may be adopted in the future for specific plans being developed under the NCCP Act or for the application of the NCCP Act to specific ecosystems or regions of the state. Such guidelines will be consistent with these general guidelines. Such guidelines will be circulated for appropriate public review before their adoption by the Department.
-

V. Adoption and Effective Date

These guidelines are adopted by the Department of Fish and Game this **22nd day of January, 1998**.
These guidelines are effective immediately and apply to all NCCPs hereafter approved by the
Department.

JACQUELINE E. SCHAFER Director





Southern California Coastal Sage Scrub NCCP Process Guidelines

Amended: November, 1993

California Department of Fish and Game
and
California Resources Agency
1416 9th Street
Sacramento, CA 95814

in Coordination with

U.S. Fish and Wildlife Service

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Summary

The Coastal Sage Scrub (CSS) Natural Communities Conservation Planning (NCCP) Process Guidelines explain the roles of local, state, and federal government, and describe how the planning process will shift in focus from the regional to the subregional level.

Background

The program was established by state law, the Natural Community Conservation Planning Act of 1991 (Fish and Game Code Section 2800 et. seq.). The Southern California Coastal Sage Scrub NCCP Program is the first such program developed under the law. The California Department of Fish and Game (CDFG) is the principal state agency implementing the NCCP Program. CDFG is working under the auspices of the Office of the Secretary of the Resources Agency on this pilot program.

The Regional Coastal Sage Scrub Planning Area is roughly 6,000 square miles and includes parts of five counties: San Diego, Orange, Riverside, Los Angeles, and San Bernardino. Numerous local jurisdictions and public and private landowners are affected. Coastal sage scrub is an ecological community that supports a diverse assemblage of native California plants and animals. Human activity in this five-county area has reduced the extent of coastal sage scrub to the point where conservation action is crucial to prevent endangerment of many species.

Regional Coordination, Subregional Planning

Generally, the conservation program and the biological issues need to be coordinated across the five-county region. However, because the area is so large and because specific biological and land use planning considerations vary throughout the region, it is imperative that functional planning be conducted on a subregional scale.

During the planning period, participants agree voluntarily to protect coastal sage scrub habitat on enrolled lands and lands within their jurisdiction. The original enrollment agreements were scheduled to terminate on October 31, 1993. However, in order to enable jurisdictions to benefit from interim habitat loss provisions provided in the USFWS special rule for the California gnatcatcher [4(d) rule], all existing and new jurisdictional enrollments will be extended until the completion of the appropriate subregional NCCP or approved NCCP subarea unless a jurisdiction requests earlier termination of enrollment.

Through regional planning efforts undertaken in 1992 and 1993, it is expected that some 10 to 15 functional subregional planning areas will be formed. Most of these areas are already in some stage of planning; the rest will initiate planning in the future.

Regional Phase

The regional phase establishes the overall scientific and legal framework for subsequent subregional efforts.

- Establish state and federal cooperation through a Memorandum of Understanding (MOU).
- Convene a Scientific Review Panel (SRP) of experts.
- Collect scientific information from land owners and jurisdictions for use by the SRP.

- Identify subregional focus areas for subregional NCCPs.
- Document ongoing multi-species conservation planning.
- Provide interim habitat protection through landowner and jurisdiction enrollments and through CDFG protection of non-enrolled land.
- Establish interagency planning, public participation and review process.
- Establish regional scientific framework for subregional planning, including survey guidelines, target species, and conservation guidelines.

Subregional Planning Process

The subregional phase is when actual decisions regarding conservation and development are made through a collaborative process centered on local government and meshing with the conventional land planning and CEQA process.

- Specific subregional NCCP planning begins with a **Planning Agreement** between local jurisdictions, landowners, CDFG and the U.S. Fish and Wildlife Service (USFWS) (as described in Section 2810 of the Fish and Game Code). This Agreement sets forth the NCCP process as it applies to the specific planning area.
- Mandatory elements of the Planning Agreement include:
 - map of the planning boundary,
 - identification of a lead or coordinating agency and other jurisdictions affected,
 - list of species of concern to be addressed in the NCCP,
 - identification of parallel permits, if any (e.g., Federal Section 10(a)), and
 - public participation and public notice of plan preparation.
- Optional elements may include:
 - extent of state and federal agency participation,
 - identification of land ownerships,
 - discussion of the specific extent of biological information,
 - specific survey methods to be used to fill data gaps,
 - other aspects germane to the specific NCCP subregion.
- Subarea Planning Agreements for implementation of portions of a subregional NCCP can be authorized, subject to acceptance by CDFG and USFWS.
- Collaborative planning commences under auspices of lead or coordinating agency with CDFG and USFWS providing ongoing guidance and with appropriate public participation.
- Completed NCCP plan is published in Draft form along with appropriate CEQA and NEPA compliance documents (eg., program EIR, Joint state/federal EIR/EA or EIS).
- CDFG and USFWS comment along with members of the interested public during a set time period. Because they have been involved throughout the planning process, it is expected that CDFG and USFWS will be able to accept the plan. If they cannot, however, they must identify specific changes to the plan that need to be made to meet requirements.
- Lead or coordinating agency finalizes plan. Lead or coordinating agency, CDFG, USFWS and

other parties as appropriate enter into an **Implementing Agreement**. This agreement specifies all terms and conditions of activities under the NCCP plan. By signing the Implementing Agreement, CDFG and USFWS explicitly acknowledge approval of the Final NCCP plan.

- Lead or coordinating agency or other Implementing Agreement parties report activity under the plan routinely to CDFG and USFWS demonstrating compliance, as outlined in the Implementation Agreement.

Federal Involvement and the Endangered Species Act

The NCCP process does not supplant the endangered species protection of existing state or federal law. At present, only a few coastal sage scrub associated species, such as the coastal California gnatcatcher, are formally listed as endangered or threatened under either state or federal endangered species acts. By taking a comprehensive ecosystem approach to conservation it is hoped that the NCCPs will forestall endangerment of other coastal sage scrub species, thereby avoiding the necessity of subsequent listings.

If species become listed, or if an already listed species other than the California gnatcatcher is found in the NCCP area, the jurisdictions or landowners affected will still need to obtain a federal Section 10(a) or state Section 2081 permit for activities that would involve take of listed species. However, the NCCP is meant to meet the requirements of both a state Management Authorization and a federal Habitat Conservation Plan to allow issuance of the appropriate permits if they are needed.

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1.1 Statutory Basis

The Natural Community Conservation Planning (NCCP) program is authorized by California law: the Natural Community Conservation Planning Act of 1991 (AB 2172), set forth in Section 2800 et. seq. of the California Fish and Game Code.

The Coastal Sage Scrub (CSS) NCCP is the first such planning effort to be initiated under the Act. It is undertaken as a pilot project to develop a process for accelerated conservation planning at a regional scale which may serve as a model for other NCCPs elsewhere in the state.

Because the CSS NCCP program is a pilot program for possible application elsewhere in California, it is sponsored jointly by the California Resources Agency and the California Department of Fish and Game (CDFG). Where these process guidelines refer to participation in agreements or other action by CDFG, it should be understood that for this program, this means both the Resources Agency and CDFG. Both state agencies are proceeding in cooperation with the U. S. Fish and Wildlife Service (USFWS) (See 12/4/91 MOU between CDFG and USFWS).

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1.2 Program Purpose

The purpose of the Natural Community Conservation Planning program is to provide for regional protection and perpetuation of natural wildlife diversity while allowing compatible land use and appropriate development and growth. These goals will be achieved through implementation of a Natural Community Conservation Plan (NCCP).

The NCCP process is designed to provide an alternative to current "single species" conservation efforts by formulating regional, natural community-based habitat protection programs to protect the numerous species inhabiting each of the targeted natural communities. The shift in focus from single species to the natural community level will greatly enhance the effectiveness of ongoing species protection efforts.

It is intended that NCCPs will result in land use plans and management programs for the long-term protection of designated habitats and their component species. The planning process will be carried out with the voluntary and collaborative participation of landowners, local governments, state and federal agencies, and environmental organizations.

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1.3 Southern California CSS Program

This program, the first of the State's NCCP projects, provides the direction and collaborative support necessary to conduct research, planning, and habitat management efforts leading to long-term conservation and protection of species in the coastal sage scrub community of southern California.

According to the Coastal Sage Scrub Scientific Review Panel (SRP), approximately 100 species (plants and animals) considered rare, sensitive, threatened, or endangered by Federal and State resource agencies are associated with coastal sage scrub. The array of sensitive species within the coastal sage scrub community that would potentially benefit from this initial NCCP process illustrates the rationale of the proposed shift in focus from species to the natural community. The SRP has identified three target species within the CSS (two birds: California gnatcatcher, cactus wren, and one lizard: orange-throated whiptail) for detailed study. Information on these target species along with other natural community conservation guidelines will be used in planning individual subregional NCCPs.

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1.4 CSS Planning Area

The Coastal Sage Scrub NCCP pilot project creates a regional planning and management system designed to protect coastal sage scrub habitat and reconcile conflicts between habitat protection and new development within the Southern California study area. Although coastal sage scrub is found further north as well, the study area for the Coastal Sage Scrub NCCP project embraces portions of five counties: San Diego County; Orange County; Riverside County; San Bernardino County; and Los Angeles County (See SRP Special Report No. 2, "Conservation Planning Region").

The five-county study area will be divided into several large planning subregions in order to minimize the inherent problems related to addressing the entire region in a single planning effort. These subregions will be designated by participating local jurisdictions, subject to approval by CDFG and based on the analysis provided by the SRP. Designated planning subregions will consist of large areas where the cumulative impacts of development on coastal sage scrub can be analyzed. These subregions also will be large enough, in terms of the presence of sufficient coastal sage scrub and associated natural habitat acreage and species diversity, to constitute effective habitat planning units. All NCCPs will be prepared and submitted by landowners and/or local jurisdictions to CDFG on a subregional basis. Some subregions may need to break down into smaller subareas for planning purposes.

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1.5 Enrollment During Planning Period

Planning for long-term management and protection of coastal sage scrub natural community will be initiated by participating landowners and local jurisdictions enrolled in the NCCP process. The purpose of enrollment is to: 1) protect "enrolled" coastal sage scrub habitat during the planning period, and 2) to initiate the collaborative planning process which will result in long-term habitat protection through an NCCP.

The original enrollment agreements were scheduled to terminate on October 31, 1993. However, in order to enable jurisdictions to benefit from interim take provisions established in the USFWS special rule [4(d) rule], all existing and new jurisdictional enrollments will be extended until the completion of the appropriate NCCP unless a jurisdiction requests earlier termination of enrollment.

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1.6 NCCP Planning Guidelines

Fish and Game Code Section 2825 authorizes the California Department of Fish and Game to prepare nonregulatory guidelines that will facilitate and expedite the preparation and implementation of natural community conservation plans statewide. The guidelines are intended to improve understanding of the NCCP program among potential private and public participants, thereby encouraging early participation in NCCP process, increasing the effectiveness of the program, and ensuring that proposed plans will ultimately gain approval.

CDFG seeks to use the CSS pilot project to direct its future effort on the statewide guidelines.

The CSS NCCP Process Guidelines published here explain how the regional coordination effort will lead to individual subregional NCCPs. The Process Guidelines are referenced by the enrollment agreements as a basis for voluntary participation.

The Process Guidelines incorporate by reference the Conservation Guidelines developed by CDFG for the CSS program.

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1.7 NCCP and Endangered Species Acts

The NCCP process does not supplant the endangered species protection of existing state or federal law. At present, only a few coastal sage scrub associated species, such as the coastal California gnatcatcher, are formally listed as endangered or threatened under either state or federal endangered species acts. By taking a comprehensive ecosystem approach to conservation it is hoped that the NCCPs will forestall endangerment of other coastal sage scrub species, thereby avoiding the necessity of subsequent listings.

The California gnatcatcher was listed by the USFWS as a threatened species on March 25, 1993. At the time the gnatcatcher was listed, the USFWS proposed a special rule under Section 4(d) of the Endangered Species Act (ESA), that defined the conditions under which take of the gnatcatcher would not be considered a violation of Section 9 of the federal ESA. When the rule is finalized (anticipated in November, 1993), activities conducted in enrolled jurisdictions pursuant to the NCCP Guidelines (Process Guidelines and Conservation Guidelines) that will involve take of gnatcatchers will not result in violations of Section 9 of the ESA. Therefore, no Section 10(a) permit would be needed for take of gnatcatchers for these activities.

If other species become listed, or if an already listed species is found in the NCCP area, the jurisdictions affected will still need the applicable federal Section 10(a) or state Section 2081 permit; however, the NCCP is meant to meet the requirements of both a state Management Authorization and a federal Habitat Conservation Plan to allow issuance of the appropriate permits provided the approved NCCP has adequately addressed those particular species.

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2. CSS NCCP Planning Milestones

Both conservation and development community interests will be well served by rapid progress on NCCPs. The overall program is intended to incorporate the following NCCP planning milestones. Local conditions will vary, and not all jurisdictions or subregions will be able to respond fully within the suggested timeframes. Participants are encouraged to meet the targeted milestones for cited tasks and work products.

November, 1993

- CDFG publishes final NCCP Process Guidelines and Conservation Guidelines.
- USFWS publishes final special rule for the gnatcatcher.
- Initial jurisdictional enrollments are extended following final publication of the Section 4(d) special rule for the gnatcatcher.

November, 1993 and continuing.

- Implement interim habitat loss provisions.
- CDFG evaluates NCCP program status and considers options for areas without completed plans.
- Monthly informational report by CDFG to the California Fish and Game Commission concerning NCCP program status.
- Periodic informational report by CDFG to the California legislature.
- Research undertaken to fill information needs.
- Preparation, submittal, and review of NCCP plans.

Summer, 1994.

- Completion of first NCCP plans.

Fall, 1994.

- Approval of first NCCP plans.

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3. Regional Planning

Coastal Sage Scrub habitat under study is scattered broadly over portions of a five-county area in southern California. While long term conservation will come about from specific subregional NCCPs, the scientific and procedural framework for the subregional plans will be established at a regional scale.

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3.1 State and Federal Wildlife Agency Coordination

Because both state and federal wildlife agencies have clear legal mandates to protect endangered species, both agencies have an interest in the natural community approach to conservation. The overall intent for state and federal coordination is expressed in the 12/4/91 MOU between the U.S. Fish and Wildlife Service and the California Department of Fish and Game.

On March 25, 1993, the Secretary of Interior listed the coastal California gnatcatcher as a threatened species. At the time of the listing the Secretary proposed a special rule that strongly supported the NCCP efforts and would closely tie the NCCP program to federal actions under the Endangered Species Act.

State and federal coordination will occur throughout the process, but focuses on four phases:

- a. Exchange of scientific information and cooperative review of recommendations from the Scientific Review Panel to assist CDFG in promulgating survey, subregion, conservation, and process guidelines that can be applied uniformly throughout the region and which will be consistent with both state and federal policies.
- b. Initiation of specific subregional NCCPs or acceptance of Ongoing Multi Species Plans (see section 3.6) to make clear what requirements the plans must meet. This includes a joint effort to establish criteria for review and ultimate acceptance of a subregional plan. This will allow subregional planning efforts to prepare a *single* conservation plan that will meet both state and federal requirements.

Where appropriate, the CDFG and USFWS can accept the delineation and planning of subareas within subregions, provided subareas adhere to and conform with the basic subregional goals and objectives. Subareas must contain a section that indicates how that subarea implements the larger subregional effort and integrates its preserve areas across subregional boundaries.

- c. Establishment of procedures, consistent with the 4(d) rule, for subregions to utilize during the interim, planning period including procedures for monitoring interim habitat loss.
- d. Cooperative review of draft plans to coordinate requested modifications, requirements for monitoring, issuance of parallel permits (if any), and compliance with CEQA and NEPA in a time matched to the local plan adoption process.

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3.2 Scientific Review Panel

By agreement between USFWS and CDFG in a MOU (12/4/91), CDFG established a Scientific Review Panel (SRP) for the CSS NCCP. According to the MOU, "information and analysis undertaken by the SRP shall be presumed to constitute the best scientific information available until, and unless, further credible analysis and investigations show the contrary". The SRP is described in NCCP Special Report No. 1.

The role of the SRP is to collect readily available data and to integrate the information into a region-wide scientific framework for conservation planning activities. The scientific framework is to be communicated via a series of recommendations regarding: scientific survey methods, appropriate focus areas for subregional planning, and region-wide conservation needs.

The SRP recommended a conservation strategy in March 1993 to serve as a basis for the state's Conservation Guidelines. CDFG and USFWS staff worked with the SRP to prepare the draft Conservation Guidelines published in June, 1993 and revised in November, 1993. (See Attachment A).

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3.3 Program Enrollment

The success of the NCCP program relies on conservation and management of a high percentage of the currently remaining coastal sage scrub habitat.

3.3.1 General Enrollment

Cities and counties are encouraged to participate in the NCCP process by entering into an enrollment agreement with CDFG, including commitments to the following standards for the duration of the collaborative planning period. Agreements may be modified to reflect special circumstances or individual needs upon approval by the Department.

Jurisdictional enrollment provides for a cooperative effort to initiate actual long term NCCP planning. This includes sharing survey data and generally heightening awareness of the NCCP program in the jurisdiction.

Because they were asked to enroll prior to preparation of the guidelines, enrollees have the option to withdraw from the NCCP process if the guidelines or subregion designations are not acceptable to the enrollee. However, enrollment and active participation in subregional planning are integral to the interim take provisions of the special rule for the California gnatcatcher,

3.3.2 Enrollment Equivalent on State and Federal Lands

Substantial CSS habitat occurs on state or federally owned land. Major examples are the Cleveland National Forest, Military facilities at NAS Miramar and Camp Pendleton, and the Chino Hills State Park. Some public lands are governed by law that precludes use of the same enrollment process that is available for local jurisdictions.

However, most such public land has an established internal program of research and land use evaluation that fulfills the same objectives as the formal enrollment process: heightened protection of CSS, ongoing research, and progress toward long term conservation planning.

For the state's purpose of limiting CSS loss during the planning period and establishing subregional coordination among major landowners, the availability of a state or federal CSS management program comparable to the planning and habitat loss provisions of NCCP will be viewed as being commensurate with formal enrollment.

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3.4 Non-Enrolled Land

Land not enrolled through jurisdictional enrollments will still be subject to the requirements of CEQA and the federal Endangered Species Act.

CEQA has a mandatory finding of significance wherever:

"(a) The project has the potential to substantially degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal, .." (CEQA Guidelines, section 15065)

By that standard, most CSS habitat in the NCCP Program area is sensitive and could trigger these CEQA findings.

Section 9 of the federal Endangered Species Act prohibits take of a listed animal. With the federal listing of the California gnatcatcher, much CSS is subject to federal protection. Without participation in the NCCP program, a jurisdiction issuing land use approvals that may result in incidental take of the California gnatcatcher may be in violation of federal law. Similarly, landowners who develop land or otherwise engage in activities that result in take without authorization from an enrolled jurisdiction would be in violation of the federal ESA.

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3.5 Subregional NCCP Focus Areas

The SRP reviewed information on distribution and made a preliminary recommendation of the large CSS habitat areas that should serve as focus areas for designation of subregional NCCPs. The draft focus area map and interpreting text was published in May 1992 and the final report was published in August 1992.

It is expected that subregional NCCPs will attempt to delineate planning areas that include large, manageable CSS habitat and suitable peripheral corridor and buffer habitat areas. Corridor and buffer areas are likely to consist of habitats other than CSS. Generally, a subregional planning area should include all of a focus area, but it is recognized that some subdivision of focus areas may be needed to reflect jurisdictional and land ownership patterns.

Regardless of how a NCCP subregion is drawn, the boundary will be approved by CDFG and USFWS in advance of actual planning when CDFG and USFWS enter into a Planning Agreement (see section 4.1). In the course of planning, the subregional plan will need to explicitly treat the need to integrate with CSS conservation needs *outside* of the immediate planning area by providing for corridors or other features that will improve region-wide habitat values.

The focus areas identified by the SRP are by no means the only areas of CSS and associated habitats of potential conservation value. It is intended that the subregional planning areas will be drawn broadly to encompass both large and small CSS habitat and areas which serve as corridors for interconnection between CSS habitats. With the possible exception of completely urbanized areas, the entire five-county CSS planning area will eventually be included in subregional CSS NCCPs.

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3.6 Ongoing Multi-Species Plans

The CSS planning area has several active, large-scale conservation planning activities that have similar form and content to a NCCP. These so-called Ongoing Multi-Species Plans (OMSP) can be accepted into the CSS NCCP process with little or no change. It is easy to consider a prior conservation planning activity as equivalent to enrollment or a Planning Agreement as a NCCP; ultimately, all plans -- whether NCCPs or OMSPs -- must meet the same standards for protection of coastal sage scrub habitat.

For a conservation plan to qualify as an OMSP and be accepted as an NCCP, all of the following must hold:

- a. The planning effort was funded and was underway as documented by either a memorandum of understanding, an agreement, a statutory exemption, or other formal process at the time that the NCCP Act became effective (1/1/92).
 - b. The plan protects CSS habitat and/or contains an agreement for satisfactory mitigation for any CSS loss approved by CDFG pursuant to a prior planning effort, and the plan substantially achieves the objectives of the NCCP Act, meaning that the plan provides assurance that CSS habitat and named species will be protected to a degree substantially equivalent to an NCCP prepared under the guidelines.
 - c. California Department of Fish and Game approves the plan and the plan meets CESA Section 2081 Management Agreement requirements for named species of concern.
 - d. U.S. Fish and Wildlife Service approves the plan and it provides the equivalent of federal ESA Section 10(a) habitat conservation plan requirements for named species of concern.]Because an OMSP will have commenced before all NCCP guidelines were in place, an OMSP may differ in detail from the NCCP process described here. A qualifying OMSP may include, among other things:
 - (1) Habitat and species in addition to CSS habitat and species.
 - (2) Boundaries different from CSS subregions as long as the boundaries have been previously approved by CDFG and do not significantly impair the long-term opportunities for conserving CSS region-wide.
 - (3) Survey methodologies may differ from the SRP recommended guidelines as long as the methods used have been approved by CDFG.
 - (4) Timing requirements may differ from the target milestones for the CSS NCCP.
 - (5) The prior planning effort includes provision for CDFG participation in planning and reimbursement of CDFG expenses.
 - (6) The prior planning effort may include provision for USFWS participation in planning.
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3.7 Regional Conservation Guidelines

A central element of the regional CSS NCCP coordination is promulgation of a set of conservation guidelines. These guidelines will accelerate the planning process by providing subregions with a general set of scientific principles and preserve management tools.

CDFG published draft Conservation Guidelines based on recommendations by the Scientific Review Panel. CDFG, after considering public comments, finalized the Conservation Guidelines in November, 1993.

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4. Process for Securing Interim Approvals for CSS Habitat Loss

The following procedure is set forth to govern activities during the subregional planning phase, prior to completion of a subregional NCCP. These procedures are intended to allow local jurisdictions to benefit from the 4(d) rule.

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4.1 Subregional Responsibilities

- a. A subregional planning process shall be established. This entails defining subregion boundaries, establishing a lead or coordinating agency, and executing a planning agreement among participating local governments, private landowners, the lead or coordinating agency, CDFG, and USFWS.
 - b. Consistent with these guidelines and the Conservation Guidelines, the subregional lead or coordinating agency shall:
 - (1) Establish base number of acres of coastal sage scrub (CSS) habitat in each subregion based on local maps from field surveys conducted according to the Scientific Review Panel (SRP) survey guidelines or on vegetation maps submitted in digital form approved by CDFG/USFWS; in any case the base number of acres shall not be less than that which existed on March 25, 1993, the date the gnatcatcher was determined to be a threatened species.
 - (2) Calculate 5% estimate for interim habitat loss.
 - (3) Establish interim habitat loss mitigation guidelines appropriate for each subregion. The guidelines shall seek to minimize project impacts to CSS habitat consistent with the Conservation Guidelines. The CDFG and USFWS must concur with these guidelines. Mitigation may be approved on a case by case basis prior to adoption of the guidelines. See section 4.3.
 - (4) Keep a cumulative record of all approvals for "interim habitat loss," including adjustments of totals if approvals expire, to assure the 5% interim habitat loss guideline is not exceeded in the subregion. Interim habitat loss approval status should be forwarded to the USFWS at least once a month.
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4.2 Local Agency Interim Habitat Loss Approvals

- a. Applications for interim habitat loss permits are limited to projects proposed to proceed with grading in the near term. Habitat loss permits may be conditioned on payment of applicable development fees, including any mitigation fees. Any interim habitat loss approval shall expire if substantial site work or other site development activities have not commenced within one year from the permit issuance.
- b. The application for interim habitat loss must be submitted to the local jurisdiction with entitlement responsibility for the associated project.
- c. Applications should include a mitigation plan which is justified as appropriate to the proposal.
- d. Projects impacting intermediate and high value CSS habitat should involve USFWS early in planning stages to avoid unnecessary delays during the final approval process. Development decisions having a substantial adverse impact on high value habitat should be deferred until completion of the NCCP, if possible. Impacts to high value areas will require, and impacts to intermediate habitat may require, special mitigation. Impacts in higher value areas must demonstrate that the loss will not foreclose future reserve planning options as stated in the Conservation Guidelines.
- e. Local agencies may determine specific application and process requirements, provided that interim habitat loss requests are integrated into the regular project entitlement process as much as possible and public notice and opportunity for public comment is provided according to law prior to the final decision by the local agency.
- f. California Environmental Quality Act (CEQA) review, consistent with applicable requirements of state law, will be undertaken by the local agency to provide an appropriate level of analysis in order to make the required findings.

(1) If the project proposed for interim habitat loss has already obtained final CEQA approval, the local government will determine whether the CEQA document addressed potential CSS impacts and potential impacts on gnatcatcher populations and minimized and mitigated the impacts to the gnatcatcher. If the local jurisdiction determines that the project impacts have not been mitigated consistent to the above standards then the project must meet mitigation requirements of 4.3.

(2) If no CEQA review has previously been undertaken, then CEQA review shall be necessary, consistent with current law, and the project must meet the mitigation requirements of 4.3.

- g. To approve an interim habitat loss application, the local agency must make the following findings, based on the information obtained pursuant to Section 4.2a above and the applicable CEQA review:

(1) The proposed habitat loss is consistent with the interim loss criteria in the Conservation Guidelines and with any subregional process if established by the subregion.

- o The habitat loss does not cumulatively exceed the 5% guideline.
 - o The habitat loss will not preclude connectivity between areas of high habitat values.
 - o The habitat loss will not preclude or prevent the preparation of the subregional NCCP.
 - o The habitat loss has been minimized and mitigated to the maximum extent practicable in accordance with 4.3.
- h. The habitat loss will not appreciably reduce the likelihood of the survival and recovery of listed species in the wild.
- i. The habitat loss is incidental to otherwise lawful activities.

Projects meeting these criteria may be prioritized based on the likelihood of imminent development or which otherwise provide significant public benefit.

The project and the draft findings for the interim habitat loss approval proposed by the local government shall be made available for comment to the subregional lead or coordinating agency, CDFG, USFWS, and the public at least 45 days prior to the local agency action on the proposed project and findings.

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4.3 Interim Mitigation

Project design must be consistent with the Conservation Guidelines and with any guidelines adopted by the subregion and concurred with by the CDFG and USFWS and must, to the maximum extent practicable, minimize habitat loss. Prior to the adoption of subregional guidelines, local agencies may approve mitigation on a case by case basis as long as it is consistent with the conservation guidelines.

Any impacts to the coastal sage scrub habitat and the target species must be mitigated to insignificant levels as required by the California Environmental Quality Act(CEQA) by using one or more of the following options:

- Acquisition of habitat
- Dedication of land
- Management agreements
- Restoration
- Payment of fees
- Transfer of development rights
- Other mitigation measures approved in writing by CDFG and USFWS.)

Appropriate mitigation must be identified in a mitigation plan prepared by the applicant. The applicant must demonstrate capacity for funding appropriate mitigation and the mitigation must be legally assured. Habitat acquisition and set asides should occur in areas with long-term conservation potential.

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4.4 USFWS Concurrence

- a. Once a local agency has completed its review and approval, it shall notify the subregional lead or coordinating agency. The subregional lead or coordinating agency shall review the interim habitat loss approval to confirm that it does not exceed the 5% habitat loss guideline or prejudice the preparation and implementation of the subregional NCCP. The subregional agency shall communicate its findings in writing to the appropriate local agency within 15 days after receipt of local agency notification.
- b. Within 5 days of receiving subregional agency confirmation, the local agency shall post public notice of its decision and notify CDFG and USFWS of its actions and findings, including the findings by the subregion. Notification of CDFG and the USFWS shall include project and biological information, including the mitigation plan, and delineate the location of the boundaries of the subject project on a 7.5 minute U.S. Geological Survey (USGS) quadrangle map.
- c. USFWS, in close coordination with CDFG, shall review the project for consistency with the Conservation Guidelines and any approved subregional habitat loss mitigation guidelines. If the USFWS concludes the project, as approved and mitigated, is inconsistent with the Conservation Guidelines or any approved subregional mitigation guidelines, the California State Supervisor shall notify the local approving agency within 30 days of receipt of the notice. Within 60 days after notification of inconsistency, the USFWS, after consultation with CDFG, shall provide recommendations for modifying the project or mitigation to eliminate the inconsistency(ies). Once USFWS has provided notice under this section, and until it concurs that the project as modified is consistent with the Conservation Guidelines and mitigation guidelines, the project may not proceed. Once the USFWS, the approving agency, and the project proponent agree that there are no longer inconsistencies, the project can proceed. If no notification is provided by the USFWS within 30 days, the proposed habitat loss shall be deemed approved and may proceed as approved by the local agency.

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4.5 Termination of Interim Period

- a. Upon the approval of an NCCP by the USFWS and CDFG, (see section 5.4) the interim period in the subregion shall terminate and the rules for interim habitat loss shall be replaced by the "Habitat loss Provisions" of the approved NCCP plan within the geographic area governed by the NCCP.

 - b. As required under the provisions of the Section 4(d) rule for the gnatcatcher, the USFWS shall monitor the implementation of the Conservation Guidelines and the NCCP Process Guidelines to ensure that the implementation of both sets of guidelines are effective in progressing towards meeting regional and subregional conservation objectives. Such monitoring will occur every six months. If, during its review of the implementation of the guidelines, the USFWS determines that either the Conservation Guidelines or the Process Guidelines are no longer effecting adequate progress towards meeting regional and subregional conservation objectives, the USFWS shall consult with the Department to seek appropriate modification of the Guidelines and/or their implementation. If appropriate modification of the guidelines does not occur the USFWS shall publish a public notice of its intention to revoke the provisions of the special rule on a subregional or subarea basis. Following receipt of public comments, the USFWS shall publish its determination.
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5.1 Planning Agreement

Specific subregional NCCP begins with a Planning Agreement between local jurisdictions, landowners, CDFG and USFWS (as described in Section 2810). This Agreement sets forth the NCCP process as it applies to the specific planning area.

Mandatory elements of the Planning Agreement include:

- map of the planning boundary,
- identification of a lead or coordinating agency and other jurisdictions participating or affected but not participating,
- list of target species and any other species of concern to be addressed in the NCCP,
- identification of parallel permits, if any (eg., Federal Section 10(a) for a listed species other than the California gnatcatcher),
- identify affected state and federal land ownerships,
- identify any other habitat conservation plans or multi-species conservation plans completed or underway in the area affected,
- schedule for plan preparation, public review, and agency approval,
- public participation and public notice of plan preparation.

Optional elements may include:

- extent of state and federal agency participation,
 - funding for plan preparation and for local government or public participation,
 - identification of land ownerships,
 - discussion of the specific extent of biological information,
 - specific survey methods to be used to fill data gaps,
 - provisions for coordinating with other subregions, the CDFG, and the USFWS to accommodate, where appropriate and consistent with the Conservation Guidelines, the exchange of conservation, development, and mitigation lands/credits across subregional boundaries. (Such transfers would not reduce the standards that the subregions must meet to obtain approval of their respective NCCP plans.)
 - other aspects germane to the specific NCCP subregion.
-

5.2 Plan Formulation

Collaborative planning commences under auspices of lead or coordinating agency with CDFG and USFWS providing ongoing guidance and with appropriate public participation.

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5.3 Public and Agency Review

The local lead or coordinating agency will review the proposed NCCP in accordance with existing local administrative/regulatory procedures and with the provisions of the Planning Agreement. The lead or coordinating agency then publishes the completed NCCP plan in Draft form along with CEQA compliance document.

The Draft NCCP will be reviewed by CDFG and USFWS along with members of the interested public during a set time period.

In reviewing and approving the subregional NCCPs, CDFG, in coordination with USFWS, will employ the Conservation Guidelines concerning habitat needs, species distribution and abundances, and other biologic considerations. As an additional part of its review and approval, CDFG will apply the provisions of Fish and Game Code Section 2081 to determine whether the NCCP provides a level of protection for named species, whether formally listed or not.

USFWS, in coordination with CDFG will apply the provisions of Section 10(a) of the Federal ESA and make findings whether the draft subregional NCCP meets the criteria for issuance of a Section 10(a) permit pursuant to the Federal ESA for any named species, whether formally listed or not.

The California Department of Fish and Game will consult administratively with the U.S. Fish and Wildlife Service regarding acceptability of the draft NCCP. If CDFG and USFWS approve of the NCCP, the lead or coordinating agency will be notified to submit the Implementing Agreement for action.

Because the agencies have been involved in the planning, it is expected that the plan will be acceptable. If however CDFG and USFWS cannot accept the NCCP as drafted, the agencies shall prepare a written report within 60 days outlining the reasons for rejecting the NCCP, and suggested modifications that would result in acceptance of the NCCP. This report will be submitted to the local lead or coordinating agency for review and action. Because CDFG and USFWS will generally be routinely consulted during NCCP preparation, rejection of a completed plan is likely only if the agencies advice was not followed.

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5.4 Implementing Agreement and Formal NCCP Approval

Upon receipt of public comment and the results of CDFG and USFWS review, lead or coordinating agency finalizes plan.

The lead or coordinating agency, CDFG, USFWS and other parties as appropriate enter into an **Implementing Agreement** (described in Section 2810 of the Fish and Game Code). This agreement specifies all terms and conditions of activities under the NCCP plan. By signing the Implementing Agreement, CDFG and USFWS explicitly acknowledge approval of the Final NCCP plan and declare that the NCCP meets the requirements of a state Management Agreement or a federal Habitat Conservation Plan, respectively, to allow issuance of appropriate permits for target or other named species, should those species become listed.

The Natural Communities Conservation Planning Act does not establish a specific permit process for NCCPs. The CDFG and USFWS participation in the Implementing Agreement is the only formal "approval" process.

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5.5 Environmental Documentation

Pursuant to the Planning Agreement entered into by local governments and CDFG, the environmental impact report (EIR) for a subregional NCCP will be prepared as a "Program EIR" in accordance to Section 15168 of the CEQA Guidelines. As provided in the CEQA Guidelines, the preparation of a Program EIR will avoid duplicative reconsideration of basic policy considerations and ensure consideration of the cumulative effects of planned development and other actions provided in the subregional NCCP. Funding for preparation of the NCCP EIR will be the responsibility of the lead or coordinating agency as is the case for any other EIR.

At the start of a NCCP, the Planning Agreement will make explicit the extent of federal involvement and agency obligations under the National Environmental Policy Act (NEPA) will be assessed. As appropriate, the NCCP lead or coordinating agency will provide documentation to assist the U.S. Fish and Wildlife Service in NEPA compliance. Both state and federal law allow for preparation of a joint state/federal environmental document.

Once the Program EIR for a subregional NCCP is certified and becomes final and the NCCP is approved by local governments and CDFG, mitigation for impact on designated species from developments provided within the NCCP will be those specified in the NCCP and any subsequent Implementation Agreement. The limitation of mitigation measures is subject to the "unforeseen circumstances" provisions of the Planning Agreement and CEQA provisions.

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5.6 Public Participation

Public participation is essential to the ultimate success of both the Natural Community Conservation Planning process and the actual NCCPs that result from the process. The process seeks to ensure cooperation between landowners, public agencies, and other public/private interests to facilitate early coordination of planned habitat management efforts and to maximize efficient use and protection of habitat and economic resources.

This participation will be established as appropriate to each subregion and could include noticed hearings, public workshops, formal advisory committees or other activities. The collaborative planning process envisioned as a part of the NCCP program relies on participation by a wide range of private citizens.

Landowners. The NCCP process will require the broad-based support of private landowners. As described in the Enrollment Guidelines, participating landowners enter into agreements with the Resources Agency and Department of Fish and Game and are encouraged to cooperate with local governments to develop subregional NCCPs for the jurisdiction or NCCP subregion in which the property is located.

Conservation Organizations. Several statewide conservation organizations and numerous local environmental interest groups are involved in CSS species preservation efforts. While the exact role of conservation organizations will vary according to the needs of each subregional NCCP effort, it is important to recognize these organizations as a major constituency for conservation decisions as well as a significant source of scientific information and as a possible future land steward in plan implementation.

Other Private Interests. The NCCP will potentially affect many other private interests, particularly those associated with the construction industry (builders and labor), agriculture, recreation, tourism, and public utilities. CDFG should be contacted by any concerned group to obtain the identity of the subregional NCCP lead or coordinating agency for their area.

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5.7 Regional Public Utilities

Public utility-related activities often occur in linear project areas. There are also circumstances in which a proposed public utility project may cross a jurisdiction which has declined to enroll in the NCCP Program. In these unique cases the utilities may be treated as subregions for planning purposes. This planning method will be considered on a case by case basis for regional entities such as electrical, gas, and water utilities. Linear projects that are located within a geographical subregion or cross into adjacent subregions must be included with the plans for those subregions. Any habitat destroyed within a subregion or subarea during the interim planning phase will be tallied against the subregion's or subarea's 5 percent interim habitat loss allocation.

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6. Monitoring and Evaluation

During 1992 and 1993, the Southern California Coastal Sage Scrub Natural Community Conservation Planning process focused on initiating a broad series of subregional activities. Eventually, the interim planning period will pass and CDFG will need to evaluate the status of regional/subregional planning efforts.

The NCCP process outlined in these guidelines will lead to a series of subregional plans progressing at different rates. CDFG and USFWS will monitor progress by each subregion and evaluate biological conditions in the focus areas that are not formally

6.1 NCCPs Complete or Near Completion

Each subregional NCCP will be implemented through an agreement that specifies monitoring, reporting and enforcement requirements. Regionwide monitoring and subregional reporting will enable the California Department of Fish and Game to assess the overall status of the CSS community and its constituent species. If conservation goals are not being achieved, this assessment will be the basis for CDFG action to enforce provisions of the Implementing Agreement or may be the basis to find that unforeseen circumstances warrant additional conservation actions.

6.2 Areas Not Subject to a NCCP

In some areas no jurisdiction or landowner may be willing to come forward to initiate planning. Unfortunately, lack of adequate planning may jeopardize conservation activities elsewhere in the region. In these places, CDFG and USFWS will appraise the extent of threat to CSS and initiate long term conservation actions for CSS and constituent species if warranted. This may include requesting the Fish and Game Commission to list one or more CSS species as endangered under the California Endangered Species Act.

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7.1 Glossary

The following terms and abbreviations are used in this document:

CDFG: California Department of Fish and Game. For the purposes of the Southern California CSS NCCP Program, the Department is working in close coordination with the Office of the Secretary of the Resources Agency. In these Process Guidelines, references to participation by CDFG generally means joint participation with the Resources Agency.

CSS: Coastal Sage Scrub: A natural community comprising plants and animals.

CEQA: The California Environmental Quality Act: Sets requirements for environmental review (Environmental Impact Reports) by local and state government of a wide range of public and private projects.

CESA: California Endangered Species Act.

ESA: Federal Endangered Species Act.

HCP: Habitat Conservation Plan: A plan required in support of a federal Section 10(a) permit under the federal ESA.

MOU: Memorandum of Understanding: A common form of formal agreement between government agencies.

NCCP: Natural Community Conservation Plan: Usage here is that the abbreviation NCCP generally refers to a plan authorized pursuant to the Natural Communities Conservation Planning Act.

OMSP: Ongoing Multi-Species Plan: A term applied to subregional conservation efforts already underway that will function as the equivalent of a NCCP if the NCCP standards are applied.

Section 4(d): A section of the federal ESA that allows special rules to apply to a species listed as threatened. Can specify the conditions allowing incidental take.

Section 10(a): A section of the federal ESA that governs issuance of a permit to allow incidental take of a listed endangered species.

Section 2081: A section of CESA that governs take of listed endangered species.

Special Rule: See Section 4(d), above.

USFWS: United States Fish and Wildlife Service.

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7.2 Literature

The following references are cited in the text or provide additional relevant information. Copies of any of these can be obtained from the Resources Agency or from the CDFG Coastal Sage Scrub Project Coordinator.

California Fish and Game Code: Department of Fish and Game, Chapter 10. Natural Community Conservation Planning, 1991.

Federal Register March 26, 1993. Listing California Gnatcatcher as Threatened

Federal Register July 20, 1993. Proposed 4(d) rule for Threatened California Gnatcatcher.

Memorandum of Understanding By and Between The California Department of Fish and Game and The United States Fish and Wildlife Service Regarding Coastal Sage Scrub Natural Community Conservation Planning in Southern California, December 4, 1991.

Memorandum of Understanding by and Between The Irvine Company and the United States Fish and Wildlife Service Regarding the Advance Habitat Conservation Plan for The California Gnatcatcher, Cactus Wren, and Orange-Throated Whiptail Lizard, April 16, 1992.

Natural Community Conservation Planning/Coastal Sage Scrub, An NCCP Special Report No. 1, Dennis Murphy, Acting Chair, Scientific Review Panel, February 1992.

Natural Community Conservation Planning/Coastal Sage Scrub, An NCCP Special Report No. 2, John O'Leary, Dennis Murphy, and Peter Brussard, Scientific Review Panel, March 1992.

United States Marine Corps Regarding: Proposed Regulations for Establishment of Habitat Protection Areas, Letter June 17, 1992.

United States Fish and Wildlife Service, Interim National Conservation Planning Guidelines, July 30, 1990.

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Southern California Coastal Sage Scrub NCCP Conservation Guidelines

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1. Introduction

This document presents Conservation Guidelines for the Coastal Sage Scrub (CSS) Natural Community Conservation Planning (NCCP) process. The guidelines are published by the California Department of Fish and Game. The guidelines were prepared in coordination among the Department, the U.S. Fish and Wildlife Service, and the Scientific Review Panel (SRP), and are based on technical review by and recommendations from the SRP. These guidelines are intended to be used along with the NCCP Process Guidelines also published by the California Department of Fish and Game.

The SRP was commissioned by the Department and the Service to review available scientific information to assist in preparation of the Conservation Guidelines. The review addresses information available as of March 1993 and is described in "Scientific Review Panel Conservation Guidelines and Documentation," which is available from the Department.

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Premises on CSS Ecology

1. CSS vegetation is dominated by a characteristic suite of shrub species in southern California. The composition of coastal sage scrub vegetational subcommunities may vary substantially depending on physical circumstances and the successional status of the habitat. An explicit definition of CSS and a description of its constituent species has been prepared by the SRP. (See Special Report No. 2, March 1992.) A generalized map of CSS and a summary description is included in Attachment A
2. While a variety of species are characteristic of CSS, no single animal or plant species readily serves as a consistent and entirely reliable indicator of CSS conditions across the entirety of the distribution of the habitat in southern California. Rather, many species dependent on CSS are found in only certain subsets of the community, and, conversely, many nominal CSS species are widely distributed in non-CSS habitats. Nonetheless, a suite of "target" species has been identified by the SRP that is useful as a surrogate for planning purposes. Species other than target species that have been identified as deserving special consideration on account of possible rarity or endangerment are referred to as species of concern. These are state or federal candidates for listing. (See SRP Survey Guidelines, February 1992.)
3. Target species are three vertebrates that are among the community's most visible imperiled organisms: California gnatcatcher, cactus wren, and orange-throated whiptail lizard. Their distributions embrace the majority of the geographic range of southern California CSS.
4. Many species that depend on coastal sage scrub exhibit transitory habitat occupancy, along with short lifetimes, high potential rates of reproduction, limited home ranges, dramatic population fluctuations, and great susceptibility to local extirpation.
5. Because of population fluctuations and routine local extirpation and recolonization events, a single point-in-time appraisal of the presence or absence of a species on an individual parcel of land does not reliably indicate the parcel's long-term potential value or importance as habitat.
6. CSS may convert to chaparral or grassland, depending on slope, aspect, climate, Fire history, and other physical factors and biological phenomena; conversely, chaparral or grassland areas may convert to CSS.
7. CSS is a naturally patchy vegetation community. Over a scale of several miles, it is found in diverse habitat mosaics with other ecological communities. While there are species dependent on coastal sage scrub, these species do not always exhibit a clear tendency to occupy areas of continuous coastal sage scrub. Rather, vegetation components of coastal scrub habitat in mosaics with other habitat types may provide habitat for target species and other species of concern.

Premises on the conservation challenge

1. The southern California CSS planning region has been severely degraded by past urbanization and agricultural land conversion. Certain subhabitats, such as those at low elevation, those close to the coast, and those with lesser slope, have been disproportionately affected and many have experienced local losses of some species.
2. Threats to CSS habitat are more than losses of total habitat area alone. Threats also include losses of distinct CSS subtypes and losses of the special conditions needed to maintain the broad suite of CSS-resident species. (Attachment A.)
3. Conversion of natural land has also severed connections among remnant habitat patches resulting in their increased isolation. Connections among habitat patches are critical to the long-term survival of CSS species.
4. Because CSS is found naturally admixed with other vegetation communities, the best conservation strategy for CSS is to protect large areas of native vegetation that include biologically significant patches of CSS.
5. Under present conditions, few CSS-dominated lands are of sufficient extent to be self-sustaining. A status quo strategy of "benign neglect" management likely will result in substantial further losses of CSS biodiversity. Habitat areas large enough to be self-sustaining should not be significantly reduced in size and they should be actively managed in ways responsive to pertinent new information as it accrues.
6. The CSS community is inherently dynamic and should be managed to retain its capacity to support the broad range of CSS species over the long term. Under an adaptive management regime that provides for natural successional dynamics, a reserve system that consists of smaller habitat areas that are appropriately managed could have a greater likelihood of maintaining CSS biodiversity than a system of larger habitat areas that are unmanaged. The techniques associated with such a management regime, however, have not been fully developed.
7. CSS conservation will require appropriate levels of participation by public agencies responsible for publicly owned land that contains CSS or that serves as linkages between reserves. State and local government can participate through the NCCP process and federal agency land owners can participate through federal programs coordinated with NCCPs. Although important to the integrity of regional conservation efforts, not enough CSS exists in public ownership for public land to be the sole basis of a reserve network.
8. Within the southern California region as a whole, roughly a dozen biologically defined subregions, designed around extensive habitat areas can be identified based on geography, the ecological characteristics of CSS species, and patterns of past land use. Each subregion exhibits distinct local conditions that will affect the conservation approach to be used.
9. Each subregion will need to meet explicit conservation objectives to promote ecosystem stability at both subregional and regional levels. Each subregion will need to provide for conservation of the three target species.
10. Despite the extent of current threats, the majority of the species inhabiting the CSS do not appear to be in imminent danger of regional extinction. Some small amount of short-term habitat loss can be tolerated as long as it is ultimately counter-balanced by adequate long-term enhancement efforts.
11. A few, small-scale efforts at CSS restoration and enhancement have been attempted; these examples indicate that net enhancement of habitat quality may be attainable. Furthermore,

ecological studies of CSS show natural recovery from disturbance suggesting that active restorative projects may be successful.

12. Information available to the SRP supports a conservative estimate of 5% habitat quality enhancement potential for existing CSS habitat. This potential for mitigation leads to a corresponding estimate of 5% short-term habitat loss that can be tolerated in any subregion. A level of enhancement beyond 5% may be possible and with adequate scientific information, improved prospects for enhancement can be the basis for allowing a greater than 5% loss of habitat.
13. Land of high priority for inclusion in a reserve system can be identified based on a combination of size, location, and quality criteria. The impact of an overall 5% loss of CSS habitat area can be further reduced by avoiding losses of higher priority habitat.

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Premises on timing

1. The southern California planning region is too large to be planned as a single unit. For conservation planning purposes, the region needs to be divided into subregions that are based on both biological and political considerations. The scale and focus of the subregions has been defined by the SRP (Subregional Planning Document, May 1992, revised August 1992). The focus area map is included as Attachment B.
2. Subregional conservation planning will progress at different rates due to different local economic conditions. Some subregions are ready to initiate NCCP planning now; others may not participate for several years. Some subregions may need to subdivide into subareas for planning purposes. Where appropriate, the CDFG and USFWS can accept the delineation and planning of subareas within subregions, provided subareas continue to participate in the subregional planning effort and adhere to the subregional goals and objectives. Planning on a subarea basis may proceed prior to final approval of the subregional plan provided the subarea plan integrates its preserve design with adjacent subareas, is consistent with the overall design of the subregional plan, and describes how it will mesh with and augment the subregional plan.
3. Scientific information available to the SRP does not support a conservation plan that would lead to significant losses of CSS habitat. Despite recent efforts to address this data shortfall, there is still a lack of scientific information on important aspects of CSS biology that may be necessary to formulate and implement a long-term plan.
4. Land owners and local governments should initiate the subregional planning process and identify and begin to fill information needs specific to that subregion. The extent of additional information needed, hence the time and effort needed, depends on the extent of projected habitat losses within a subregion. The amount of additional data necessary for decision-making will be minimal where subregional habitat losses are expected to be minimal or where adequate mitigation for losses can be demonstrated conclusively. Conversely, where greater habitat loss is proposed or where mitigation entails unproven technologies, data needs will be greater.
5. Subregions are encouraged to formulate NCCPs for approval by CDFG and USFWS as early as possible. One element of a NCCP must be an assessment of the status of scientific information in the subregion. A NCCP can be approved for implementation in phases despite a need for scientific information. Implementation of each phase of the plan must be adequately supported by scientific information.
6. Short-term habitat conversion should not foreclose future long-term conservation planning options.

The interim strategy

- Short-term losses of habitat should be minimized so as to not foreclose future conservation planning options until such time as an NCCP has been completed and long-term enhancement and management programs are formulated.
- Total interim loss should be limited to 5% of CSS habitat in any individual subregion.
- To the maximum degree practicable, the 5% loss should be limited to areas with smaller populations of target species.
- To the maximum degree practicable, the 5% loss should not disproportionately impact specific subunits of the environmental gradient in each subregion (as defined by vegetation subcommunity, latitude, elevation, distance from coast, slope, aspect or soil type).
- During the interim period, subregional and subarea planning should strive to protect areas of higher long-term conservation value -- defined by extent of CSS habitat, proximity of that habitat to other habitat, value as landscape linkages or corridors, or presence of target species or other species of concern -- until a subregional plan can be put in place.
- Development pressure should be directed toward areas that have lower long-term conservation value. Such habitat areas are smaller in extent, are more isolated, have limited value as landscape linkages, and support comparatively fewer individuals of target species.
- Planning should ensure that all interim habitat losses are adequately mitigated and should contribute to the interim subregional mitigation program that will be subsumed in the long-term subregional NCCP as specified in the Process Guidelines.

The research agenda

The following research program can resolve unanswered questions that bear on the conservation of target species that inhabit coastal sage scrub and the biodiversity associated with that community. The SRP recommends six interactive research tasks.

1. **Biogeography and inventory of CSS.** The basic extent and distribution of CSS vegetation and its constituent species should be adequately mapped for the region and each subregion. This information will be required to support any subregional plan. The comprehensive literature review of CSS initiated by the SRP should be expanded and kept current.

For the southern California region, maps of the planning region should be provided at a scale of 1:100,000, with minimum mapping units of 100 ha (250 acres) and a minimum resolution of 100 m (330 feet). Ideally these maps would be GIS-based. Data layers should include vegetation, urban and agricultural land use, land ownership, topography, climate, distribution of target species, and available information on species of concern.

For each subregion, GIS-based maps (or accurate manually drawn maps based on similar data) should be provided at a scale of 1:24,000 with minimum mapping units of 10 ha (25 acres) and minimum resolution of 30 m (100 feet). Data layers should include those required for regional planning as well as specific conditions relevant to the subregion, with great emphasis on ground-truthing and verification of data.

2. **Trends in biodiversity.** It is the intent of the NCCP to preserve a substantial representation of the biodiversity associated with CSS. Better information on the effect of reserve size and adjoining land uses on biodiversity would help planning decisions. Monitoring of select taxa is necessary to assess the ongoing success of CSS community conservation efforts. Indicator taxa (such as CSS dependent birds, small mammals, and butterflies) should be employed due to time and funding constraints. The relationships between species richness/composition and habitat patch area and the effects of isolation should be investigated in sampling programs. These sampling programs will entail surveys for species richness and composition within a carefully selected series of CSS patches in each subregion.
3. **Dispersal characteristics and landscape corridor use.** More information about dispersal limitations of CSS species would help planning for adequate linkages between reserves and reveal trade-offs between increasing reserve size and improving corridors. Dispersal information adequate to allow tests of sensitivity of metapopulation models to connectivity are required. Data from several locations within the planning region during both breeding and non-breeding seasons should be gathered on target species, mountain lions, coyotes, and representative small mammals and invertebrates.
4. **Demography and population viability analysis.** One test of the potential effectiveness of reserve systems is population viability analysis. Time-series data on the two target species of birds should be gathered in at least half the subregions and from representative physical circumstances that span those found across the regional distributions of the species. Data should include territory size, time budgets, reproductive success, survivorship, emigration and immigration, with separate data obtained both for males and females where possible. Population viability analyses should be carried out for sample populations and metapopulations, and should consider connectivity and environmental effects.
5. **Surveys and autecological studies of sensitive animals and plants.** Basic information on the location, abundance, distribution, and natural history of vertebrate and invertebrate candidate species for federal protection and CSS-associated plant species of special concern should be gathered from select sites throughout the planning region. Each subregional planning exercise should contribute to this regional effort.

6. **Genetic Studies.** The maintenance of genetic variation is critical to the long-term viability of species inhabiting CSS and will be an important aspect of monitoring populations under a NCCP. Declining genetic variation will be one symptom of inadequate linkages between reserves and can signal a need for changes in reserve management. Baseline data for comparison with future conditions should be gathered at the earliest possible opportunity. Target species and several invertebrates should be sampled from several locations in each subregion. Most genetic data can be obtained with non-destructive sampling techniques in conjunction with other studies that require handling of individual animals.

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Management and restoration

Management and restoration practices should be addressed as part of a well-coordinated research program. Management and restoration research will be valuable to subregional NCCP planning. Even after a NCCP is adopted, ongoing restoration research will be essential to adaptive management of coastal sage scrub habitat. The California Department of Fish and Game in collaboration with the U.S. Fish and Wildlife Service will convene a committee of experienced practitioners in the management and restoration of coastal sage scrub habitats to develop guidelines for such activities. This committee should review pertinent documents and address the current state of knowledge in the following areas key to the management of coastal sage scrub:

- Exotic species control, including both animals (in particular, cowbirds and feral and domestic mesopredators such as house cats and introduced red foxes) and plants (weedy species, especially annual species of old world origin).
- Recreational use of coastal sage scrub and other open space reserve areas, including identification of suitable low impact recreational pursuits consistent with preservation goals.
- The role of fire in natural ecosystem dynamics and processes, including the application of control burns and the control of ignitions of accidental and vandal origin.

Restoration considerations to be addressed in well-designed field experiments include:

- Identification of restoration unit sizes, including identification of maximum areas that are restorable using current techniques. A focus on patch enlargement techniques is advised.
- Identification of coastal sage scrub responses to soil conditions in restoration efforts, with focus on soil structure, soil nutrient levels, organic matter content, water holding capacity, and soil compaction.
- Identification of appropriate seeding, outplanting, and irrigation techniques with focuses on proper mixes of seeds, seeding techniques, and timing of applications of seed and irrigation.
- Identification of techniques to encourage native herbaceous species and to discourage the establishment of exotic species.
- Establishment of realistic success criteria to evaluate restoration considering sage species diversity and cover, and use by target species.

The management and restoration committee will be expected to design multifactorial field experiments at appropriate spatial scales using explicit and repeatable scientific method to aid in differentiating among alternative techniques. Since treatments will in all likelihood vary with physical circumstances, local vegetation composition and structure, and other unique conditions, each subregional planning unit will be expected to contribute to the regional management and restoration research effort.

Application to subregional planning

The biogeography research task will provide mapping of physical features, land uses, and vegetation to portray the options for the design of a subregional reserve and corridor network. The other research tasks will assist planners in evaluating conservation planning options by documenting species distributions and relative abundances within each subregion, by identifying the sizes and configurations of habitat patches necessary to sustain stable demographic units of target species, and by assessing the physical characteristics of landscape corridor linkages required to facilitate dispersal, gene flow, and recolonization by species inhabiting the coastal sage scrub community.

Based on this information, subregional NCCPs will designate a system of interconnected reserves designed to: 1) promote biodiversity, 2) provide for high likelihoods for persistence of target species in the subregion, and 3) provide for no net loss of habitat value from the present, taking into account management and enhancement. No net loss of habitat value means no net reduction in the ability of the subregion to maintain viable populations of target species over the long-term.

The NCCP will need to establish a wide range of habitat management and enhancement tools and incorporate a monitoring program to provide guidance for ongoing management. With improved techniques for management and restoration, the goal of no net loss of habitat value may be attainable even if there is a net loss of habitat acreage.

Several basic tenets of reserve design should be applied to each subregion:

1. **Conserve target species throughout the planning area:** Species that are well-distributed across their native ranges are less susceptible to extinction than are species confined to small portions of their ranges.
2. **Larger reserves are better:** Large blocks of habitat containing large populations of the target species are superior to small blocks of habitat containing small populations.
3. **Keep reserve areas close:** Blocks of habitat that are close to one another are better than blocks of habitat far apart.
4. **Keep habitat contiguous:** Habitat that occurs in less fragmented, contiguous blocks is preferable to habitat that is fragmented or isolated by urban lands.
5. **Link reserves with corridors:** Interconnected blocks of habitat serve conservation purposes better than do isolated blocks of habitat. Corridors or linkages function better when the habitat within them resembles habitat that is preferred by target species.
6. **Reserves should be diverse:** Blocks of habitat should contain a diverse representation of physical and environmental conditions.
7. **Protect reserves from encroachment:** Blocks of habitat that are roadless or otherwise inaccessible to human disturbance serve to better conserve target species than do accessible habitat blocks.

4. Implementing Interim Strategy

The interim strategy should be implemented as specified in the Process Guidelines. An annotated summary of the various tasks is included below.

- **Establish a NCCP planning group and identify a lead or coordinating agency for each subregion according to process guidelines.**

The subregional lead or coordinating agency is responsible for working with local governments, landowners, and other interested parties in establishing the NCCP planning process. The subregional lead or coordinating agency is also responsible for coordinating with local jurisdictions and/or subarea authorities to accomplish the tasks listed below:

- **Designate subregions.**

Focus areas have been designated by the SRP. Local jurisdictions are to draw the actual boundaries between focus areas to designate subregions for NCCP planning. Ideally, there should be one subregion for each focus area. However, subregional boundaries can be drawn for planning purposes according to convenient jurisdictional boundaries. Divisions along county boundaries are appropriate, and there is value to coordinating planning on a large scale. Additionally some subregions may need to subdivide into subareas for NCCP planning purposes. However, the 5% interim area loss cap will apply to each biologically defined subregion. Recognizing that large subregions must meet the objective of limiting short-term CSS losses on a biologically valid scale, some further subdivision of a large planning subregion into appropriately sized biological subareas for the purpose of accounting for interim habitat loss may be necessary.

- **Inventory CSS habitat and species in subregion.**

As of winter 1993, basic inventory work on vegetation mapping has been completed. Species surveys, however, are largely incomplete, but comprehensive species surveys are not critical to interim effort. The Planning Agreement establishing a subregion will specify what other species, if any, in addition to the target species will be explicitly addressed in planning for that subregion. Individual parcels that are considered for development will need to be surveyed for those species.

- **Determine long-term conservation value of lands in subregion.**

See evaluation process and evaluation methodology, below. All CSS habitat in the subregion is to be evaluated and mapped.

- **Calculate CSS habitat area and compute 5% interim loss cap for each subregion.**

All CSS habitat in the subregion is to be counted to compute the basis for the 5% interim loss, including all publicly and privately owned land. The most inclusive definition of CSS should be used. There is no minimum parcel size threshold for consideration. Where a planning subregion has been drawn on a scale larger than the focus areas identified by the SRP, the subregion may need to be divided into smaller subareas that are adequate to account for interim CSS losses. The baseline should reflect the extent of CSS as of March 25, 1993, the time the SRP conservation strategy recommendation was made and the USFWS listing of the California gnatcatcher was published. Only those projects approved by CDFG and USFWS prior to March 25, 1993, and explicitly meeting the requirements of the Endangered Species Act should be excluded from the baseline. The baseline calculation and designation of subareas for accounting must be verified by the U.S. Fish and Wildlife Service and the California Department of Fish and Game.

- **Identify an entity to serve as a central clearing house to account for cumulative habitat loss in each subregion.**

That entity will advise local land use jurisdictions to insure that the 5% interim loss guideline is not exceeded. The entity could be the lead or coordinating agency, a council of governments, or a wildlife agency. Some provision will need to be made to coordinate and to account for state projects, or for utility or transportation projects that cross subregional boundaries.

- **Identify interim mitigation requirements guidelines for all development on CSS habitat loss.**

Mitigation guidelines for interim habitat loss must be developed for the subregion and must be established in a subregional planning agreement or another written document requiring concurrence of the U.S. Fish and Wildlife Service and the California Department of Fish and Game. The provisions for interim mitigation measures will need to be applied by local jurisdictions and may include a requirement that the landowner receiving approval for interim CSS habitat loss will make an appropriate commitment to continue to participate in the overall subregional NCCP program. It is recognized that full mitigation may not be practical during the interim period because reserve acquisition programs and enhancement techniques have not been established. However, an approved subregional NCCP will eventually mitigate interim losses. In the interim phase, adequate mitigation for losses of lower value habitat may range from payment of a fee to purchase or to set aside higher value habitat. Management and restoration efforts undertaken as mitigation during the interim program will add to the overall ability of these conservation tools to be employed more successfully in the future.

- **Identify and fill scientific information needs for long-term planning.**

Appropriate scientific research tasks will vary from subregion to subregion depending on the amount of information available, the amount of habitat conversion proposed, and the conservation strategies being considered. Scientific research must be coordinated with region-wide efforts. The timing and funding for subregional research may need to be phased with staged implementation of a plan.

- **Complete and implement subregional NCCP according to process guidelines.**

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Evaluation process

Each subregion needs to show interim protection for higher potential value lands on a map. The step-down evaluation process is outlined here. Large, dense areas of CSS are the Higher potential value lands. Natural lands that occur in linkages, that are close to possible core CSS areas, or that have high species richness are considered Intermediate potential value lands. Remaining CSS is considered to have Lower potential value. The guideline policy for local government treatment of the Higher, Intermediate, and Lower potential value lands during the interim period is given in section 6. A flow chart illustrating the logic is included as Attachment C.

1. **Natural Land:** Is natural vegetation present?

Yes: Check CSS presence (#2)
No: Not relevant for reserve planning.

2. **CSS:** Is CSS present?

Yes: Check large size (#3)
No: Check landscape linkages (#5)

3. **Large Size:** Is CSS the most dense CSS in subregion?

Yes: Land forms a Higher Value District
No: Check proximity (#4)

4. **Proximity:** Is land close to Higher Value District?

Yes: Land is Intermediate Value
No: Check landscape linkages (#5)

5. **Landscape Linkages:** Is land located in corridor between Higher Value Districts?

Yes: Land is Intermediate Value
No: Check species presence (#6)

6. **Species Presence:** Does land support high density of target species? Does land support significant populations of highly endemic species or rare sub-habitat types?

Yes: Land is Intermediate Value
No: Land is Lower Value

Ranking land for interim protection

CSS and some associated non-CSS natural lands need to be evaluated and ranked for interim protection. Interim protection should be afforded to lands that are likely to be important to long-term conservation planning options due to CSS patch size and density, location, and biologic components.

1. **Higher potential value:** To determine areas of potential long-term conservation value, large, relatively dense areas of CSS must be identified. These are termed Higher Value Districts and are possible core areas for a reserve system. They need to be identified early in the planning process and protected from habitat loss and fragmentation while planning is under way. The methodology described below places 50% of the CSS in a subregion in the higher potential value category.
2. **Intermediate potential value:** Lands that probably can not be managed as independent reserves, but which by virtue of high quality, or proximity or linkage to the Higher Value Districts should be treated as potentially significant for subregional conservation planning.
3. **Lower potential value:** Land considered to have lower potential long-term conservation value will be that remaining after the higher potential value districts and the intermediate value areas have been identified. Small, isolated CSS patches (especially those surrounded by urban lands) with relatively small populations should be considered of low long-term potential value. Development of these lands could result in a take of small numbers of individuals of target species and would probably not affect the long-term viability of target species or other species of concern.

Overall, an estimated 10% to 25% of the CSS in a subregion would fall into the lower potential value category. For the ranking approach to interim habitat loss to function, it is important that a significant amount of land be classed as lower value. The criteria for identifying higher and intermediate value land should be adapted to local conditions.

Evaluation methods

1. Natural Land:

Natural land is land with a significant cover of natural vegetation. Natural vegetation in this context includes all native California natural communities and includes forestlands, shrublands, native and non-native grasslands, non-irrigated land, grazed land, and vacant or disturbed natural land. Natural land excludes lands subject to intensive agriculture and urban uses. Disturbed land or land recently cleared may still be restorable and should be included in the evaluation. The California Department of Conservation Farmlands Mapping and Monitoring Program is one way to identify natural lands: natural lands are areas classified as "grazing" or "other." Generally, land not mapped by the Department of Conservation can be assumed to be natural in eastern portions of the study area and urban in western portions.

2. Coastal Sage Scrub:

CSS includes landscape areas supporting primary or secondary cover of characteristic CSS plant species dominants as defined by the SRP, Special Report No. 2, March 1992. A generalized map of CSS and a summary description is attached as Attachment A.

3. Large Size:

The largest CSS patches in the subregion should be considered as possible core areas for future reserves. Because CSS distribution is naturally patchy, patch size needs to represent presence of CSS habitat at an intermediate spatial scale and needs to integrate over minor fragmentation and differences in vegetation mapping methodologies. Habitat patches should not be discounted as "too small" merely because they are mixed with other natural vegetation types. It is, however, appropriate to exclude landscape areas that are highly urbanized.

The objective of the evaluation process is to identify larger patches of CSS in the subregion. These are the Higher Value Districts. The method of finding the larger patches can be adjusted to conditions present in each subregion. The SRP recommends determining the percent of CSS cover in a neighborhood around individual CSS patches. When the entire subregion is evaluated, those patches of CSS habitat with the highest percent CSS cover in the neighborhood, cumulatively representing 50% or more of all CSS cover within a subregion can be identified. Neighborhoods should have a radius of 1/2 to 1 mile. This spatial scale for planning reflects biological characteristics of CSS species and the need for agglomerations of CSS on a scale potentially suitable for incorporation into a reserve networks. The determination of the "core 50%" also takes into account the presence of urban and non-CSS natural land.

4. Proximity:

CSS patches close to a core can be identified by measuring direct, straight-line distances. Appropriate spatial scale must be determined for each subregion and should be on the order of one-quarter to one-half mile.

5. Landscape Linkages:

Natural lands, and even lands in intensive agriculture, may contribute to reserve network connectivity. Corridors must be drawn such that each Higher Value District is connected to the closest adjacent districts. A geometric corridor between Higher Value Districts is defined by drawing two straight lines tangent to each district. Boundaries can be adjusted as

necessary to reflect natural features such as riparian areas that may curve outside of a defined geometric corridor.

6. Species Presence:

A test must identify areas 1) that need special protection in the interim to reduce the likelihood of take of species and 2) that may have long-term value due to special conditions that support significant populations of highly endemic species, rare sub-habitat types, or vegetation subcommunities.

What constitutes significant populations must be determined for each subregion. For target species, the SRP considers habitat that supports a portion of a local population with five or more pairs of gnatcatcher or cactus wrens to be significant. For other species of plants or animals (including those species listed or candidates for listing), the SRP considers habitat that supports a portion of a local population representing more than 20% of the known population of the subregion to be significant.

The species presence test specifically means that each parcel under consideration for development will be subject to a species clearance: a survey for target species and other rare plants and animals. The survey should use techniques specified by the SRP or equivalent methods. (See SRP Survey Guidelines.)

Species presence during a one-time survey is not a reliable measure of habitat value. Moreover, species survey work is also expensive and time consuming. For this reason, the basic methodology to identify potential reserves relies most heavily on less variant aspects of the landscape.

Pending approval of subregional NCCP

When formal planning is underway, the conservative interim strategy seeks to minimize short-term loss of habitat and CSS species and to prevent foreclosure of options for long-term conservation planning by deferring development decisions on lands that may be important components of a final CSS community conservation plan.

Potential Long-term Conservation Value	Policy
Higher Value	Defer development decisions where possible. Determine actual conservation suitability in NCCP. Allow development only where it can be proven that the loss will not foreclose reserve planning options. Special mitigation will be required.
Intermediate Value	Case-by-case decisions
Lower Value	Allow development with adequate mitigation

Cumulative CSS loss in any subregion or any subarea of a large subregion is limited to 5% during the interim period.

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With approved subregional NCCP

An approved subregional NCCP plan will supersede the interim designation of potential long-term conservation value and the interim 5% CSS loss limit will no longer apply. Implementation of an explicit subregional plan will allow long-term economic interests to be served. Inherent in the NCCP is resolution of technical and implementation issues to allow specification of long-term conservation programs. The final subregional NCCP may provide for development of lands initially designated as having potential long-term conservation value if it is later determined that actual long-term conservation value is lower. Conversely, lands originally thought to be of lower value may be determined to be valuable in final conservation plans. This consideration is one of many that support a conservative interim loss ceiling.

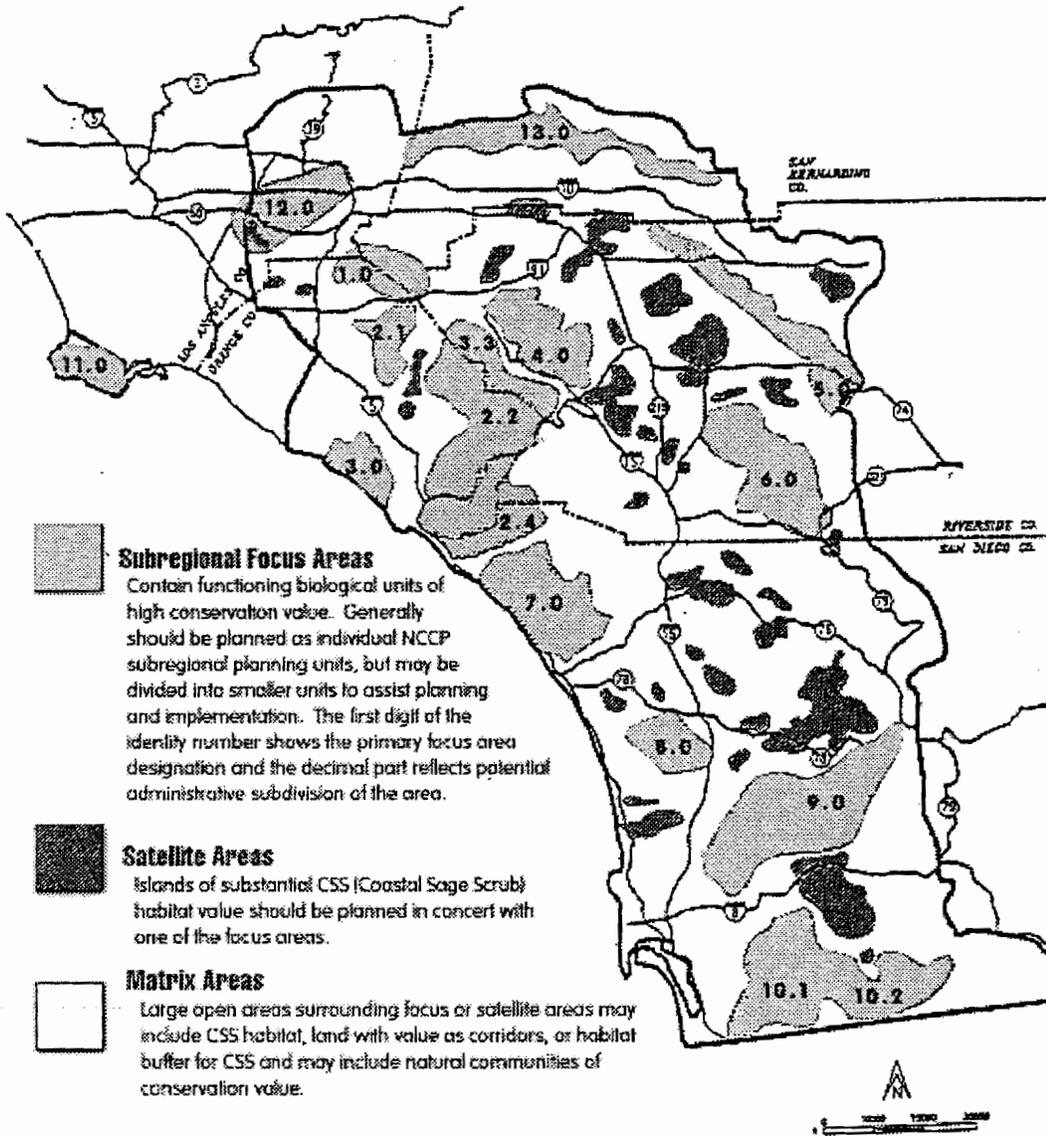
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In the absence of a subregional NCCP

A subregional NCCP is intended, among other things, to provide long-term mitigation for project impacts which occur within the subregion. However, if for any reason the subregional NCCP fails to be completed, and provided the total cumulative loss of CSS habitat area is kept below 5%, public agencies should be able to undertake restoration independently of private lands to compensate for any portion of the 5% habitat area loss that was not directly mitigated by measures imposed on approvals on private land during the interim process.

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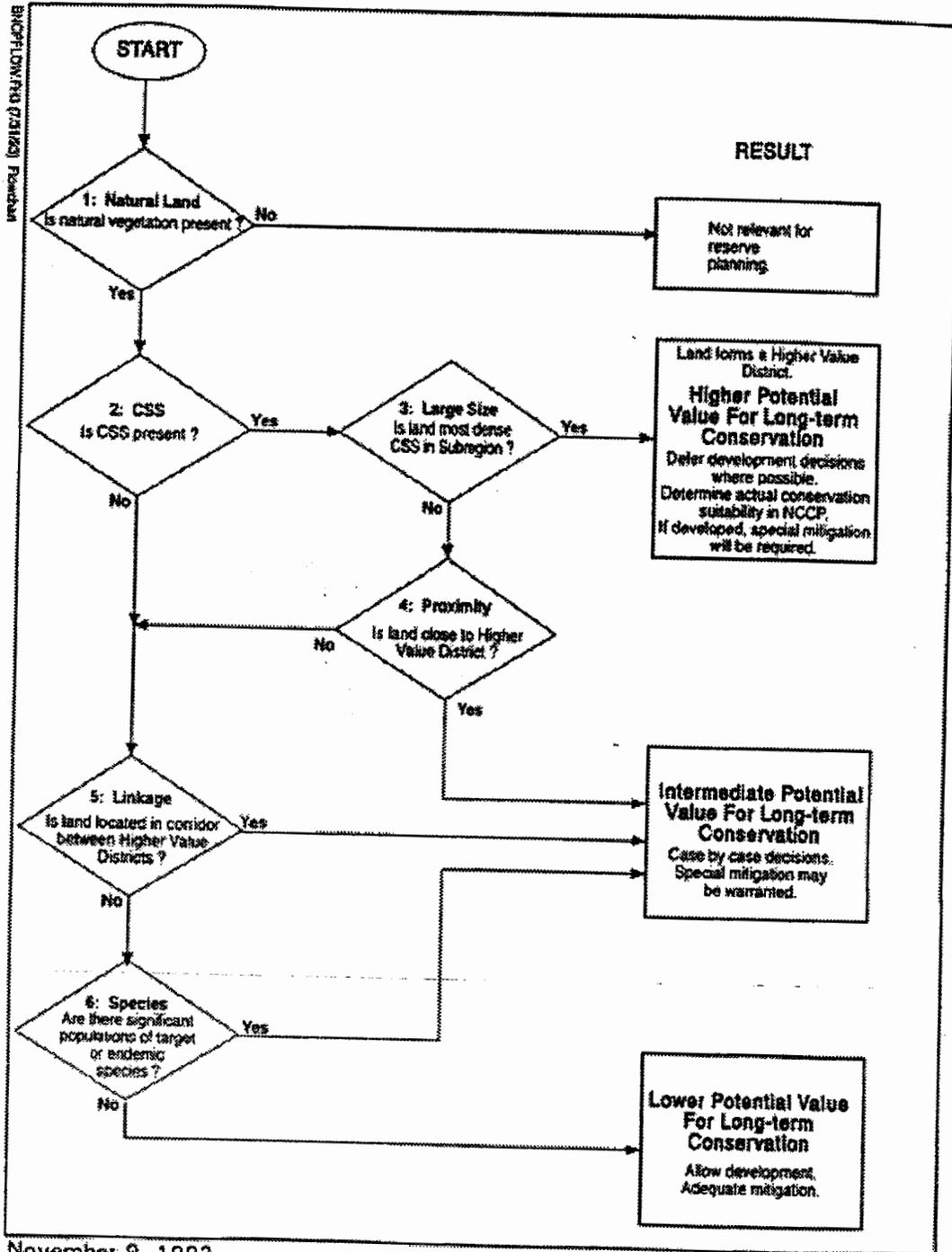
Subregional Coastal Sage Scrub NCCP Planning Unit Focus Map



NOTE- The focus and satellite areas are based on an evaluation of coastal sage scrub

Attachment C. Evaluation Logic Flow Chart

Refer to text section 5.c. Evaluation Methods for definitions.



**THE ENDANGERED SPECIES ACT AND
HABITAT CONSERVATION PLANNING:
INTRODUCTION TO THE LAW**

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I. LEGAL STANDARDS FOR HABITAT CONSERVATION PLANNING UNDER THE FEDERAL ESA.

A. Statutory Standards for Habitat Conservation Plans (HCPs).

1. **Section 9:** prohibits any "person" from "taking" threatened and endangered species.^{2/} (16 U.S.C. § 1538(a)(1)(B), (G).)
 - a. The ESA defines "take" as to "*harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect or to attempt to engage in any such conduct.*" (16 U.S.C. § 1532(19).)
 - b. The ESA defines "person" broadly as "an individual, corporation, partnership, trust, association, or any other private entity; or any officer, employee, agent, department or instrumentality of the Federal Government, of any State, municipality, or any political subdivision of a State; any foreign government; any State, municipality, or political subdivision of a State; or any other entity subject to the jurisdiction of the United States." (16 U.S.C. § 1532(13).)

1/ The views and opinions expressed herein are those of the author only and do not necessarily reflect the views of the Attorney General, Department of Justice, State of California, or any agency of the State.

^{2/} Note that the "take" prohibition is not directly applicable to threatened species by statute, but is applied to such species by the U.S. Fish and Wildlife Service and National Marine Fisheries Service on a case-by-case or blanket basis by regulation. (16 U.S.C. § 1533(d); 50 C.F.R. §§ 17.31(a) (USFWS listed threatened fish and wildlife species); 50 C.F.R. Part 227 (NMFS listed threatened species).)

- c. The U.S. Fish and Wildlife Service (USFWS) regulations define "harm" to include significant modification or degradation of a species' habitat, if this "actually kills or injures wildlife by significantly impairing its essential behavioral patterns, including breeding, feeding and sheltering." (50 C.F.R. § 17.3.) This definition of "harm" was upheld by the U.S. Supreme Court. (Babbitt v. Sweet Home Chapter of Communities, 515 U.S. 687; 115 S. Ct. 2407 (1995).) The National Marine Fisheries Service (NMFS) has adopted a similar regulation for species under its jurisdiction (marine and anadromous fish species). (50 C.F.R. § 217.12.)^{3/}
- d. USFWS regulations define "harass" as "an *intentional or negligent act or omission* which creates the likelihood of injury to wildlife by annoying it to such an extent as to significantly disrupt normal behavioral patterns which include, but are not limited to, breeding, feeding or sheltering." (50 C.F.R. § 17.3.)

2. **Section 10(a)(1)(B):** Incidental Take Permits (ITPs). Exception to Section 9 prohibition on take for take incidental to an otherwise lawful activity. (16 U.S.C. § 1539(a)(1)(B).)

- a. Any non-federal person can obtain a permit for "incidental take" of threatened and endangered fish or wildlife species^{4/} if he or she submits an HCP to the USFWS or NMFS which specifies:
 - (1) the impact that will likely result from the taking;
 - (2) what steps the applicant will take to monitor, minimize and mitigate such impacts, the funding that will be available to implement such steps, and procedures to deal with unforeseen circumstances;
 - (3) what alternative actions the applicant considered and the reasons why such alternatives are not being proposed; and

^{3/} Like USFWS, NMFS defines harm to include "significant habitat modification or degradation which actually kills or injures fish or wildlife by significantly impairing essential behavioral patterns, including breeding, *spawning, rearing, migrating*, feeding and sheltering." (50 C.F.R. § 217.12.)

^{4/} Federal agencies receive incidental take authorization through the section 7 consultation process. (16 U.S.C. § 1536(b)(4), 1536(o)(2).)

- (4) any other measures the USFWS or NMFS requires "as necessary or appropriate for purposes of the plan."

(16 U.S.C. § 1539(a)(2)(A).)

b. USFWS or NMFS may not issue the permit unless it makes all of the following findings:

- (1) the taking will be incidental (i.e. incidental to, and not the purpose of, the carrying out of an otherwise lawful activity);
- (2) the applicant will, to the maximum extent practicable, minimize and mitigate the impacts of the taking;
- (3) the applicant will ensure that adequate funding for the plan and procedures to deal with unforeseen circumstances will be provided;
- (4) the taking will not appreciably reduce likelihood of the survival and recovery of the species in the wild (this is the section 10 equivalent of the "jeopardy" standard of section 7(a)(2));
- (5) any other measures the USFWS or NMFS has required as necessary or appropriate will be met; and
- (6) the USFWS or NMFS has received such other assurances as required to ensure that the plan will be implemented.

(16 U.S.C. § 1539(a)(2)(B).)

c. General prohibitions on permit issuance: 50 C.F.R. § 13.21.

- (1) USFWS or NMFS may not issue an ITP if:
 - (a) "The applicant has been assessed a civil penalty or convicted of any criminal provision of any statute or regulation relating to the activity for which the application is filed, if such assessment or conviction evidences a lack of responsibility."
 - (b) The applicant has failed to disclose material information required, or has made false statements as

to any material fact, in connection with his application;

(c) "The applicant has failed to demonstrate a valid justification for the permit and a showing of responsibility." (50 C.F.R. § 13.21(b).)

(2) In addition, a conviction, entry of a plea of guilty or nolo contendere, or a felony violation of the Lacey Act, the Migratory Bird Treaty Act, or the Bald and Golden Eagle Protection Act disqualifies any person "from receiving or exercising the privileges of a permit." (50 C.F.R. § 13.21(c).)

d. HCP case law.

(1) Friends of Endangered Species v. Jantzen, 780 F.2d 976 (9th Cir. 1985). Upheld first HCP ever prepared, for a housing development on San Bruno Mountain in South San Francisco that would impact endangered butterflies. This HCP provided the "model" for enactment of ITP provisions in ESA.

(2) Sierra Club v. Babbitt, 15 F. Supp. 2d 1274 (S.D. Ala. 1998). Struck down two HCPs for condominium developments that would impact the Alabama Beach Mouse on the Fort Morgan Peninsula in Alabama.

(3) National Wildlife Federation v. Babbitt, E.D. Cal. Case No. Civ. S-99-274, Mem. of Op. and Order, Aug. 15, 2000. Struck down regional HCP for commercial and residential development in the City of Sacramento.

3. **Section 10(a)(1)(A):** permits for enhancement of survival. Allows the USFWS or NMFS to permit take of endangered and threatened fish or wildlife species for the purposes of enhancing the propagation and survival of such species. This provision is being used to permit take in conjunction with the safe harbor program and candidate conservation agreements (see Section V below).

B. Regulatory Standards and Policies for HCPs.

1. USFWS and NMFS have promulgated regulations governing issuance of ITPs. USFWS regulations are found at 50 C.F.R. § 17.22(b) (endangered species) and 17.32(b) (threatened species). NMFS regulations only authorize

issuance of incidental take permits for endangered species. These are found at 50 C.F.R. § 222.22. Take of threatened species is governed by species-specific special rules issued pursuant to section 4(d) of the ESA (16 U.S.C. § 1533(d)). (See 50 C.F.R. Part 227.)

2. USFWS and NMFS have issued a guidance document for incidental take permitting entitled the "Endangered Species Habitat Conservation Planning Handbook," which became final in November 1996. The Services recently have published an draft Addendum to the HCP Handbook suggesting that HCPs include measurable biological goals and adaptive management and monitoring programs. The Addendum also includes guidance on public participation in the HCP process and the duration of incidental take permits. (64 Fed. Reg. 11485 (March 9, 1999).)
3. No surprises regulation and policy (see Section III below).

C. Relationship to Section 7 of the ESA.

1. Section 7(a)(2).
 - a. Under section 7(a)(2) of the ESA, each federal agency has a *mandatory* duty to insure that any federal agency action it proposes to authorize, fund or otherwise carry out is not likely to: (1) jeopardize the continued existence of *any* listed species; or (2) destroy or adversely modify designated critical habitat.^{5/} (16 U.S.C. § 1536(a)(2).)
 - b. Federal "agency actions" are broadly defined as "all activities or programs of any kind authorized, funded, or carried out, in whole or in part, by Federal agencies in the United States." (Pacific Rivers Council v. Thomas, 30 F.3d 1050, 1054 (9th Cir. 1994).) This includes granting of federal licenses and permits, as well as any

^{5/} The ESA's implementing regulations define "jeopardize the continued existence" as to "engage in an action that reasonably would be expected, directly or indirectly, to reduce appreciably the likelihood of both the survival and recovery of a listed species in the wild by reducing the reproduction, numbers or distribution of that species." (50 C.F.R. § 402.02.) The ESA's implementing regulations define "destruction or adverse modification of critical habitat" as a "direct or indirect alteration that appreciably diminishes the value of critical habitat for both the survival and recovery of a listed species. Such alterations include, but are not limited to, alterations adversely modifying any of those physical or biological features that were the basis for determining the habitat to be critical." (*Id.*)

actions that directly or indirectly cause changes to air, land or water.^{6/}
(50 C.F.R. § 402.02.)

- c. The USFWS' and/or NMFS' issuance of an incidental take permit pursuant to section 10(a) of the ESA constitutes a "federal agency action" subject to section 7 consultation. (See 50 C.F.R. § 402.02 (definition of agency action includes issuance of permits and licenses by federal agencies); cf. Ramsey v. Kantor, 96 F.3d 434, 444 (9th Cir. 1996) (holding that issuance of an incidental take statement under section 7 is functionally equivalent to an incidental take permit under section 10 and that issuance of such statement constitutes major federal action for purposes of NEPA).)
 - d. Section 7 consultation adds several other requirements to the HCP process that are not explicitly part of section 10. These include the requirement to: (1) avoid adverse modification or destruction of designated critical habitat; (2) avoid jeopardy to listed plants as well as fish and wildlife species; (3) consider the cumulative effects of issuance of the ITP on listed species (50 C.F.R. §§ 402.02, 402.14(g)).
2. Section 7(d).
- a. Section 7(d) provides that "[a]fter initiation of consultation required under subsection (a)(2) of this section, the Federal agency [e.g. the Services] and any permit or license applicant [e.g. an ITP applicant] shall not make any irreversible or irretrievable commitment of resources with respect to the agency action which has the effect of foreclosing the formulation or implementation of any reasonable and

^{6/} Specifically, federal agency "action" is defined under the Services' regulations as follows:

Action means all activities or programs of any kind authorized, funded, or carried out, in whole or in part, by Federal agencies in the United States or upon the high seas. Examples include, but are not limited to (1) actions to conserve listed species or their habitats; (2) issuance of regulations; (3) granting of licenses, contracts, leases, permits, easements, rights-of-way, etc.; and (4) actions that directly or indirectly cause changes to the land, air and/or water.

(50 C.F.R. § 402.02.) The Services' regulations also provide that "Section 7 and the requirements of this part apply to all actions in which there is discretionary Federal involvement or control." (50 C.F.R. § 402.03.)

prudent alternative measures which would not violate subsection (a)(2) of this section [e.g. would not jeopardize the continued existence of a listed species or jeopardize or adversely modify designated critical habitat]."^{2/} (16 U.S.C. § 1536(d); 50 C.F.R. § 402.09.)

- b. This prohibition on irreversible and irretrievable commitments of resources applies throughout consultation and continues until the requirements of section 7(a)(2) have been satisfied. (Natural Resources Defense Council v. Houston, __ F.3d __ (9th Cir. 1998); 50 C.F.R. § 402.09; 51 Fed. Reg. 19926, 19935 (June 3, 1986).)
- c. The purpose of section 7(d) is to ensure that the existing environmental *status quo* is maintained during the consultation process so as not to foreclose consideration and adoption of alternatives to the proposed federal agency action. (Connor v. Burford, 848 F.2d 1441, 1445 n.34 (9th Cir. 1988); Lane County Audubon Society v. Jamison, 958 F.2d 290, 294 (9th Cir. 1992).)
- d. Environmental Protection Information Center v. Pacific Lumber Co., N.D. Cal. Case No. 98-CV-03129; *currently on appeal to the Ninth Circuit.*
 1. The U.S. District Court for the Northern District of California held that section 7 consultation applies to the Services' issuance of an ITP pursuant to section 10(a). In so holding, the court rejected arguments that section 7 is "extravagant and duplicative" as applied to the section 10(a) ITP process, and that Congress never intended the Services to conduct intra-agency consultation.
 2. The court also held that the section 7(d) prohibition applies during informal consultation on an ITP application. The court found that informal consultation had in fact been initiated in that case by an exchange of correspondence between the permit applicant (Pacific Lumber Company) and the Services,

^{2/} Reasonable and prudent alternatives are those that: (1) can be implemented in a manner consistent with the purposes of the proposed agency action; (2) are within the agency's legal authority and jurisdiction to implement; (3) are economically and technologically feasible; and (4) would not jeopardize the species or adversely modify or destroy critical habitat. (50 C.F.R. § 402.02.)

and the Services' issuance of a public comment notice on the draft HCP in the Federal Register. The court implied, however, that formal consultation will always be required on an ITP application, because such permit by definition "may affect" listed species.

3. Finally, the court found that the permit applicant had made an irreversible and irretrievable commitment of resources in violation of section 7(d) by harvesting timber in watersheds that historically contained threatened coho salmon, and that presently contained suitable coho habitat.

3. Reinitiation of Consultation.

- a. The section 7 implementing regulations require federal agencies to reinitiate formal consultation on federal agency actions over which they have ongoing discretionary involvement and control, if:

- (1) the amount or extent of the authorized taking is exceeded;
- (2) new information reveals that the action may affect listed species or critical habitat in a manner or to an extent not previously considered;
- (3) the action is subsequently modified in a manner that causes impacts to listed species or critical habitat that were not considered in the biological opinion; or
- (4) a new species is listed or critical habitat is designated that may be affected by the action. (50 C.F.R. § 402.16.)

- b. Environmental Protection Information Center v. Simpson Timber Co., N.D. Cal. Case No, C-98-3749, *currently on appeal to the Ninth Circuit*. The U.S. District Court for the Northern District of California rejected the plaintiff's argument that the USFWS was required to reinitiate consultation on Simpson's ITP for northern spotted owl after the USFWS listed the marbled murrelet, and the NMFS listed the coho salmon, as threatened species under the ESA. The court agreed that the USFWS retained general discretionary involvement or control over Simpson's ITP with respect to the northern spotted owl, and that it had authority to revoke or alter the

ITP if the activities authorized under the permit result in an unauthorized taking of a listed species that was not included in the original permit. Nevertheless, the court concluded that this was insufficient discretionary federal involvement or control to render the ITP an ongoing federal agency action for purposes of newly listed species. Therefore, the court held that the USFWS was not required to reinitiate consultation on the ITP after the murrelet and the coho were listed. The court noted that plaintiff's remedy instead was to sue Simpson for an unlawful taking of species under section 9 of the ESA.

D. Relationship to the National Environmental Policy Act (NEPA).

1. The Services' issuance of an ITP is a "major federal action" subject to NEPA. Major federal actions are those with effects that *may* be major and which are potentially subject to federal responsibility and control. (40 C.F.R. § 1508.18.) Major federal actions include issuance of permits. (40 C.F.R. § 1508.18(b).)
2. Because an ITP by definition will harm endangered and threatened species and their habitat, it is also a major federal action that may significantly affect the quality of the human environment,^{8/} and thus requires the Services to prepare an environmental impact report (EIS). (42 U.S.C. § 4332(2)(C).) Under NEPA regulations, an EIS is required for all major federal actions that may adversely affect species listed under the federal ESA. (40 C.F.R. § 1508.27.)
3. Two district courts have held that the USFWS violated NEPA in failing to prepare an EIS on its decision to issue an ITP. (*See National Wildlife Federation v. Babbitt*, E.D. Cal. Case No. Civ. S-99-274, Mem. of Op. and Order, Aug. 15, 2000; *Sierra Club v. Babbitt*, 15 F. Supp. 2d 1274 (S.D. Ala. 1998).)

II. LEGAL STANDARDS FOR HABITAT CONSERVATION PLANNING UNDER STATE ESA

^{8/} "Human environment" is defined broadly under NEPA to include the natural and physical environment and the relationship of people to that environment. (40 C.F.R. § 1508.14.)

A. Take Prohibition: Fish and Game Code §§ 2080 and 2085. These sections prohibit any person from taking fish, wildlife and plant^{2/} species listed as threatened or endangered, or candidate species, under the state ESA.

1. "Take" is defined as "to hunt, pursue, catch, capture or kill" or to attempt to do any of these things. (Fish & Game Code § 86.) Take incidental to an otherwise lawful activity is prohibited. (See Department of Fish and Game v. Anderson-Cottonwood Irrig. Dist., 8 Cal. App. 4th 1554 (1992) (holding that irrigation district's diversion of water from the Sacramento River caused a take of winter-run salmon by entrapping them in the district's pumping facilities and canals, directly or indirectly killing them).)

The California Attorney General has concluded that, because the state definition of "take" does not include the terms "harm" and "harass," unlike federal law, CESA therefore "does not prohibit indirect harm to a state-listed endangered or threatened species by way of habitat modification." (78 Ops. Cal. Atty. Gen. 137, Opinion No. 94-605 (May 15, 1995).) However, this opinion is not binding precedent on a court of law.

2. "Person" is defined as "any natural person or any partnership, corporation, trust, or other type of association." (Fish and Game Code § 67.)

B. Incidental Take Exception: Fish and Game Code § 2081.

1. Authorizes the California Department of Fish and Game (DFG) to issue permits for the incidental take of candidate, threatened and endangered species provided:
 - a. The impacts of the authorized take are "minimized and fully mitigated." Impacts include "all impacts on the species that result from any act that would cause the proposed taking."
 - (1) The measures required to meet this obligation must be "roughly proportional in extent to the impact of the authorized taking on the species."

^{2/} There is an ongoing debate about whether CESA's take prohibition applies to plant species listed as endangered or threatened under CESA. Although CESA applies to both plants and animals, some argue that CESA's take prohibition incorporates by reference the arguably less-restrictive provisions of the Native Plant Protection Act. (See 81 Ops. Cal. Atty. Gen 222 (1998); *but cf.* "California Listed Threatened and Endangered Plants Are Protected Under the California Endangered Species Act," Calif. Land Use Law & Policy Rptr., Vol. 9, No. 1, Sept. 1999.)

- (2) The measures must also be "capable of successful implementation."
 - (3) Where various measures exist that will minimize and fully mitigate the impacts to the species, "the measures required shall maintain the applicant's objective to the greatest extent possible."
- b. The permit applicant ensures that adequate funding is available to implement the required mitigation measures, and for monitoring compliance with and the effectiveness of these measures.
 - c. Issuance of the permit would not jeopardize the continued existence of the species.
 - (1) The DFG must make this determination based on the best scientific and other information that is reasonably available.
 - (2) The jeopardy determination must include consideration of the species' ability to survive and reproduce, and any adverse impacts on the species in light of known population trends, known threats to the species, and reasonably foreseeable impacts on the species from other related projects and activities.

(Fish and Game Code § 2081(b), (c).)

- 2. No ITP is required for take of species listed, or candidate species, under CESA if that species is also listed under federal ESA, and the person has obtained a federal incidental take permit and DFG has certified that the permit is in compliance with CESA. (Fish and Game Code § 2080.1.)
- 3. Regulations implementing the state incidental take permit program: 14 Cal. Code Regs. § 783.0 *et seq.*
- 4. The Resources Secretary has certified DFG's issuance, as a lead agency, of ITPs under section 2081 of CESA as a "functional equivalent" regulatory program under the California Environmental Quality Act (CEQA). (14 Cal. Code Regs. § 15251(p).) If DFG is not a lead agency, the normal CEQA process applies. The lead agency must make a mandatory finding of significance and prepare an EIR for any project that may impact a species that is or *ought to be* listed under the state or federal ESAs. (14 Cal. Code Regs. §§ 15065, 15380.)

5. The Sacramento Superior Court upheld a section 2081 ITP for the Natomas Basin Habitat Conservation Plan. The court held that substantial evidence in the record supports DFG's certification of the HCP and implementing agreement as meeting the substantive criteria of section 2081(b). The case is now on appeal. (Friends of the Swainson's Hawk et al. v. California Department of Fish and Game, Notice of Entry of Order and Judgment Denying Petition for Writ of Mandate, Feb. 2, 2000, Sacramento County Sup. Ct. Case No. 98CS01131.)

III. NATURAL COMMUNITIES CONSERVATION PLANNING: NCCP Act. (Cal. Fish & Game Code § 2800 *et seq.*)

A. NCCP Act in General.

The NCCP Act was enacted in 1991 to "conserve long-term viable populations of California's native animal and plant species and their habitats in areas large enough to ensure their continued existence," while at the same time allowing for "compatible and appropriate" urban growth and economic development. (Calif. Dep't of Fish & Game, 1991-92 Report on the Status of the Natural Communities Conservation Planning Program.)

B. Natural Communities Conservation Plans.

1. **Implementation agreements.** To carry out the NCCP Act's dichotomous goals, the Act permits the California Department of Fish and Game (DFG) to enter into planning and implementation agreements with any person or entity to prepare and implement a natural community conservation plan (NCCP). (Fish and Game Code § 2810.) An NCCP may be prepared by a local, state or federal agency either independently or in cooperation with other persons. (Fish and Game Code § 2820.)
2. **Contents of an NCCP.**

An NCCP identifies areas appropriate for "the regional or areawide protection and perpetuation of natural wildlife diversity," as well as areas for "compatible and appropriate development and growth." (Fish and Game Code § 2805(a).) An NCCP also must set forth guidelines for conserving and managing the multiple wildlife species residing in identified reserve areas. (Fish and Game Code § 2810.) An NCCP may address any "wild animals, birds, plants, fish, amphibians, and related ecological communities, including the habitat upon which the wildlife depends for its continued viability." (Fish and Game Code §§ 711.2(a), 2805(b).)

3. Statutory requirements for DFG approval of an NCCP.

To be valid, an NCCP must meet several requirements.

- a. First, it must be consistent with an approved planning agreement between the DFG and participating persons and entities. (Fish and Game Code § 2820.)
- b. Second, the plan must be reviewed and approved by the DFG for consistency with the DFG's NCCP standards and guidelines. (*Id.*)
- c. Third, the plan must "provide for" the "conservation, protection, restoration, enhancement and management" of candidate and other identified species. (Fish and Game Code §§ 2830, 2835.)
- d. Fourth, an implementation agreement must be entered into between the DFG and the participating parties to carry out the plan's goals. (Fish and Game Code § 2810.)

4. Other requirements. Although there are no regulations implementing the NCCP program, the DFG has adopted General Process Guidelines to assist plan preparers in meeting the Act's requirements and to "allow flexibility in plan development." (NCCP General Process Guidelines, Jan. 1998.)

5. CEQA compliance. NCCPs must be prepared in compliance with CEQA. (Fish and Game Code 2825(b); NCCP General Process Guidelines.) Generally, an NCCP will require an environmental impact report (EIR) or program EIR. (San Bernardino Valley Audubon Society v. Metropolitan Water District, 71 Cal. App. 4th 382 (1999) (holding that MWD was required to prepare EIR for NCCP in Riverside County that included a habitat mitigation bank); CSS NCCP Process Guidelines (see below).)

C. Take Permits Under the NCCP Act.

1. Taking of candidate species.

If all the above requirements are met, the California Fish and Game Commission may authorize, upon DFG's recommendation, the taking of a state-listed candidate species under § 2084 of the California ESA. (Fish and Game Code § 2830.)

2. Taking of other species.

The DFG may authorize the take of any state-listed threatened and endangered species under § 2081 of the California ESA. Alternatively, DFG may authorize take of any "identified" species whose *conservation* and management is provided for under the NCCP Act itself. (Fish and Game Code §§ 2825(c), 2835.)

D. DFG Report to Legislature.

1. In February, 2000, the DFG submitted a report to the Legislature evaluating the NCCP program. Specifically, the Supplemental Budget Report of the 1999 Budget Act requested that DFG compare the NCCP General Process Guidelines with the federal HCP Handbook Addendum.
2. Significantly, the report concludes that "the conservation standard in FGC § 2835 is a higher standard than either the California Endangered Species Act standard (fully mitigate the impacts of the incidental taking) or the federal Endangered Species Act standard (mitigate to the maximum extent practicable)."
3. The report also states that the DFG intends to "bolster" the NCCP program to improve the scientific basis, and increase public participation in the development, of NCCPs. The DFG proposes to create scientific and citizen advisory groups, expand public comment periods on NCCPs, provide additional informational meetings on NCCPs, and create partnerships for management and monitoring of NCCPs.
4. Finally, the report recommends that statutory standards be established for the following aspects of the NCCP program: regional scope, ecosystem conservation, science, public participation, monitoring, adaptive management, funding, and assurances.

E. Pilot Coastal Sage Scrub (CSS) NCCP Program.

1. After enactment of the NCCP Act in 1991, Governor Wilson initiated the first NCCP pilot program for the coastal sage scrub region in Southern California. The planning region covers a total of 6,000 square miles and includes 11 planning subregions. DFG has prepared NCCP Conservation and Process Guidelines providing more detailed guidance for the CSS NCCP pilot program. (CSS NCCP Conservation Guidelines and Process Guidelines, as amended, Nov. 1993.)
2. The first NCCP completed under the CSS NCCP pilot program was approved in the late spring of 1996 for the Central/Coastal region of Orange County.

The plan covers over 40 listed and unlisted species, and the permit will be in effect for 75 years. Portions of the Southern San Diego County Multi Species Conservation Plan, covering 87 listed and unlisted species for 50 years, also have been approved. A challenge to this plan is pending in federal district court for the Southern District of California. Several other plans, including those covering Southern Orange County, Northern San Diego County, and Riverside County, are in various stages of development.

F. Relationship of NCCP Act to Federal ESA: Section 4(d) Takings.

1. General.

a. Although a completed NCCP is designed to meet both state and federal requirements for issuance of taking permits (CSS NCCP Process Guidelines, ¶ 4.7), an NCCP cannot and does not supersede the incidental take requirements of the ESA. (Fish and Game Code §§ 2825(a)(6), 2830.) Thus, if an NCCP will apply to one or more species listed as endangered or threatened under the ESA, then applicable state *and* federal taking permits are required.

b. In addition to section 10(a), section 4(d) of the ESA authorizes the USFWS or NMFS to issue a special rule which provides for the *conservation* of a *threatened* species. (16 U.S.C. § 1533(d).) However, the take authority under section 4(d) is substantially more limited than the take authority under section 10(a).

(1) The ESA defines "conservation" broadly as: the use of all methods and procedures which are necessary to bring any . . . threatened species to the point at which the measures provided pursuant to [the ESA] are no longer necessary. Such methods and procedures include, but are not limited to, all activities associated with scientific resources management . . . and, *in the extraordinary case where population pressures within a given ecosystem cannot be otherwise relieved, may include regulated taking.* (16 U.S.C. § 1532(3), emphasis added.)

(2) Two federal Circuit Courts have held that, to be consistent with the conservation mandate of section 4(d), a special rule may only authorize take of a threatened species if species population pressures within a given ecosystem "cannot otherwise be relieved." (*See Christy v. Hodel*, 857 F.2d 1324,

1336-37 (9th Cir. 1988), and Sierra Club v. Clark, 755 F.2d 608, 612-13 (8th Cir. 1985).)

- (3) These rulings call into question the USFWS' use of section 4(d) to authorize incidental take of the threatened gnatcatcher in conjunction with economic development activities under the NCCP Act (see below).

2. Gnatcatcher special rule for CSS NCCP program.

- a. In December 1993, the Secretary of the Interior bolstered Southern California's multi-species planning efforts by issuing a special 4(d) rule for the federally threatened coastal California gnatcatcher, a key indicator species for the CSS region.
- b. This rule allows incidental takings of the gnatcatcher without issuance of a section 10(a) permit under the federal ESA, provided that: (a) the taking results from state or local government planning activities conducted in connection with the NCCP program; and (b) the Secretary of the Interior has certified in writing that an NCCP has been prepared, approved and implemented for the area in question, which satisfies the requirements for issuance of a section 10(a) incidental taking permit. (58 Fed. Reg. 65088 (Dec. 10, 1993), adding 50 C.F.R. § 17.41(b).)

Pending preparation and approval of a given subregional NCCP, incidental takings of the gnatcatcher in that plan area will not be deemed a violation of section 9 if the taking: (1) "occurs within an area under the jurisdiction of a local government agency that is enrolled and actively engaged in the preparation" of an NCCP; and (2) "results from activities conducted in accordance with" the DFG's NCCP Conservation and Process Guidelines. (*Id.*) The Conservation Guidelines allow destruction of up to five percent of the remaining gnatcatcher habitat in the CSS area during the period in which NCCPs are being prepared.

3. New salmon and steelhead 4(d) rule (65 Fed. Reg. 42422 (July 10, 2000).)

- a. Applies section 9 "take" prohibition to several threatened ESUs salmon and steelhead in California, Oregon and Washington, including Central Valley California, Central California Coast, and South-Central California Coast.

- b. Includes several important exceptions to the take prohibition, including take in conjunction with fish harvest and fish hatchery activities that meet specified requirements, take pursuant to a "watershed conservation plan," take resulting from screened water diversions, and take resulting from municipal, residential, commercial and industrial activities that meet specified requirements.
- c. This rule is currently being challenged by a broad coalition of environmental and fishing groups, led by the Washington Environmental Council.

IV. NO SURPRISES REGULATION AND POLICY.

A. Federal Policy.

1. The "no surprises" policy was published as a final regulation in February, 1998. (See 63 Fed. Reg. 8859 (Feb. 23, 1998), codifying 50 C.F.R. §§ 17.22(b)(5), 17.32(b)(5); 222.22(g), (h).) The regulations apply to *all* species "covered by" (i.e. included within) an HCP, whether listed or unlisted.
2. The regulations provide that an incidental take permittee cannot be required (without his or her consent) to provide additional mitigation measures^{10/} to deal with changed circumstances that are not addressed in the HCP, for the *entire* life of the permit (provided the permittee is in compliance with the terms and conditions of the permit). This raises the level of significance of an approved incidental take permit to unprecedented proportions: the no surprises policy essentially "locks in" an ITP's mitigation provisions for *decades of time no matter how inadequate the document subsequently proves to be.*
3. The USFWS and NMFS may seek additional mitigation from a permittee to deal with "unforeseen circumstances," provided the mitigation does not involve dedication of additional land or water, payment of additional money, or further restrictions on use of land or water. USFWS and NMFS bear the burden of demonstrating that such unforeseen circumstances exist, based on the best scientific and commercial data available. USFWS' and NMFS' findings must be "clearly documented and based upon reliable technical information regarding the status and habitat requirements of the affected

^{10/} Measures that require dedication of additional land or water, payment of additional money, or that impose further restrictions on lands or waters that are otherwise available for extractive use under the terms of the HCP.

species." The regulation contains a number of factors the USFWS and NMFS must consider in making unforeseen circumstance findings.

4. In cases where the USFWS or NMFS determine that unforeseen circumstances warrant the imposition of additional mitigation measures, such mitigation must be limited to modifications within "conserved habitat areas" (if any), or to the HCP's "operating conservation program" for the covered species and must "maintain the original terms of the [HCP] to the maximum extent possible."
5. USFWS recently has amended its no surprises regulation to allow them to revoke an ITP if continuation of the permitted activity "would be inconsistent with" the no jeopardy permit issuance criterion, and "the inconsistency has not been remedied in a timely fashion." (50 C.F.R. §§ 17.22(b)(8), 17.32(b)(8).)

B. State Policy.

1. While the state has not published formal regulations codifying the no surprises policy, the state DFG incorporates "no surprises" regulatory assurances similar to federal assurances into the implementing agreements for state section 2081 permits and NCCPs on a case-by-case basis.
2. The NCCP General Process Guidelines provide that "an NCCP may include, in both the plan and in a separate implementing agreement, assurances that provide for the long-term reconciliation of new land development in the planning area and the conservation and protection of endangered species. Departmental assurances will be determined for individual plans according to the level of conservation each plan affords. If warranted, the Department will provide its assurance that the NCCP provides measures sufficient to conserve the species addressed in the plan and that no further land dedications, land use restrictions, water use commitments, or financial compensation will be required by the Department of plan participants, except in extraordinary circumstances."

V. SAFE HARBOR POLICY AND CANDIDATE CONSERVATION AGREEMENTS.

A. Federal.

1. **Safe harbor policy and program.**
 - a. Under the safe harbor program, landowners may obtain a take permit "for enhancement of survival" of threatened and endangered species

pursuant to section 10(a)(1)(A) of the federal ESA if they enter into an agreement with the USFWS to restore and enhance habitat on their land. Such landowners are then relieved from future take liability for species which did not exist on the property at the time the agreement was entered into. The safe harbor program differs from the HCP process in that it supposedly seeks to encourage landowners to create positive species benefits in *advance* of specific project impacts. The HCP process, on the other hand, is aimed at mitigating the effects of planned development projects or resource extraction activities on species and habitat.

b. The USFWS may issue a safe harbor take permit if it finds:

- (1) the take will be incidental to an otherwise lawful activity and will be in accordance with the safe harbor agreement;
- (2) the implementation of the safe harbor agreement will provide a net conservation benefit to the affected species by contributing to the listed covered species' recovery and by complying with the USFWS' safe harbor policy;
- (3) The probable direct and indirect effects of any authorized take will not appreciably reduce the likelihood of the listed covered species' survival and recovery;
- (4) implementation of the safe harbor agreement is consistent with applicable federal, state and tribal laws and regulations;
- (5) implementation of the safe harbor agreement will not conflict with any ongoing conservation or recovery programs for the listed covered species; and
- (6) the applicant has shown a capability for and commitment to implementing the safe harbor agreement.

c. Permit conditions:

- (1) the landowner must notify the USFWS of any transfer of lands subject to the agreement;
- (2) the landowner must notify the USFWS at least thirty days in advance of any expected incidental take of covered species; and

- (3) any additional requirements or conditions the USFWS deems necessary or appropriate to carry out the purposes of the permit and agreement.

2. Candidate conservation agreements.

- a. A landowner may also enter into a candidate conservation agreement (CCA) with the USFWS for species that are not then listed as endangered or threatened. When a species covered under a CCA is listed as endangered or threatened, if the landowner wishes to continue the activities specified in the agreement and to take the covered species, he or she must apply for an enhancement of survival permit under section 10(a)(1)(A) of the ESA.
- b. The USFWS may issue the CCA permit if it makes all of the findings applicable to a safe harbor agreement. A CCA permit is also subject to the same conditions as a safe harbor permit.

- 3. Assurances.** Both the safe harbor program and candidate conservation agreements include regulatory assurances similar to those provided to ITP applicants under section 10(a)(1)(B) of the ESA. (50 C.F.R. §§ 17.22(c)(5), 17.22(d)(5), 17.32(c)(5), 17.32(d)(5).)

B. State: Ongoing Activities Take Exception: Fish and Game Code § 2086 *et seq.*

1. Authorizes the DFG to adopt regulations authorizing "locally designed voluntary programs for routine and ongoing agricultural activities on farms and ranches." (Fish and Game § 2086(a).) DFG has adopted such regulations at 14 Cal. Code Regs. § 786.0 *et seq.* "Routine and ongoing agricultural activities" do not include conversion of agricultural land to a non-agricultural use. (Fish and Game Code § 2089.)
2. Local programs must meet the following requirements:
 - a. "Include management practices that will, to the maximum extent practicable, avoid and minimize take of candidate, threatened and endangered species, while encouraging enhancement of habitat;"
 - b. Be supported by the best available scientific information for both agricultural and conservation practices;

- c. Be consistent with the goals and policies of CESA to "conserve, protect, restore and enhance" listed species and their habitat (Fish and Game Code § 2052);
- d. Be designed to provide "sufficient flexibility to maximize participation and to gain the maximum wildlife benefits without compromising the economics of agricultural operations."
- e. Allow farmers and ranchers to cease participation in the program "without penalty," and include terms and conditions to minimize take during program withdrawal.

(Fish and Game Code § 2086(b).)

- 3. Taking of candidate, threatened or endangered species incidental to routine and ongoing agricultural activities in compliance with local, voluntary programs is not prohibited under CESA. (Fish and Game Code § 2086(c).) However, take of fish species and take of any species due to timber harvesting activities is not authorized under this program. (Fish and Game Code § 2088.)
- 4. "Accidental" take of candidate, threatened or endangered species "resulting from inadvertent or ordinary negligent acts that occur on a farm or ranch in the course of otherwise lawful routine and ongoing agricultural activities" also is not prohibited, regardless of whether a local voluntary program is in place and regardless of whether take is in compliance with such program. (Fish and Game Code § 2087.)



USING SCIENCE IN HABITAT CONSERVATION PLANS

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Key Words: habitat conservation plans; Endangered Species Act; habitat management; extinction; conservation planning; monitoring.

EXECUTIVE SUMMARY

The Endangered Species Act of 1973 (ESA) was established to save species at risk of extinction and to protect the ecosystems upon which they depend. Toward that aim, the ESA makes it unlawful for any person to "take" a listed species. In 1982, the ESA was amended to authorize incidental taking of endangered species by private landowners and other non-federal entities, provided they develop habitat conservation plans (HCPs) that minimize and mitigate the taking. Since 1982, HCPs have rapidly proliferated, leading in turn to widespread concern among conservationists that these plans are not being prepared with adequate scientific guidance. Critics have argued that scientific principles must be better incorporated into the process of developing HCPs. In response to these criticisms, we reviewed a set of approved habitat conservation plans to evaluate the extent to which scientific data and methods were used in developing and justifying them. The review was conducted through a nationwide graduate seminar involving eight major research universities, 106 students, and 13 faculty advisors. Our analyses focused on the extent to which plans could be substantiated by science. Thus, even if based on the best available data (the legal requirement), a legally and politically justified plan could be deemed scientifically inadequate because, by more stringent scientific standards, the data were insufficient to support the actions outlined in the plan.

A Systematic Effort to Collect Quantitative Data on Science in HCPs

This investigation proceeded along two lines. First, individuals gathered data on 208 HCPs that had been approved by August 1997 in order to obtain basic descriptive information about plans. Second, the group conducted a more comprehensive analysis for a focal subset (43) of these plans. The HCPs in the focal subset range widely in geographic location, size, duration, methods, and approval dates. For this in-depth investigation, we developed two separate data questionnaires: one asked for information on the plans themselves, and the other focused on listed species and their treatment within HCPs. These questionnaires included information about what scientific data were available for use in formulating the HCP, how existing data were used, and the rigor of analysis used in each stage of the HCP process. As a whole, the questions were designed to generate a detailed profile of each HCP and to document the use (or lack thereof) of scientific data and tools. Plans were not judged overall; rather, questionnaires focused on different stages of the planning process, including the HCP's assessment of (1) the *status* of the species; (2) the "take" of species under the HCP; (3) the *impact* of the take on the species; (4) the *mitigation* for the anticipated take; and (5) the biological *monitoring* associated with the HCP. All of the data sheets, plan descriptions, and other detailed results from this effort are available on the NCEAS website: <http://www.nceas.ucsb.edu/projects/hcp/>

Results

From our data on 208 HCPs, we were able to outline an overall picture of HCPs across the landscape. These 208 HCPs involve permits for incidental take of 73 endangered or threatened species. Of those 208, a great majority (82%) involve a single species, although the profile is skewed by more than 70 plans involving the golden-cheeked warbler (*Dendroica chrysoparia*) in Travis County, Texas. HCPs occur in 13 states; the largest concentrations are in Texas, Florida, and California. They range in size from only 0.17 ha (0.5 acre) of habitat to 660,000 ha (1.6 million acres) of habitat. The duration of plans also varies widely, from seven months for a plan in Travis County, Texas, to 100 years for the Murray Pacific Company's HCP

in Washington. HCPs do not appear to be getting larger, smaller, longer, or shorter over time.

In our more comprehensive examination of the focal HCPs, we direct much attention to what we call scientific adequacy. It is important to note that an HCP would be labeled scientifically inadequate if insufficient data were available to justify an action formally, even though legally the plan might be defensible. HCPs and many other provisions of the Endangered Species Act require only that decisions be based on the best available data. Scientifically, however, to support a claim we require data that when analyzed give some statistical confidence of an assertion, and that confidence is often lacking in applications of science to conservation biology because of a paucity of data. For example, from a scientific perspective, the best data might suggest a particular relationship between loss of habitat and loss of individuals, but the data are so variable and scarce that one could never have scientific confidence in the presumed relationship. Our aim is not to change the law but to point out just how much science is being used, and can be used given the availability of data pertinent to HCP development. The conclusions we draw probably apply to many other facets of federal decisions regarding species listed as endangered or threatened.

Status/Take/Impact

Because they involve take of endangered species, HCPs must include information about the *status* of populations and habitats of the species, an assessment of how many individuals and how much habitat will be *taken* under the plan, and what *impact* that take will have on the species overall. We found that, for most species (74%), population sizes were known to be declining globally before the HCP was submitted; 21% were stable, and 5% were increasing. The most important threat to species was habitat loss, although habitat degradation or fragmentation and direct human-caused mortality also represented important threats. Notably, for only 56% of the instances in which a listed species might be "taken" by an activity was the predicted take quantitatively estimated. And only 25% (23 of 97) of species treatments included both a quantitative estimate of take and an adequate assessment of the impact of that take.

Mitigation

A crucial measure for the success of HCPs is the choice and implementation of measures to avoid, minimize, and mitigate impacts on the species included in the permit. If the appropriate measures are chosen and implemented in a timely fashion, the impact on the species in question might be effectively mitigated, justifying the issuance of an incidental take permit. For this analysis, we chose to evaluate avoidance, minimization, and mitigation measures as overall "mitigation," because they all involve offsetting potential impacts to species. Minimization and avoidance of the threatened species are by far the most common mitigation measures (avoidance is proposed for 74% of species, and minimization for 83%). Our analyses identify some important gaps in quality of data underlying mitigation proposed in HCPs. Overall, particular mitigation measures commonly suffered from an absence of data indicating they were likely to succeed, leading to a situation in which "unproven" mitigation measures were relied on in the HCPs. Given this uncertainty, one would expect that a mitigation measure should be evaluated prior to the onset of take. Unfortunately, such a precautionary approach was often lacking.

Monitoring

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Monitoring

We determined whether biological monitoring (i.e., "effectiveness monitoring" or

monitoring of trends in the populations that are potentially affected) was included for the HCPs in our sample. In this analysis, we looked at each plan as a sampling unit (n = 43), and we only considered information included in the plan or associated documents. For only 22 of the 43 plans was there a clearly outlined monitoring program. Of those 22 well-described monitoring programs, only 7 took the next step of indicating how the monitoring could be used to evaluate the HCP's success. Interestingly, although most plans do not include provisions for "adaptive management," when plans do include such provisions they are significantly more likely to include clear monitoring plans as well.

Availability and Use of Information Needed for Scientifically Based HCPs

In many cases, we found that crucial, yet basic, information on species is unavailable for the preparers of HCPs. By crucial, we mean information necessary to make determinations about status of the species, the estimated take under the HCP, and the impact of that take on the species. For example, in only one-third of the species assessments was there enough information to evaluate what proportion of the population would be affected by a proposed "take." If we do not know whether one-half or one-hundredth of a species' total population is being affected by an action, it is hard to make scientifically justified decisions.

We assessed the overall adequacy of scientific analysis at each stage of the HCP process. Although this evaluation of scientific adequacy amounted to a largely qualitative assessment, the foundations of that assessment were well specified by series of background questions; "overall adequacy" was consistently well predicted by data obtained for these background questions. In general, the earlier stages in HCP planning are the best documented and best analyzed. In particular, species status is often well known and adequately analyzed, whereas the progressive analyses needed to assess take, impact, mitigation and monitoring are more poorly done or lacking. Our evaluations also indicate that the very large and the very small HCPs contain the poorest analysis. In terms of plan duration, it appears that shorter-duration plans have better estimates of the amount of take, but longer-duration plans have better analysis of the status of the species and the mitigation measures imposed.

Conclusions and Recommendations

Although our analysis points to several shortcomings of HCPs, we acknowledge that the HCP process is new, complex, and difficult. In general, the USFWS and NMFS are doing a good job with the data that are available. They do not have the resources to obtain the data that are needed for many of the decisions that must be made. Without such resources, the best scientific approach is to be more cautious in making decisions and to use the findings of this report to justify requests for additional resources.

Recommendations

1. We recommend that greater attention be given to explicit scientific standards for HCPs, but that this be done in a flexible manner that recognizes that all HCPs need not adhere to the same standards as high impact HCPs. A formalized scheme might be adopted so that small HCPs draw on data analyses from large HCPs, assuring that applicants are not paralyzed by unrealistic demands.
2. For the preparation of individual HCPs, we recommend that those with potentially large

impact (those that are large in area or cover a large portion of a species' range) include an explicit summary of available data on covered species, including their distribution, abundance, population trend, ecological requirements, and causes of endangerment. HCPs should be more quantitative in stating their biological goals and in predicting their likely impact on species. When information important to the design of the HCP does not exist, it may still be possible to estimate the uncertainties associated with the impact, mitigation, and monitoring, and to still go forward, as long as risks are acknowledged and minimized. Flexibility can be built into mitigation plans so that managers can be responsive to the results of the monitoring during the period of the HCP. When highly critical information is missing, the agencies should be willing to withhold permits until that information is obtained.

3. For the HCP process in general, we recommend that information about listed species be maintained in accessible, centralized locations, and that monitoring data be made accessible to others. During the early stages of the design of potentially high-impact HCPs and those that are likely to lack important information, we recommend the establishment of a scientific advisory committee and increased use of independent peer review (review by scientists specializing in conservation biology). This policy should prevent premature agreements with development interests that ignore critical science.

1. INTRODUCTION

1.1. The Endangered Species Act in Relation to this Study

The Endangered Species Act of 1973 (ESA) was established to save species at risk of extinction and to protect the ecosystems upon which they depend. Toward that aim, the ESA makes it unlawful for any person to "take" a listed species. This prohibition encompasses activities that directly kill or harm listed species, as well as activities that cause indirect harm through "significant habitat modification or degradation" (50 CFR §17.3). In 1982, the ESA was amended to authorize incidental taking of endangered species by landowners and nonfederal entities, provided they developed habitat conservation plans (HCPs) that minimize and mitigate the taking, and that receive approval by the U.S. Fish and Wildlife Service (USFWS) or the National Marine Fisheries Service (NMFS). Any nonfederal entity, whether a private citizen, corporation, county, or state, can initiate an HCP. Once approved, an HCP results in an incidental take permit. The language of this amendment (Section 10a of the ESA - 16 U.S.C. §1539(a)) arose directly out of a model HCP designed to resolve a conflict between a development project and the needs of endangered species in the San Bruno Mountain area near San Francisco. Few landowners chose to undertake HCPs until the early 1990s. The USFWS approved only 14 HCPs from 1983 to 1992 (USFWS and NMFS, 1996), but since 1992 there has been an explosion of HCPs—225 were approved by September 1997, and approximately 200 are currently being formulated. Indeed, HCPs have become one of the most prominent mechanisms employed by the USFWS to address the problem of threatened and endangered species on private lands (Bean et al., 1991; Noss et al., 1997; Hood, 1998).

The rapid proliferation of HCPs has led to widespread concern among conservation advocates about the scientific information in these documents. From a policy perspective, critics charge (1) that HCPs may undermine species recovery because they can allow for impacts to species that are not fully offset, (2) that HCPs are developed without adequate biological information or scientific review, (3) that small-scale HCPs can lead to piecemeal habitat destruction and fragmentation, and (4) that meaningful public participation occurs infrequently (Hosack et al., 1997; Kaiser, 1997; Kostyack, 1997; Murphy et al., 1997; National Audubon Society, 1997; O'Connell and Johnson, 1997). Our objectives in this study were to conduct a major review of HCPs and to evaluate in detail the scientific merit of a substantial sample of HCPs currently in effect. We did not attempt to evaluate the biological success of HCPs or their attempt to balance economics with biology. That exercise would have been premature given the newness of most HCPs. Our emphasis is on scientific data and approach, whether they are adequate, and if not, what should be done. To strengthen the role of science in this process, we start with the premise that regardless of the compromises that may be made between economics and environmental concerns, HCPs should have clear scientific objectives, be based on the best available data, and employ well-tested procedures. It is important to emphasize that we scrutinized HCPs and their use of data and inference from a strictly scientific (as opposed to legal) perspective. We sought to determine whether a presumed impact, a proposed mitigation measure, and so forth could be scientifically substantiated given the data available. We adopted this strictly scientific stance because one of the outcomes of our analysis is a series of recommendations for improving the quality of scientific input; arriving at these recommendations required that we keep a clear vision of the highest possible scientific standards for HCP implementation. Although the focus of this report is science, it is useful to keep in mind more legal definitions of key terms such as "take," "compliance monitoring," "effects and effectiveness monitoring," etc. In Table 1 we define key legal terms and emphasize how our

more biological use of language differs from some of these legal definitions.

1.2. HCP Requirements

Applicants proposing HCPs must specify the impact that will result from the incidental take of listed species, what the plan does to minimize and mitigate the impact, and what alternatives were considered (Table 2). NMFS is responsible for ultimately approving or rejecting the HCP (issuing the "incidental take permit") for marine and anadromous species, and USFWS is responsible for the remainder of listed species. The applicant may develop an HCP independently, but USFWS often works with the landowner in the plan's early stages, providing guidance as to what is or is not acceptable with respect to approval requirements. Typically, impact on species is minimized by limiting the geographic extent of harmful activities or the seasons when those activities are allowed (e.g., prohibiting timber harvest during the nesting season of an endangered bird). Mitigation often involves setting aside (through purchase or conservation easements) habitat elsewhere. USFWS or NMFS can only issue an incidental take permit if the HCP meets five criteria (Table 2). Incidental take permits are only issued for species listed as threatened or endangered, although for any unlisted species that is treated in the HCP as if it were listed, the landowner is assured of receiving a permit for that species when it becomes listed.

No set of particular actions must be specified in an HCP for it to gain approval, and overall the process is quite flexible. There is, however, standardized guidance in the form of the Habitat Conservation Planning Handbook distributed by NMFS and USFWS (USFWS and NMFS, 1996). The handbook gives general advice on all aspects of HCPs. It also suggests expediting small-scale HCPs, while indicating directions in which USFWS and NMFS wish to direct future HCPs, including habitat-based, multi-species planning and large-scale, multi-landowner plans. In addition, USFWS conducts training workshops across the country for employees who help applicants develop and implement HCPs.

1.3. The Impetus and Aims of This Study

HCPs are not purely scientific documents—they are compromises between the interests of resource development and conservation, and political and economic concerns play a major role. Some HCPs represent the outcome of negotiations that take years. HCPs have economic, political, and scientific dimensions. Because HCPs represent negotiated compromises, it is essential to know what exactly is "given up" in the process of arriving at a compromise. It is easy to identify what is given up from the viewpoint of a private landowner, because the dollar value of future land development or exploitation is readily calculable. It is much harder to quantify what is given up in terms of a species' prospects for long-term survival. That is the challenge for the scientific component of HCPs.

To examine the scientific component of HCPs, we decided to use a highly structured, detail-driven approach to collecting information on HCPs. To date, criticisms and recommendations about HCPs have emphasized broad policy implications and have sketched general qualitative attributes of particular HCPs (Hood, 1998; Noss et al., 1998). We sought to develop a quantitative data base that sampled a "population of HCPs," so that our analysis would be relevant to HCPs in general, and not only to particular HCPs. This highly structured quantitative analysis complements the more flexible analyses previously published and, by uncovering broad trends within a substantial data base, will set the stage for further analyses.

To examine the role of science in HCPs, the National Center for Ecological Analysis and Synthesis (NCEAS) and the American Institute of Biological Sciences (AIBS) initiated a one-year project to analyze HCPs. A set of graduate seminars at eight universities (Florida State University; North Carolina State University; University of California, Berkeley; University of California, Santa Barbara; University of California, Santa Cruz; University of Virginia; University of Washington; and Yale University) were coordinated during the fall of 1997. These seminars comprised a total working group of 119 researchers, including 106 students and 13 faculty members. The group was charged with reviewing current plans to evaluate the extent to which scientific data and methods were used in developing and justifying the agreements. The group was also charged with recommending ways to strengthen the role of science in conservation planning. The group did *not* attempt to evaluate what effects the plans have had on biological systems or species. Because the vast majority of HCPs have been initiated since 1994, it is simply too early to evaluate whether the plans are working. Moreover, our goal was not a vague judgment of the overall quality of each plan or of the plans as a whole. Instead, the group focused on the scientific data and reasoning supporting the plans, paying particular attention to the key issues of take, impact, mitigation, and monitoring. All of the data sheets, plan descriptions, and other detailed results from this effort are available on the NCEAS website: <http://www.nceas.ucsb.edu/projects/hcp/>

This paper is both our synthesis of the data available at this website, and a reader's guide to the website. The scale of the data set is large—89,908 entries were recorded for HCPs (7,246 for the set of 208 plans, 75,094 for species questions pertaining to the 43 focal plans, and 7,568 for plan questions pertaining to the 43 focal plans). Throughout the paper, when discussing data we use the following key: AQ refers to questions applied to all 208 plans, SQ refers to species questions applied to the 43 focal plans, and PQ refers to plan questions applied to the 43 focal plans. The actual questions can be found in Appendix I.

2. METHODS AND RATIONALE FOR DATA COLLECTION AND ANALYSIS

2.1. Obtaining a Sample of HCPs for Descriptive Statistics

As part of our effort, we sought to characterize the largest possible sample of plans in terms of their most basic attributes. Data we attempted to identify for these plans included plan duration and area, basic species information included in the plans, and other factual descriptors of the agreements. Unfortunately, there is no centralized office or collection of HCPs. We therefore took advantage of the joint effort of the two nonprofit organizations, the National Wildlife Federation (NWF) and the Earth Justice Legal Defense Fund (EJLDF), to assemble HCPs in Washington, DC. As of November 1997, they had compiled 208 of the 225 HCPs completed at that time. The questionnaire applied to this sample of HCPs is given as Appendix I-C.

2.2. Detailed Data Collection for 43 Focal Plans

The time and energy required for careful evaluation of both an HCP and the relevant background information precluded a detailed investigation of all plans. We therefore selected 43

focal plans (21% of the all plans available at the time the project began) for detailed analysis. Plans were chosen non-randomly, to span the range of geography, size, duration, methods, and approval dates represented in the entire population of HCPs (Appendix II-B lists these 43 plans).

For the focal plans we performed three types of data collection. The first was accumulating evidence demonstrating the presence or absence of several types of scientific information. For this segment of our analysis, we chose *a priori* to define an "HCP package" as including the HCP itself, the incidental take permit (ITP), implementing agreement (IA), biological opinion, and any associated environmental review documents (EA/EIR/EIS). These documents were consulted for all focal plans for which they were available (some HCPs might lack some of these documents). Information contained in these and any other explicitly referenced documents was considered to be included in the plan. Second, we gathered general data about the HCP setting and the species covered by the associated incidental take permit. Many of these data were found in the documents listed above, but to augment them, corroborate conclusions made in the HCP documents, and provide a comparison to existing scientific knowledge, we completed surveys of relevant literature (which included both articles published in journals and the so-called "gray literature," represented by reports prepared by government agencies and consulting firms). In gathering this information, we considered all reports and publications available at least one year before the date of the HCP's approval as having been available for the HCP preparers. For 32 of the focal plans, we collected species-specific data for all species covered on the incidental take permit. For the other 11, we chose a taxonomically representative subset of the species covered. Finally, we gathered information about the local context and characteristics of the HCPs that included data about plan developers/preparers and the policy or social contexts in which plans were developed. Often, this profile was developed from both anecdotal and formal discussions with USFWS employees, consultants who worked on the development phase, and various stakeholders.

Our goal in analyzing these focal plans was not judgment of the overall quality of each plan, or plans as a whole, but rather a rigorous analysis of a variety of detailed questions about HCPs: What types of data or analysis do HCPs use well? What available information is ignored? Are data unavailable that are crucial to sound planning? Of the many steps in the planning for each species covered in an HCP, which are usually done well and which poorly? Which of the many features of a plan (size, duration, etc.) and of the plan's preparation (who prepared it, was there a scientific advisory committee?) are important in influencing its scientific adequacy? Answering these questions requires "dissecting" each plan—gathering information on its many factors and parts, so that statistical analysis can be used to judge what factors significantly influence the scientific quality of HCPs as a whole and to allow a clear assessment of the adequacy of existing HCPs. To ensure consistency of information gathering across groups, and to put the resulting data into an organized and analyzable form, we developed two separate data questionnaires; one asked for information on the plans themselves, whereas the other focused on species listed in the incidental take permit and the treatment in HCPs of these species (see website). In total, the Plan questionnaire contained 176 questions/subquestions per plan studied, and the Species questionnaire contained 789 questions/subquestions per species per plan (these complete questionnaires are given as Appendices I-A and I-B).

The questions asked in the two questionnaires fall into three categories:

- For both plans and species, many questions seek to detail simple (although not always simple to acquire) factual information about the HCPs, the species, and the preparation process.

Essentially all plan questions are of this type.

- For species, a large number of questions address the details of what scientific data and analyses were used in formulating different steps in the planning process. Most involved a set of four parallel questions, which for a broad array of data categories asked (1) whether information of this type was used in the HCP, (2) the source of the data, (3) the quality of the use of this type of data, and (4) whether any important data of this type were missing from the HCP. In addition, there are questions about the importance of these types of data for application to the species and situation at hand. Together these questions seek to determine what data were used in formulating the HCP, the quality of their use, and their relative importance.
- Finally, both for detailed types of biological information and for larger steps in the HCP analysis process, the species questionnaire asked for judgments of the quality of the analysis.

Because the data included in the plan and species questionnaires form the basis of our results, it is important to describe the approach we took in designing and then analyzing these queries. As a whole, the questions were designed to generate a detailed profile of each HCP, to document the use (or lack thereof) of many different types of scientific tools and data, and to characterize the availability of these tools and data. The questions evolved over the first weeks of the project, as online discussion led to the creation of new questions, the deletion or modification of existing questions, and official "consensus interpretation" of ambiguous questions. We do not presume that these questionnaires are comprehensive, but they were certainly sufficient to generate a large body of data on our 43 sampled HCPs, covering the full spectrum of HCP ingredients.

Three lines of reasoning led us to the final set of questions in each questionnaire. First, we did not feel that it was either scientifically justifiable or most productive to judge the adequacy of entire plans, so we sought to confine our "quality judgments" to much smaller segments of analysis. This approach should better reveal the strengths and weaknesses of HCPs and suggest improvements in the HCP process. Second, the battery of questions is large, both to minimize the danger of missed information and to leave open the door to unexpected findings or issues. Third, because it is difficult to make scientifically defensible judgments about the quality or adequacy of even small pieces of a plan, each question regarding adequacy follows an extensive series of questions about the details of the information and analysis that were used in the plan, that were left out, and that would be needed to improve the analysis. Our goal was to lead ourselves (and others reviewing our results) through a clearly articulated set of steps that would clarify our judgments about importance and adequacy of different types of information. It was impossible to write out a rigid and explicit definition of "adequate" or a ranking score for each question, because we were flexible in our scoring. For example, if an HCP involved only a small amount of land and minimal take, we would score a rather crude assessment of "impact" as adequate simply because it was obvious there was no need to be especially careful for such a negligible activity. In other words, as professional biologists, we asked what level of scientific proof was required for different activities, depending on those activities and their context. All scorings and evaluations were presented to the local university seminar group and thus were subject to internal peer review by up to 20 other biologists. This review was an important part of the process. The graduate students involved included many with masters degrees (about one-third), some with extensive work experience in environmental consulting or as employees of USFWS, and some who had actually helped write HCPs. The biological, statistical, and practical

experience of this large cohort of graduate students compares favorably with those employees of USFWS who actually administer the HCP process.

In sum, our approach of using detailed questionnaires to evaluate HCPs was designed (1) to include unexpected but important information, (2) to allow the dissection of plans so that clear judgments could be made about their merits and faults, and (3) to make transparent the reasons for our judgments of quality. Although inevitably imperfect, our approach allows us to develop a detailed analysis of the limitations and the strengths of HCPs. In particular, it takes the analysis of HCPs away from the realm of unsubstantiated expert opinion and into an empirically based arena where arguments over methods and conclusions can be articulated, debated, and revisited.

2.3. A Framework for Judging the Biological Adequacy of HCPs

To be scientifically credible, HCPs must address a variety of issues for each species covered. Although in theory our data set allows us to address the scientific credibility of HCPs in their entirety, it is more informative to clarify the particular stages in habitat conservation planning where scientific knowledge or analysis may limit the scientific foundation of HCPs. How should the integrated process of HCP planning be dissected, however? Although there is no set of hard-and-fast rules or steps to which all HCPs must conform, the USFWS/NMFS HCP handbook mandates several issues that each HCP must address for species covered in the incidental take permit (USFWS and NMFS, 1996). Our review of HCPs, in combination with these mandated steps, led us to divide the HCP planning and analysis process into five stages:

- Analysis of current *status* of the species
- Analysis of *take* under the planned activities
- Analysis of the biological *impact* of the anticipated take.
- Analysis and planning of *mitigation* for the anticipated take.
- Analysis and planning of *monitoring* activities to follow the future status of the species, the actual take, and the effectiveness of mitigation procedures.

It is important to emphasize that failure to address any one of these stages adequately calls into question the adequacy of planning for a species, even if all other stages are addressed extremely well. For example, an HCP might have excellent data on the current status of a species, have excellent estimates of take and the impact of take on population health, and have a good monitoring plan, but if the proposed mitigation procedures are untested and there are no plans to allow for their review and modification, the plan is not scientifically credible. Similarly, a seemingly reasonable plan can be formulated that has good estimates of everything but the actual effect of the planned take on the population viability of the species. In this case, again, the entire plan is questionable, because there may be no good way to judge the real impact of the planned activities and hence the adequacy of planned mitigation work. These examples illustrate both that the division of plans into five stages is somewhat artificial and that each of these steps must somehow be addressed in an HCP for the whole plan to be a scientifically credible blueprint for balancing potentially damaging actions with potentially beneficial ones.

2.4. Units of Analysis

For the questions we address, two units of analysis are logical: (i) the individual HCP and (ii) the treatment of an individual species within an HCP. Plans are the basic unit in which

HCPs are approved and implemented, and many of the steps or issues in the HCP process are inextricably part of an entire plan's formulation, but species protection is the goal and mandate of the ESA and of the individual plans. Similarly, although plans with many species will be over-represented in a strictly species-by-species analysis, this is to some extent as it should be. We therefore use a combination of approaches; some analyses are done at the plan level and some at the species level. When performing most significance tests for species-level analyses, we either include plan as a factor in the analysis or use a weighting factor that discounts the effect of a species by the number of analyzed species from that plan ($1/(\text{number of species in the plan included in our analysis})$). One factor we do not consider in most of our analyses is the occurrence of the same species in multiple plans; because each plan analyzes different impacts in different places, it seems correct to count each plan-species combination as a separate data point. We also minimized the bias that could arise from making judgments on the basis of a large number of "minor species," when a plan was actually written primarily for just one or two major species. It would be unfair to call the scientific foundation of such a plan weak because it failed to deal with the minor species but did a superb job with the major species. We deal with this possible bias in two ways: (1) by choosing as a subsample only a few species (and always only listed species) from plans with long lists of species to be covered by the Incidental Take Permit and (2) by rating a plan's overall adequacy with respect to monitoring and so forth primarily on the basis of how well it applied to the main species. For example the Washington Plum Creek plan covers four listed species (grizzly bears, gray wolves, marbled murrelets, and northern spotted owls) and 281 non-listed species (some of which were candidate species and may be listed in the future). For this plan, we examined only the four listed species, and, because this plan was really tailored to northern spotted owls, we used the plan's performance with respect to spotted owls as the major issue to be evaluated.

3. CHECKS ON DATA REPRESENTATION AND ACCURACY OF ANALYSIS

With 89,908 entries in our data base and analyses conducted by several different individuals and universities, there was obviously an opportunity for errors to creep into our data. To offset this problem, we enlisted the cooperation of the USFWS and sent them a preliminary draft of the manuscript, the questionnaires, and all of the data. The USFWS then coordinated a review of all of these materials. Importantly, the data were sent to the USFWS regions that had originally approved the HCPs of concern. After a heroic review process, the USFWS suggested changes for 4367 data entries. We made 4328, or 99.1%, of their requested changes. It is important to note the tremendous effort USFWS put into examining our data base, and also to acknowledge that USFWS in no way endorses or takes responsibility for our data or our interpretations of the data. We simply point out that the raw data themselves were reviewed internally by our own research group and externally by USFWS. There still certainly remain errors, but we doubt that the analyses we report would be substantially altered by the errors in the data. For example, observation errors for field counts of animals are often on the order of 10-40%, a magnitude of error we are confident we were well below. All analyses, with one exception, are performed on the corrected data, and the data on the website represent the corrected data. The one exception is our analyses of "school bias," in which we asked whether groups from the participating universities answered questions differently. For that analysis, we used the "uncorrected data," because error rate is one way in which the groups might differ.

For many of the analyses presented below, we use one of the two questions that

summarize the adequacy of each of the five stages of the HCP process (see above). To assess whether they are valid measures of scientific adequacy, we regressed the graded-scale (1-6) measures of adequacy (see Appendix I-B) for each section on seven aggregate variables indicating the knowledge about, and analysis of, various categories of biological information about each species (see website and Appendix I). We used both one-way regressions using just one set of biologically distinct answers to detailed questions (e.g., data on changes in numbers or demography) and multiple regressions using combinations of variables. These multiple regressions usually had much lower sample sizes than did the simpler analyses, due to many combinations of missing values. All analyses were performed on normalized variables. For each of the five stages, some types of information or types of question (e.g., the presence of data versus the type of analysis of the data) had little effect on quality rating, whereas others were extremely good predictors. For each stage, the R^2 values for the single best regression are Status, 0.66; Take, 0.92; Impact, 0.59; Mitigation, 1.0; Monitoring (performed separately for monitoring of take, status, and mitigation), 0.92, 0.91, 0.92. Overall, the results from these analyses show that the summary rankings are well predicted by the details of data and analysis used at each step of the HCP process (see Tables 3 and 4, and Appendix III).

Because of the time and effort needed to find, read, and synthesize the full background data for each of the 43 focal HCPs, each plan was analyzed in depth by only one university. Because the participants at different universities differed in background, and because of the unique cultural differences among our groups (e.g., Yale versus U.C. Berkeley versus N.C. State University), we were concerned to test that the identity of the evaluating university did not substantially influence plan evaluation. Two problems could arise from such differences. One of these is loss of power to detect real differences and effects in the plans due to added noise. The second and more serious problem is systematic biases in the patterns we see among plans. Furthermore, as noted above, we are often interested in analyzing for species-level effects and must therefore account for the correlation in species answers due to plan-level effects.

To check for university biases, we fit a set of mixed linear models to species-level data using SAS PROC MIXED, which allowed us to assess the effects of institution on the adequacy ratings in five major areas (Status, SQ:B43; Take, SQ:C33; Impact, SQ:D47; Mitigation, SQ:E49; and Monitoring, SQ:F80). We used these models to determine whether universities differed with respect to ratings and whether these differences affected the statistical significance of the relationship of the five adequacy ratings to the factors Date, Duration, Multiple Species (yes/no), Taxon, and Area. In the model, university and plan were considered random factors, and Date, Duration, Multiple Species, Taxon, and Area were considered fixed factors (Date, PQ:181; Duration, PQ:178, Plan Species Number (from PQ:11, coded for three levels), Taxon SQ:A3; Area, PQ:182; Existence of Recovery Plan, SQ:A8). The results showed that only for Mitigation effects was the school to school variation a sizeable portion of the residual variation (Table 5). In sum, these tests for university biases suggest that there are generally not strong or consistent differences in the ratings of different universities—certainly nothing of a magnitude that is likely to influence our results or conclusions.

4. A DESCRIPTIVE OVERVIEW OF HCPs

Before beginning our analysis of how science is used in HCPs, we report the general characteristics and diversity of the HCPs in our sample of 208. In particular, we summarize descriptive data about where HCPs were implemented, who developed them, why they were developed, how large an area they address, how long they last, what species they address, and

what approaches to habitat conservation planning are used. Second, we describe these same characteristics for our intensively studied sample of 43 focal HCPs and compare them to the larger set of 208 plans.

4.1. Attributes of Sample of 208 HCPs

More than 70 of the sample of 208 HCPs were coordinated and approved within the Balcones Canyonlands Conservation Planning area in Texas. Because these plans are very similar to one another and may bias general patterns of HCP characteristics, we report two results whenever appropriate: one based on data for all 208 plans and one excluding data for the Balcones Canyonlands plans.

Any nonfederal entity can develop an HCP in support of an incidental take permit application. Most HCPs (82%) were submitted by single private landowners (either corporations or individuals). Just 3% of HCPs were submitted by state and local governments. Fourteen percent were developed for lands under multiple jurisdictions (these could be public, private, or both); an example of a multiple-jurisdiction plan is the Orange County NCCP (see website plan narratives). If the Balcones Canyonlands plans, which were developed for numerous private landowners, are excluded, these proportions change to 72% private, 5% public, and 22% multiple jurisdiction. The areas covered by HCPs can differ dramatically—on an “area basis,” the figures are 14% private, 18% public, and 67% multiple jurisdiction.

HCPs are developed because some action is expected to take threatened or endangered species and thus to have impact, which can be either reversible or irreversible. Reversible impacts include those that could be expected to diminish substantially in 100 years or less; examples include the impacts of timber harvest rotations or livestock grazing. Irreversible impacts are those that have a permanent effect on species or their habitats, such as urbanization or land conversion. Fourteen percent of HCPs will result in reversible impacts and 81% in irreversible impacts. Five percent will have both reversible and irreversible impacts. When Balcones Canyonlands plans are excluded, the proportions shift to 23% having reversible impacts, 69% having irreversible impacts, and 8% having both. Data collected for the 43 focal HCPs allowed a more specific characterization of land uses motivating HCPs. Within this smaller dataset, the primary land use changes were specifically defined, e.g. agriculture, logging, urban development. For each plan, various land uses were ranked according to their importance in motivating that plan; a ranking of 1 identified the land use change that was the primary motivation for the HCP (PQ:42-49). Although plans may be motivated by many different changes in land use, 56% of those we examined in depth (24 of 43) were motivated by construction of buildings; logging came in second at 19% (8 of 43).

We analyzed the duration and size distribution for HCPs using the larger data set of 208 plans. Land areas covered are extraordinarily diverse, spanning six orders of magnitude. The smallest approved plan protects the Florida scrub jay (*Aphelocoma coerulescens*) on just 0.17 ha (0.4 acres). The largest plan to date covers over 660,000 ha (over 1.6 million acres) of forest managed by the state of Washington Department of Natural Resources. Nevertheless, most HCPs are relatively small. The median size is less than 10 ha (24 acres), and 74% of HCPs cover fewer than 100 ha (240 acres). If Balcones Canyonlands HCPs are excluded, the median size increases to about 44 ha (110 acres), and 59% of HCPs cover fewer than 100 ha (250 acres). For simplicity and comparative purposes, HCPs were categorized as small (0-10 ha), medium (>10-1000 ha), or large (>1000 ha). The largest proportion of all HCPs falls in the small size

category (50%). When the Balcones Canyonlands plans are excluded, the largest fraction falls in the medium category (48%). No directional trend over time in the mean size of HCPs is apparent. Regressions with and without Balcones Canyonlands plans of $\log(\text{area})$ of HCPs on year of approval yield slopes not significantly different from zero ($P > 0.14$ and $P > 0.07$, respectively). Some recently approved plans are larger than their predecessors, but other recent plans are smaller, suggesting only that the aerial extent of HCPs has diversified with time.

The length of time over which an HCP is to be implemented is correlated with the duration of the ITP for which the plan was developed. Plan durations are diverse, ranging from seven months for a plan in Travis County, Texas, to 100 years for HCPs implemented by the Murray Pacific Company in Washington. Two plans developed for private properties in Texas are to be maintained in perpetuity. Excluding those two plans, the median duration of HCPs is 10 years, and 60% of HCPs will be maintained for 20 or fewer years. Excluding the Balcones Canyonlands plans, the median duration of HCPs increases to 22.5 years. Over time, the durations of approved HCPs have diversified, but they exhibit no significant directional trend. When Balcones Canyonlands plans are excluded from analysis, a regression of plan durations on approval dates suggests that more recent plans may be longer, but the trend is not statistically significant ($P > 0.15$).

Although no HCPs show directional trends in either duration or area, these two characters are positively correlated with one another (Figure 1). A regression of HCP duration on HCP area yielded a positive relationship in which small HCPs tend to have shorter durations and larger plans longer durations ($P < 0.001$). Such a relationship seems reasonable because a larger planning area may necessitate a longer planning horizon.

The 208 HCPs examined cover 73 threatened and endangered animal species: 22 birds, 13 mammals, 19 reptiles and amphibians, 18 invertebrates, and 1 fish (Table 6). Fifteen species of plants are also covered under HCPs, even though the ESA does not mandate such protection on non-federal lands. The number of HCPs that cover various threatened and endangered taxa are presented in Table 6. The majority of HCPs (143) cover one or more bird species. Mammals and covered by 32 HCPs and amphibians and reptiles by 33.

Because HCPs can address conservation of single species, multiple species, or habitats, the assessment of status, take, impact, and mitigation measures vary accordingly. For single-species plans, they are species specific. Multi-species plans are essentially scaled-up versions of single-species plans. Assessments of status, take, and impact are done for each covered species; mitigation measures may address multiple species simultaneously but are still species-specific. Habitat-based plans represent a distinctly different approach. They are based on the premise that, by protecting the ecological integrity of a natural habitat, one also protects the many species within that habitat (USFWS and NMFS, 1996). Such plans de-emphasize species-specific analyses and mitigation measures, focusing instead on more holistic protection and management of the habitat. Most HCPs (84%) are single-species plans. Multi-species plans make up 12% and habitat-based plans only 4%. Excluding the Balcones Canyonlands plans shifts these proportions to 74% single-species plans, 7% multi-species plans, and 19% habitat-based plans. Habitat-based plans have only been developed since 1993, so their prominence among HCPs is likely to change in the future. Certainly there is increasing interest in assessing the quality of large habitat-based plans because of their larger spatial scale and biological breadth.

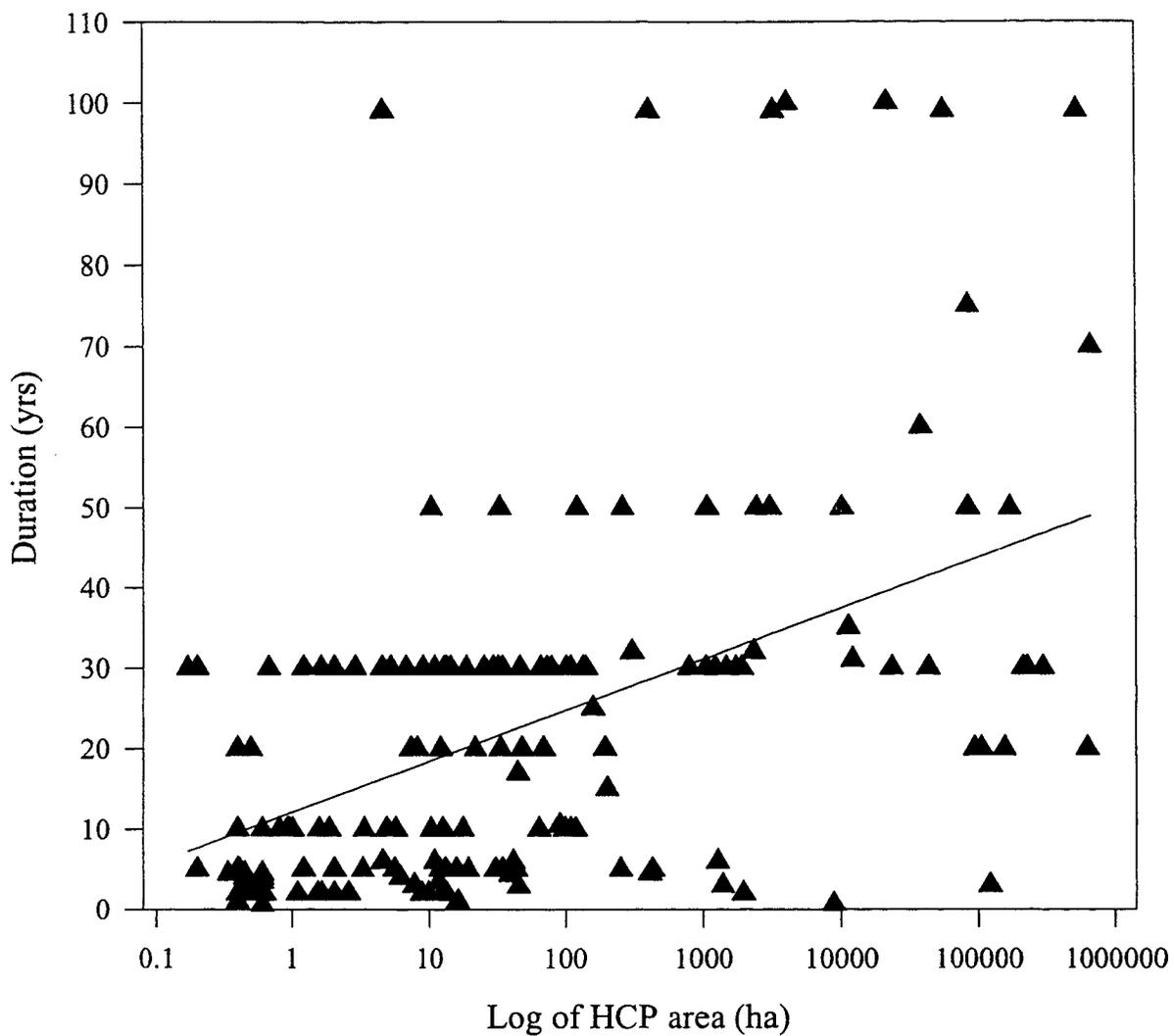


Figure 1. The relation between plan duration (AQ:3) and plan area (AQ:6a). The line shown is the best fit-linear regression, with $R^2=0.27$ and $p<0.01$. (N=192 HCPs)

4.2. Attributes of 43 Focal Plans

The following subsections compare characteristics of the 43 focal plans with those of the larger HCP population. We assert that the focal plans adequately represent the diversity of HCPs, allowing a general evaluation of how science is used in habitat conservation planning.

Time of Approval

When selecting focal HCPs, we biased our sample toward more recent plans. These presumably reflect current approaches and strategies in HCP development and are therefore more pertinent for the evaluation we have undertaken. Ninety percent of the 43 focal plans were approved after 1992, compared with 89% of the whole population of HCPs (PQ:3).

Applicant Types

To sample a sufficient number of plans developed by state and local governments and by multiple jurisdictions, we biased our selection of focal HCPs with respect to this characteristic. Among the focal plans, 71% were developed by private entities, 10% by state or local governments, and 19% for lands under multiple jurisdictions (PQ:65).

Area

We selected focal plans non-randomly with respect to size to avoid sampling bias due to the many small Balcones Canyonlands plans and to achieve more balanced representation of different-sized plans. As a consequence, the proportions categorized as small, medium, and large differ from those observed in the larger HCP sample. Nineteen percent of the plans selected were small, 40% were medium, and 42% were large (PQ:28).

Duration

Plan durations were categorized as short (up to 5 years), medium (> 5 to 20 years), and long (greater than 20 years). Twenty-three percent of the plans selected were of short duration, 20% of medium duration, and 58% of long duration (PQ:4 minus PQ:3).

Species

By selecting only 43 HCPs for intensive analysis, we necessarily reduced the number of different species protected under these plans. Nonetheless, 64 out of a possible 73 different listed species are covered in our focal-plan subsample. Birds, mammals, reptiles and amphibians, fish, and invertebrates were included.

Approach

The focal HCPs were chosen to represent the primary approaches to habitat conservation planning: single-species plans, multispecies plans, and habitat-based plans. Fifty-one percent of the focal HCPs were single-species plans, 21% were multispecies plans, and 29% were habitat based plans. These proportions differ from those for the larger HCP population in that multispecies and habitat-based plans are over-represented. We intentionally sought an overrepresentation of these large multispecies plans because they represent the major impacts in

terms of total area and because there has been a move toward increasingly favoring these types of plans (although small single-species plans continue to play a role) (PQ:7 and PQ:8).

5. THE USE OF AVAILABLE DATA FOR HCP PLANNING

Before evaluating the five key components of HCPs (status, take, impact, mitigation, and monitoring), we first discuss the more general issue of data availability. In particular, we assess what data are altogether lacking, what data are available but not used, and the quality of analysis of available data.

5.1. Data Limitations

To assess data availability during HCP preparation, we first documented the proportion of cases for which we were unable to determine basic information on a species or effects of actions authorized in the HCP on the species. These analyses provide a view of how often scientists lack information on species for basic assessments. Note that we did not restrict our search for this basic information to the HCP or its supporting documents—we did a thorough literature search that covered peer-reviewed publications and the "gray literature." We found that the basic information necessary to make determinations about potential threats to species (SQ:A12-A21), the status of a species or its habitat (SQ:B26-B42), and the type and magnitude of take that will occur (SQ:C19-C28) were unavailable in many cases. For example, we could not determine whether or not there currently exists sufficient habitat to ensure a species' viability for one quarter of the species-plan cases we examined. If we do not know whether or not there is currently enough habitat to sustain a species, it is hard to determine the impacts of future losses or alterations of habitats. Lack of this kind of basic information can severely limit our ability to make correct assessments regarding the effect of proposed developments on a given species. Indeed, for only one-third of the species are there enough data to determine what proportion of the population will be affected by the proposed development. All of the aforementioned data assessments were made for the literature up to one year prior to permit approval.

5.2. Unused, but Available, Information

To determine whether HCP preparers did not use important data that were available, we reviewed all the information we could find that was *not* in the HCP and judged the importance of this information for assessment of status, take, impact, and mitigation strategies (QD responses to SQ:B1-24, C7-18, D7-30 and E7-30). In gathering this information, we considered all reports and publications that were available at least one year prior to the date of the HCP's approval as available for the HCP preparers. The majority of the information we found was either cited in the HCPs or deemed not to be important to the conclusions drawn in the HCP. Thus, our analysis showed that HCP preparers do a good job of finding and citing relevant data; data omissions were judged to be significant only 15-25% of the time (Table 7). However, a few categories of data appear to be under-researched in HCPs. Of particular concern is the omission of information regarding cumulative impacts. For example, in 23% of the cases, we concluded that plans neglected information on cumulative impacts that would have altered the assessment of the impact of take. Data omissions were also potentially serious in the development of mitigation or minimization efforts (Table 7). Of particular note was the omission of information about the amount and quality of habitat with respect to feeding, breeding, and migration—these

are key aspects of habitat that will be central to any mitigation for habitat loss.

5.3. Analysis of Available Data

For each category of species-specific information we reviewed, we evaluated the quality of the analysis and use of any data reported in an HCP (QC responses to SQ:B1-24, C7-18, D7-30, and E7-30). For analyses of status, take and impact, we found that, when data were available, the overall quality of their use was high (Table 8). Data on population sizes and habitat availability were generally used well in HCPs, whereas more detailed data on species or their interactions in the environment were more unevenly applied and stood out for their relatively low scores with respect to data use (Table 8). The most significant finding in this analysis is the poor use of existing data regarding extrinsic factors (such as anticipated human population growth with likely future pressures on the species) and environmental variability for designing mitigation strategies (Table 8). Information about possible catastrophic events and environmental variability is important when mitigation is designed, because such variability can often undermine otherwise effective mitigation.

6. ASSESSMENT OF STATUS, TAKE, AND IMPACT

6.1. Determining the Status of Species

Accurate determination of the status of endangered and threatened species serves to justify procedures outlined in the HCP and provides baseline data to be compared with similar estimates after development has occurred. A fundamental aspect of a species' status is knowledge of the critical threats to that species' viability. As part of our evaluation of HCPs, we identified the primary threats to the 97 species-plan combinations (some species occur in several different plans, so 64 species yield 97 combinations: Figure 2, SQ:A12-23) both at the local scale (within boundaries of the HCP) and at the global scale (over the range of the species). Overall, the most important threat to species is habitat loss, which was cited as primary threat for over 75% of the species, both locally and globally (Figure 2), followed by habitat degradation, habitat fragmentation, and direct human-caused mortality. Other sources of declines for species covered in HCPs include pollution, water diversion and/or damming, interactions with invasive species, and changes in community composition (which affect interactions with food, predator, parasite, and disease species).

A second basic feature of species status is the estimated trend in abundance or numbers of individuals in the populations in question, both within the HCP area (SQ:B30) and globally (SQ:B31). For those species where population trends were known, we compared the proportion of species that were increasing, stable, or declining in numbers within the HCP area and globally. For most of the species, population sizes were known to be declining in the HCP area (57% total; 53% declining at a moderate rate and 4% declining so rapidly that extinction is possible within the next 20 years). An intermediate number of species were known to be stable (40%), and, for a small fraction of the species included in HCPs, the populations were increasing (2%) (Figure 3). Changes in populations for these species at a global scale are similar to those observed within HCP lands. Populations range-wide are declining for 74% of the species, stable for 21%, and increasing for only 5% of the species in our sample.

The status of populations of endangered species is highly dependent on the maintenance

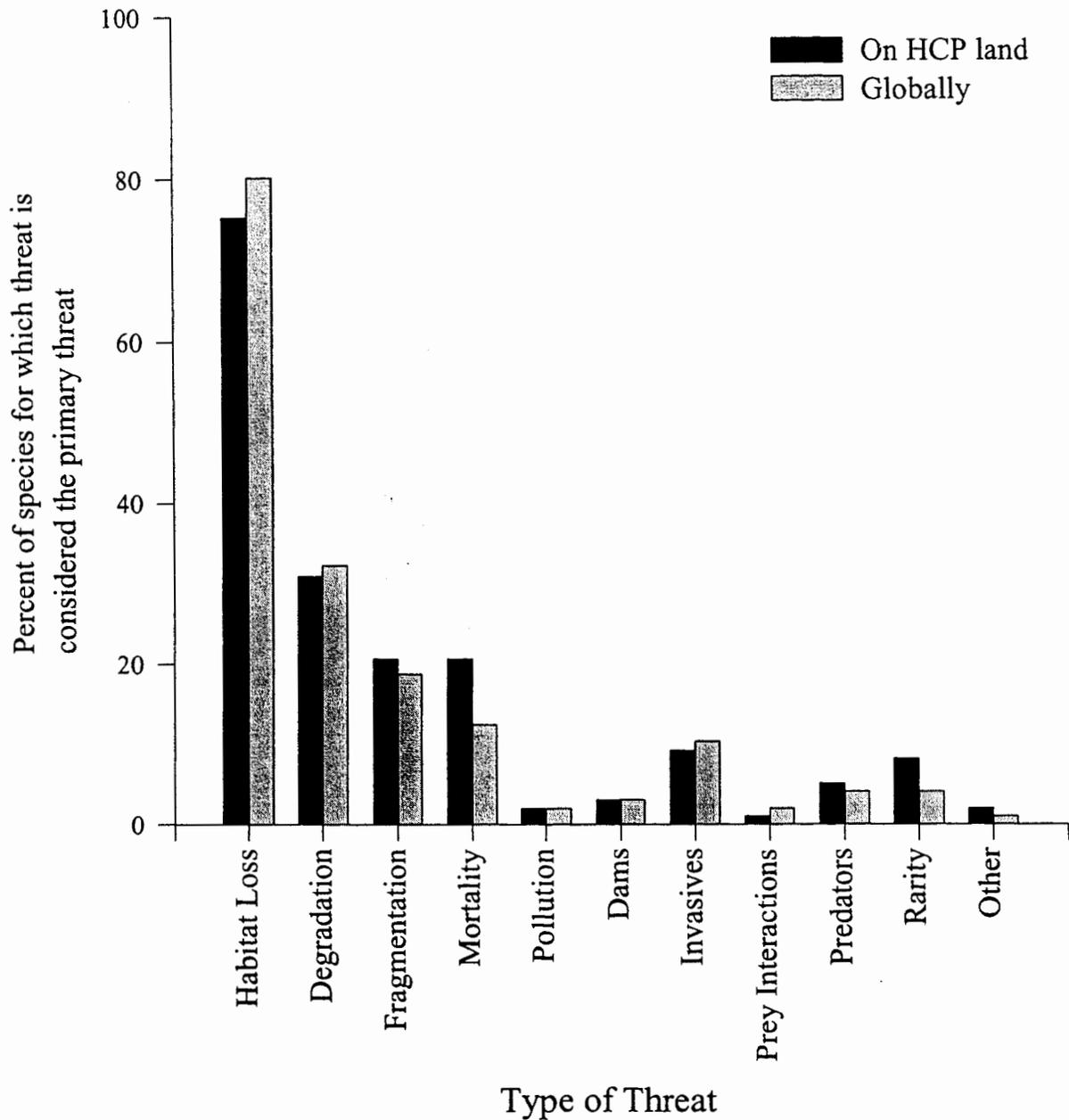


Figure 2. Major threats, at local and global scales, to species included in HCPs. For each threat category, columns indicate the number of times each type of threat was listed as most important (score of 1 for SQ:A12-22). Because multiple threats can be considered to be of major importance to any one species, the totals sum to greater than 100%. (N=97 species-plan combinations)

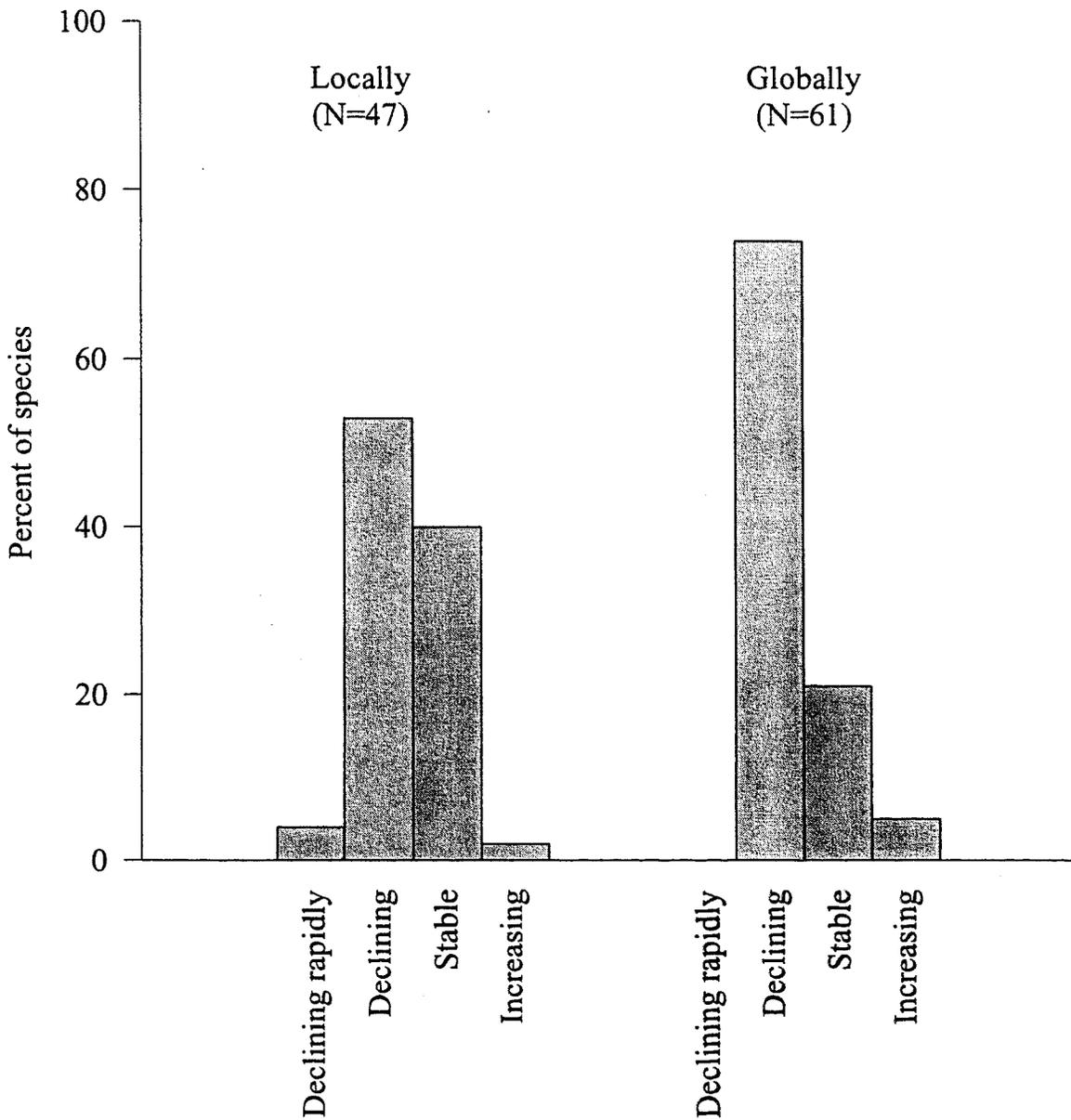


Figure 3. Local and global population trends (SQ:B30, B31) for species included in HCPs. For cases where population trends were known, we asked whether the impacted population was declining rapidly (with high probability of extinction within 20 years), declining, stable, or increasing in numbers. Sample sizes shown in parentheses.

of sufficient adequate habitat for the species. Trends in habitat availability (Table 9) are similar to those observed for populations: habitat availability is declining in the local HCP area for 63% and is stable for 37% of the species in the HCPs we reviewed. Habitat quantity is not increasing for any of the species we evaluated (Table 9; SQ:B34). Globally, habitat is declining for 88% of the species and stable for 12% and is not increasing for any of the species in our HCP sample (SQ:B35). The decline in habitat availability at larger scales underscores the importance of populations within HCP areas for overall viability of endangered species (Bean and Wilcove, 1997).

Most of the habitat remaining for species contained in the HCPs is of "medium" quality (51% of habitat in HCP area and 70% of habitat globally; Table 9; SQ:B28-29). We defined medium-quality habitat as that able to support self-sustaining populations but not able to produce an excess of individuals (i.e., not able to serve as consistent "source" populations). Habitat quality within the HCP area was generally rated of poorer quality than global habitat quality for the species in our HCP sample. In particular, 40% of the remaining habitat in HCP areas was deemed to be "poor" quality (i.e., not able to support isolated populations through time), whereas only 15% of habitat was determined to be poor globally.

6.2. Nature and Characterization of Take

Activities permitted in HCPs can result directly or indirectly in death of individuals of an endangered species, commonly referred to as "take" (ESA, 1982). Take also includes any type of harassment or harm to species and destruction or modification of a species' habitat (USFWS, 1981). Take was predicted to occur for the majority of the species-plan combinations we reviewed (73%; SQ:C25). For the remaining species either take was not predicted to occur as a result of HCP activities or not enough information was provided in the HCP to reveal whether take would occur. In cases where it was explicitly stated in the HCP that take would occur if the permit were approved, the quantification of take varied tremendously among plans (SQ:C27). Predicted take, in terms of the estimated number of individuals that will be displaced or killed, is poorly estimated for most of the species in our focal HCPs—in almost half of the cases (49%) no data in the HCP or associated documents addressed the level of take likely to result from the proposed development.

For each species evaluated in our 43 focal plans, we also asked what percentage of the population on the HCP land would be taken as a result of the proposed activities (SQ:C26). In a large proportion of the cases (42%), the HCPs do not explicitly estimate this figure. Among the plans in which take was estimated, the expected level of take was most often "all or nothing" (Figure 4). In the majority of cases either a small percentage (1% or less) or all (100%) of the population on the HCP land would be taken as a result of the proposed activities; few predicted intermediate take levels.

Our data suggest that little emphasis is currently placed on accurately estimating the consequences of proposed activities for the species or population in the HCP area. A high percentage of the species listed on incidental take permits have no quantitative estimate of take, either as the total number of individuals lost or the percentage of the affected population taken. In the cases where predicted take is quantified, our data suggest that HCPs fall into two categories: the plans either minimize take (resulting in many cases with low take estimates) or they allow for removal of 100% of the affected population.

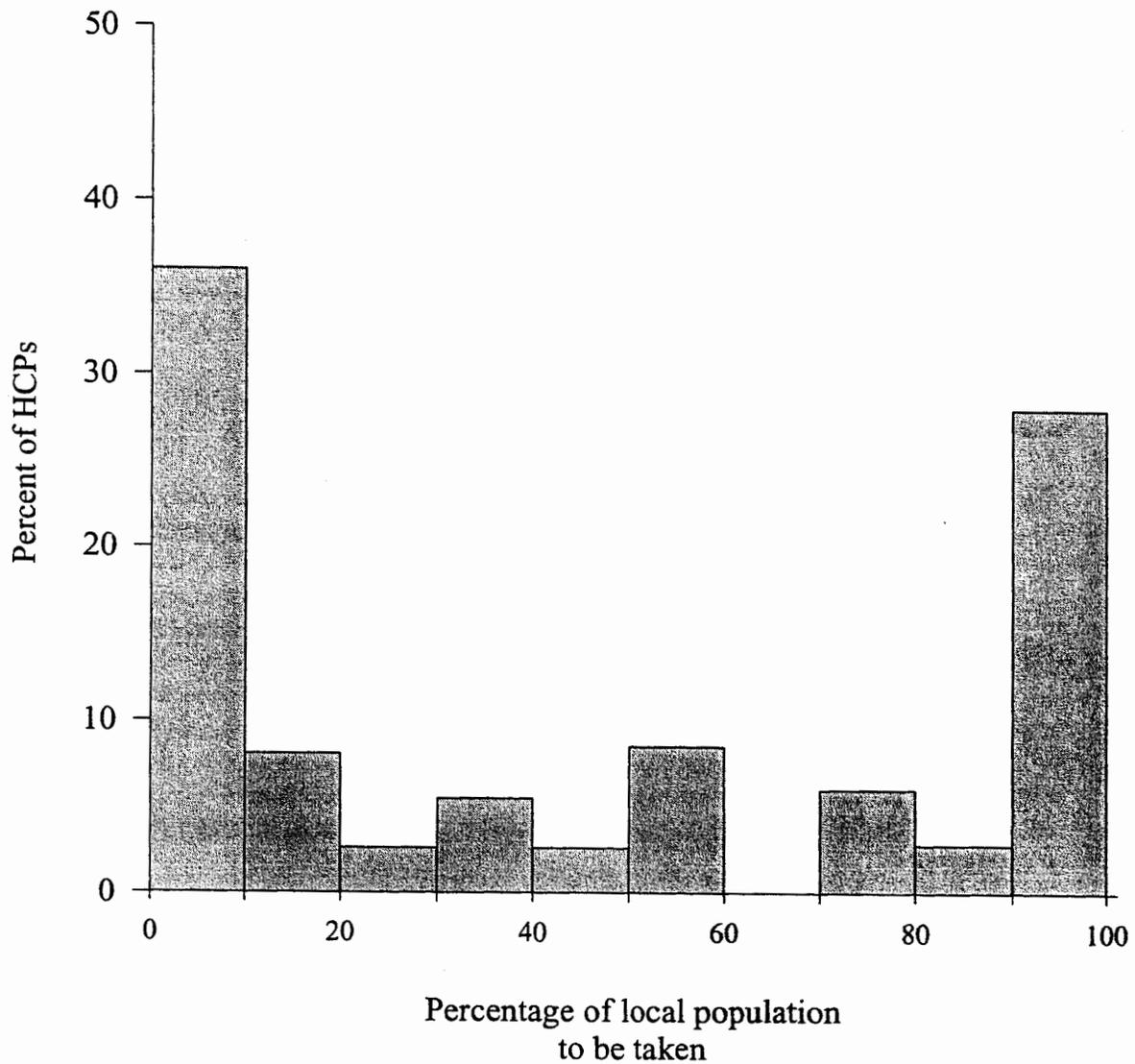


Figure 4. Percent of impacted local populations that will be taken as a result of the activities proposed in the HCP (SQ:C26). In the cases where the levels of take were estimated in the HCPs, either very few individuals from the impacted population are expected to be taken or the entire population is taken.

6.3. Assessing Impacts of Development on Endangered Species

Impacts on populations in HCPs can be defined as the combined effects of take and habitat modification on the viability of endangered species. Because of its complex nature, quantifying impact is difficult and requires not only accurate estimates of take but also an understanding of the population dynamics, species requirements, and demographic thresholds that apply in each individual case; these data are often necessary to full understanding of the biological consequences of proposed levels activities. We reviewed the types of threats that were considered in HCPs (QE responses to SQ:D32-45) and compared those to the categories of impact we deemed important for the species given our knowledge of their biology and status (QG responses to SQ:D32-44). We ranked all categories for each individual species-plan combination on a four point scale ranging from 1 (not an important impact) through 4 (a serious impact that will significantly affect the population). We ranked area of habitat loss, percent habitat lost, direct mortality, habitat fragmentation, cumulative impacts, and altered interspecific interactions as the six most significant effects for the species in our sample (Table 10). With the exception of cumulative impacts, we generally found high concordance between our rankings and the number of times that the same impact was considered in the HCPs we reviewed.

7. MITIGATION AND MONITORING

7.1. Mitigation in Habitat Conservation Plans

A crucial feature of HCPs is the choice of mitigation procedures aimed at minimizing the threats to species included in the incidental take permit (see, e.g., Bingham and Noon, 1997). In fact, this minimization of impact is required by the ESA (1982) and clearly outlined in the HCP Handbook (USFWS and NMFS, 1996). If the appropriate mitigation is chosen and implemented in a timely fashion, the impact to the species in question can be minimized to the maximum extent practicable, thus justifying the issuance of an incidental take permit. However, many scientists have criticized the mitigation plans proposed in HCPs because they have often seemed arbitrary, based more on political and economic constraints than empirical data on the species' ecology, life history, and specific requirements (Beatley, 1994; Bingham and Noon, 1997; Buchanan et al., 1997). Given the importance of mitigation for the success of HCPs, we focused our analyses on the scientific basis of mitigation measures proposed. HCPs that include more than one endangered species must mitigate for impact to all species included in the take permit. Therefore, because of the species- and plan-specific nature of mitigation measures, we considered each species within a plan as our unit for analysis.

7.2. Types of Mitigation Most Commonly Used

We treated minimization of impacts (e.g., modifying construction and/or development at the site to minimize changes to the species or its environment) and avoidance of impact (e.g., working during the non-breeding or inactive season) as categories of mitigation. Minimization and avoidance were by far the most common mitigation measures proposed (Figure 5; QH responses to SQ:E32-E42). Avoidance was proposed for 74% of species for which permits were issued, and minimization of impact at site of development was proposed for 83% of species). Most mitigation efforts for a specific endangered species involve a combination of procedures. Thus, many of the less common mitigation measures (such as land acquisition, translocation, habitat restoration, etc.) are used in combination with strategies for minimization and avoidance

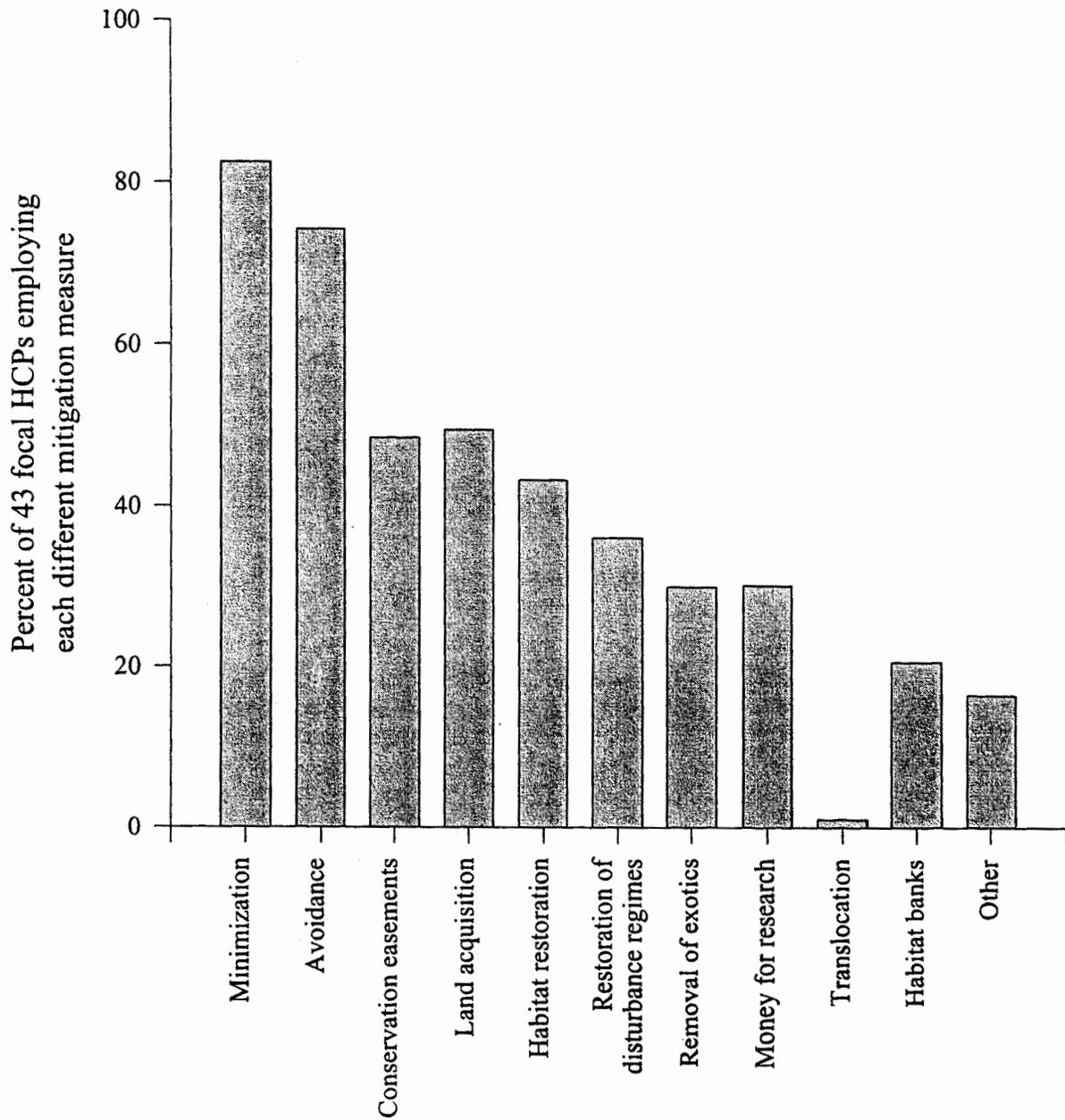


Figure 5. Frequency of specific mitigation measures proposed for all species in the 43 focal HCPs we examined (SQ:E32-42 QH). Minimization (defined as any measure at the site of development that minimizes the impact on the species while still carrying out the proposed activities) and avoidance are the most common forms of mitigation.

of impact on the threatened species. The high reliance on avoidance and minimization is not surprising, as these are usually the easiest and least costly procedures to implement.

7.3. Quality of Data Used in Determining Specific Mitigation Measures

The quality of data underlying particular mitigation measures proposed for each species was evaluated on a 4-point scale (a continuous quality index from 0, representing "no data" used to support the chosen mitigation procedure and its reliability, to 3, representing cases where data amply document that the proposed mitigation procedure is likely to be effective; QJ responses to SQ:E32-E42). On average, the quality of data used to justify mitigation measures was relatively low (Figure 6); that is, all mitigation procedures were based on data ranked as 2 or below in our quality index (indicating that the data are, at most, moderately understood and reliable). The mitigation measures based on the highest data quality are conservation easements, land acquisition, avoidance, and minimization. Other measures such as translocation often lack data demonstrating the feasibility of the proposed actions. In general, HCPs seem to rely more on mitigation measures with higher quality scores and less on those with low scores (QI responses to SQ:E32-E42). However, there are some exceptions; for example, when habitat banks (payment of money into an account, which is then to be used to purchase land that is supposedly ideal habitat for the species threatened by the proposed activities) are used, they tend to be a major component of mitigation programs, yet this mitigation approach has one of the lowest scores on our data quality scale (Figure 6). Given the generally low quality of data underlying many mitigation plans in HCPs, their success is not assured and, if implemented as proposed, may be very close to a "guess" in terms of curbing the impacts on the species.

7.4. How Well Mitigation Plans Address Threats to Endangered Species

Judging the actual success of mitigation procedures would require long-term information on the success of HCPs. Because very few plans have been in place for more than eight years, this is not an option. Hence we must rely on current indicators that mitigation measures are likely to be successful. For each of the species in our sample, we estimated the likelihood of success by answering two questions. First, we asked how often mitigation measures actually addressed the primary threat to the species in question. Second, we asked to what extent the proposed mitigation measures are likely to reduce the impacts of the primary threats. Whereas the USFWS is required to adopt mitigation and minimization measures that protect a species to the maximum extent practicable, our focus was more on whether scientific evidence was presented to substantiate that the best possible mitigation was being adopted.

We found that, for the great majority of the species we examined, the mitigation procedures addressed the primary threat to the species' continued existence (85%; SQ:E44). However, the overall adequacy with which proposed measures addressed the primary threats varied tremendously among species (Table 11; SQ:E45). Overall, we found that for only 57% of the species in the sample did mitigation measures proposed in the HCP address the primary threat to the species to a degree considered "sufficient" or better. In other words, although HCPs most often identify the primary threat to the affected species, only a little more than half of the time do mitigation plans adequately address that threat.

7.5. Implementation of Mitigation Plans

An important determinant of the success of mitigation is the adequate implementation of

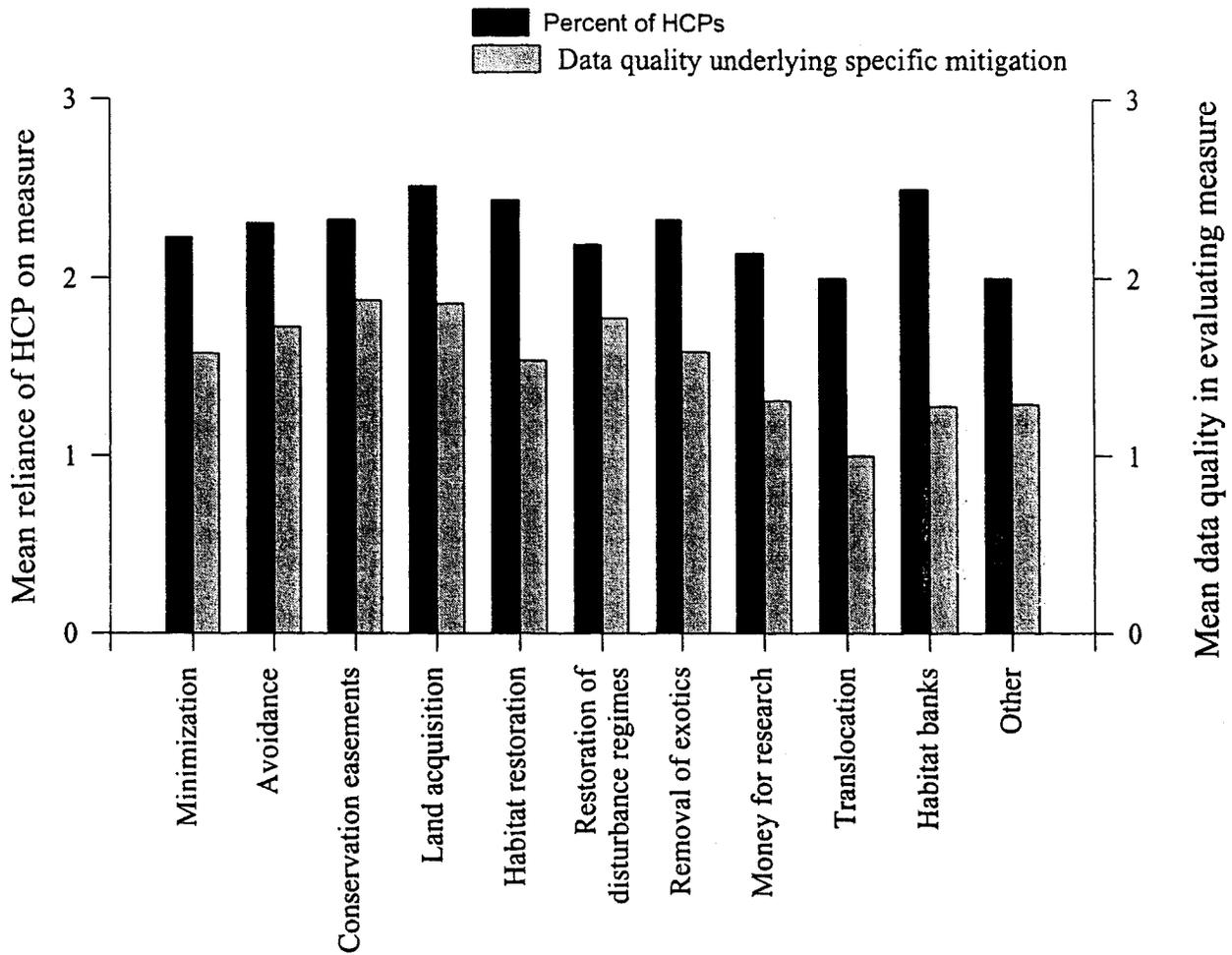


Figure 6. Data quality underlying the choice of proposed mitigation (SQ:E32-42 QJ) and reliance of HCPs upon those same mitigation measures (SQ:E32-42 QI). The quality of data underlying choice of mitigation for each species was rated on a 4 point scale ranging from 0 (no data to support the use of that measure and its reliability) to 3 (very good data, with mitigation known to work). The reliance of the HCP on these mitigation activities was also evaluated on a 4 point scale, ranging from 0 (no reliance on mitigation) to 3 (high reliance - this is one of the major mitigation measures used for the species). Bars represent the mean scores across all species examined.

the proposed measures. For maximum success rates of mitigation plans, it is important that the procedures be implemented in a timely fashion and preferably before the population of an endangered species is severely affected by activities proposed in the HCP. We examined two factors that affect the implementation of mitigation plans: funding for the measures and the timing of mitigation efforts relative to "take" of the impacted species.

Mitigation can be one of the most expensive steps in the development and execution of an HCP. Thus, it is important to determine the cost of the proposed measures, the source of funding for implementing mitigation, and the time period over which these funds are available. Under law, the plan for funding all expected mitigation measures should be outlined in the HCP; ideally the source of those funds should be determined *a priori* and not as the impact occurs in the course of development (we refer to the latter as a "pay as you go" funding program). We found that HCPs nearly always met these basic expectations: 98% of the HCPs outlined *a priori* the funding sources for the mitigation proposed (PQ:124), but only 77% had significant funds set aside to pay for mitigation at the onset of the HCP (PQ:125).

Another critical aspect of mitigation is the timing of proposed measures relative to impact. It is important that mitigation measures are started at the time of take or preferably before any take occurs, thus increasing the probability that unsuccessful mitigation procedures can be detected and corrected. In contrast, if most take occurs before mitigation measures are put into effect, chances of adaptively improving on failed mitigation efforts are reduced. We found that take occurred before mitigation in a substantial number of cases (23% of the species examined; PQ:126).

7.6. The Clarity and Effectiveness of Monitoring Programs

The first question to ask about monitoring is simply whether or not a clear monitoring program was outlined in the plan. We focused only on effectiveness monitoring, as opposed to compliance monitoring (see Table 1). An answer of "no" to this question does not necessarily mean that no monitoring is going on for the pertinent species, but rather that the text of the plan does not provide sufficient information or sufficiently explicit information to document that indeed a scientific monitoring program was part of the plan. Of course, a "no" could also mean that there was absolutely no monitoring whatsoever. For only 22 of the 43 plans was there a clear description of a monitoring program (PQ:60). The next obvious question concerns the effectiveness of those 22 clear monitoring programs we identified—in other words is the monitoring program designed in such a way that it would allow the success of the HCP to be evaluated? For this question the attributes of monitoring required for "evaluation of success" depended on the particular plan and the threats being mitigated, and they could involve factors such as number and location of sample sites, frequency of sampling, and nature of data recorded. Again, a "no" does not imply that monitoring in the field is necessarily insufficient, only that the information presented in the plan and associated documents did not provide any confidence that the monitoring could evaluate success. Under this interpretation, only 7 out of 43 plans had clear monitoring programs that were sufficient for evaluating success (PQ:167). Because our criteria for answering "yes" to the questions about clear and sufficient monitoring relied on what was actually included in the documents, the reality may not be as gloomy as the numbers above suggest. If the monitoring programs were consistently a part of all HCPs, then HCPs on average would be better, and the monitoring programs themselves would be more likely to be scientifically supported because of their role in planning. We delved deeper into the data to determine exactly what was missing with respect to questions about particular species and

whether any class of plans seemed to stand out as having better than average treatment of monitoring.

Monitoring can have more specific goals than evaluating a plan's success. For example, monitoring could be implemented to estimate take (SQ:F5) or population status (SQ:F31) or to evaluate mitigation success (SQ:F57). Our more refined analysis of monitoring according to take, status, and mitigation echoes the earlier conclusion about generally poor monitoring. In particular, when broken up into the components of "take, status, and impact of mitigation," monitoring was found to be adequate for any component in 65% of the plans at most (Figure 7).

Adaptive management and monitoring are clearly interconnected because adaptive management requires monitoring data with which to evaluate the success of alternative management strategies. Although most plans did not include provisions for adaptive management, those that did were also significantly more likely to include clear monitoring plans (cross analysis of PQ:60 and PQ:61). In particular, 88% of the plans with provisions for adaptive management had clear monitoring plans, whereas less than 30% of the remainder had clear monitoring plans ($\chi^2 = 14.93$, $P = 0.001$).

Many more detailed questions could be asked about monitoring, but so few plans were judged to include clear or sufficient monitoring programs, that sample sizes are small. Moreover, the major results are clear with the most straightforward analyses:

1. Barely 50% of the plans contain clear monitoring programs, and they rarely include monitoring programs that are both clear and sufficient for evaluation of a plan's success.
2. The provision of adaptive management in plans was often associated with clear monitoring programs.

Monitoring should be a key component of an HCP because there is no way to evaluate the performance of an HCP without adequate monitoring. Our data compellingly show that monitoring programs are often either poorly described or nonexistent within the HCPs themselves and their associated documents. It might be argued that this lack of description does not matter as long as sufficient monitoring is implemented "on the ground" in the real world, but if the HCPs fail to spell out the details of monitoring programs, the adequacy of monitoring cannot be scientifically evaluated.

8. GENERAL PATTERNS AND FACTORS SHAPING SCIENCE IN HCPS

Above we have presented analyses of each of five stages of HCP planning (status, take, impact, mitigation, and monitoring). Here, we investigate the interactions between stages of the HCP process and test for patterns and principles that connect and synthesize the different aspects of the HCP planning process. In particular, we focus on the cumulative effects for HCP adequacy of several factors (e.g., differences between single-species and multiple-species HCPs) that are likely to indicate trends in future HCP science. In this section, we have for the most part used species as the sampling unit and used as dependent variables answers to questions regarding the overall quality of each stage of analysis (SQ:B42-43, C32-33, D46-47, E48-49, F79-80). We first present results showing overall patterns in adequacy and then discuss in more detail the

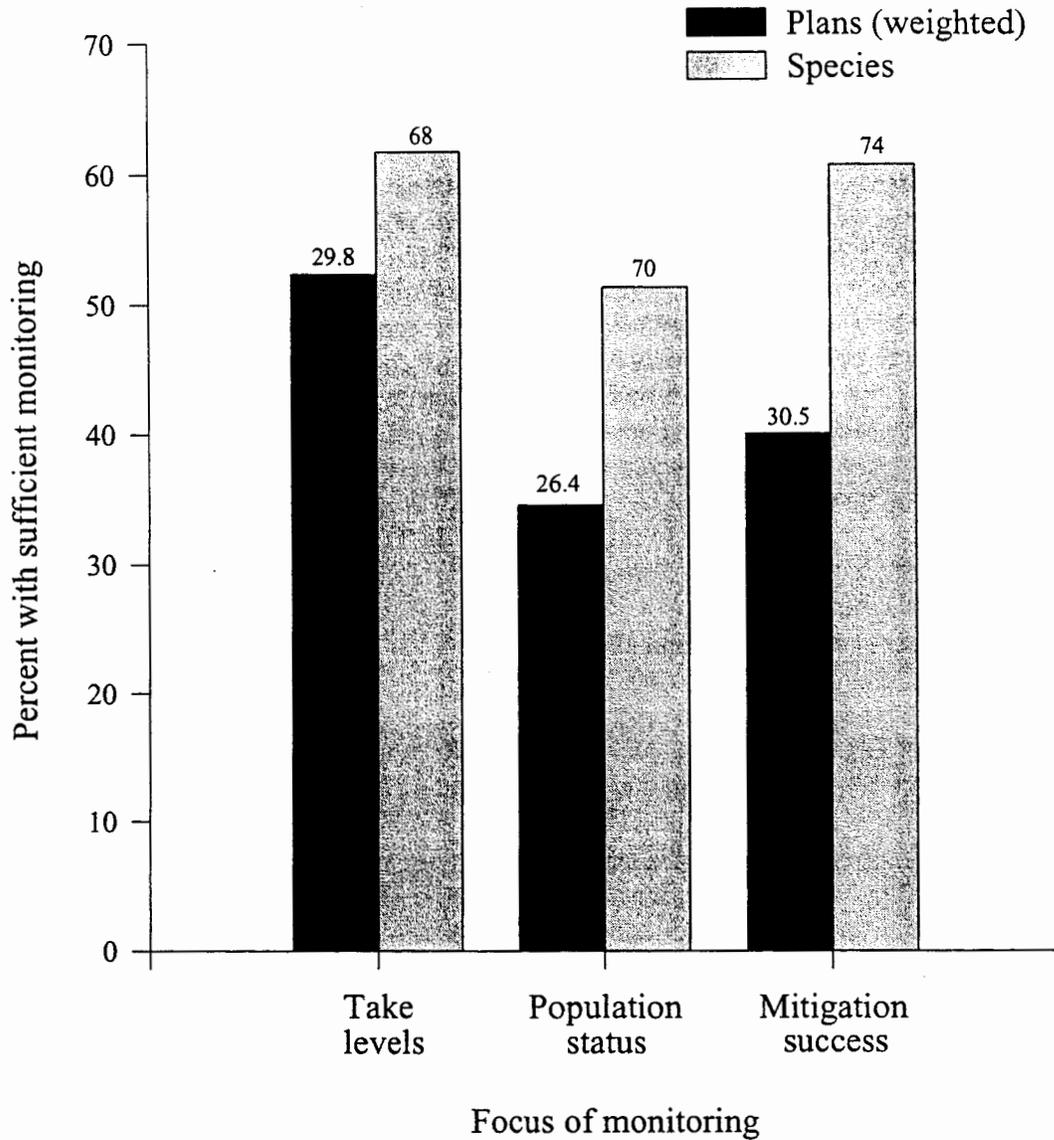


Figure 7. The percentage of monitoring programs deemed adequate with respect to their evaluations of take, status, and mitigation. The analysis was done in two different ways: For the plan-weighted analysis, each species in the plan is weighted by $1/(\#spp. \text{ in the plan})$. For the species analysis, each species is treated as a separate and equally weighted unit regardless of how many other species might be subject to monitoring in the same plan. Sample sizes shown above each bar; fractional sample sizes are possible for plans because of the weighting factor.

importance of different aspects of species biology and plan characteristics for the scientific rigor of HCPs.

8.1. Multivariate Analyses of "Adequacy" Rankings and Correlations with Attributes of Plans

In general, the earlier stages in HCP planning are the best documented and best analyzed (Figure 8). In particular, species status is often well known and adequately analyzed, whereas the progressive analyses needed to assess take and impact are more poorly done or lacking; inadequate assessment of impact is especially common. We next consider what factors may explain the range of adequacy seen across different HCPs and different stages of analysis. Factors that we considered in our analyses were those that seemed most likely to influence the quality of HCP analysis, plus those that may indicate whether changes in HCP formulation will have desirable results. For example, both multispecies and large-area HCPs have been advocated, and thus we asked whether the area covered by an HCP or the number of species covered influenced the quality of biological analyses in HCPs. In particular, we tested for the effects of the following seven variables:

- Area covered by the Incidental Take Permit (PQ:28)
- Plan duration (PQ:4 minus PQ:3)
- Existence of an approved recovery plan (SQ:A8)
- Single-species vs. Multispecies Plan (PQ:7)
- Habitat-based vs. Species-based Plan (PQ:8)
- Taxon (SQ:A2)
- Date of permit (PQ:A3, categorized as Early [1983-1994] or Recent [1995-1997])

To test for effects of these variables on each of the five HCP planning steps, we performed a series of MANOVAs using standardized transformations of all variables. We first performed separate, one-way MANOVAs using each of the above variables, with the five ratings of analysis quality as dependent variables (SQ:B43, C33, D47, E49, F80). Next, we performed two multiway MANOVAs. The first used all seven independent variables; the second included only the five independent variables with one or more significant or near-significant ($P < 0.20$) effects in the first analysis. We used this combination of one-way and multiway analyses both because missing values considerably reduced the sample size of tests using all variables and because, without large sample sizes, multiway MANOVAs can provide only weak tests for effects. Finally, we repeated this entire set of analyses using weightings to account for unequal numbers of species per plan (weighting was by: $1/(\text{number of species in plan})$). Table 12 presents the overall results from these tests. In addition to these overall analyses, we also conducted a variety of other tests and comparisons to elucidate the effects of each factor on HCP quality. Below, we separately discuss HCP adequacy in light of each of these causal factors.

8.2. Correlations Between Scientific Quality and Area or Duration of Plans

The promotion of large-scale HCPs incorporating "ecosystem management" by Secretary of the Interior Bruce Babbitt and the USFWS is viewed by many biologists as a positive trend (Noss et al., 1997). In addition, an increasing number of large-scale HCPs are region-wide programs dealing with single focal species. Along with promulgation of these very large-scale HCPs, there is also an effort to expedite the development and approval of the smallest HCPs; the

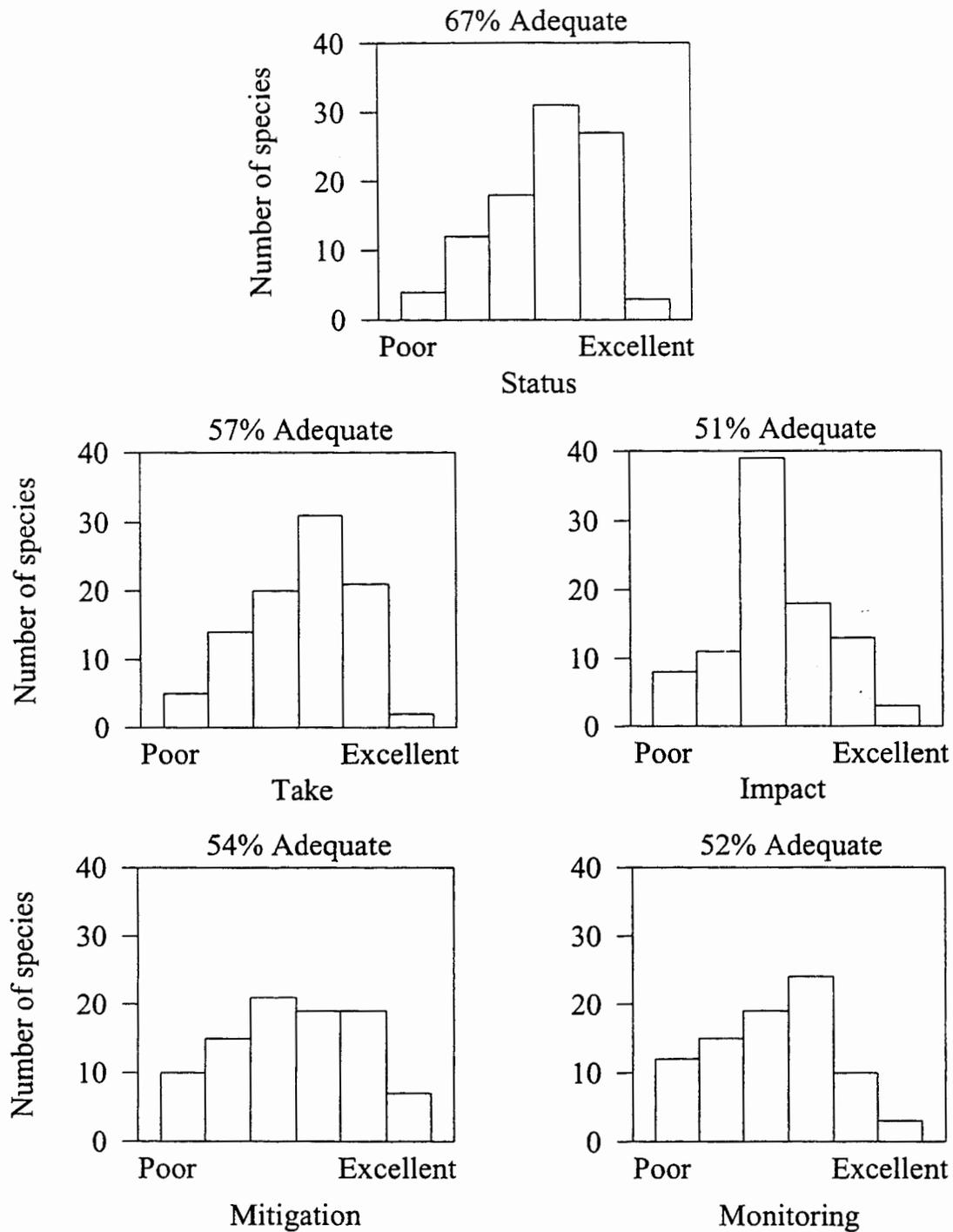


Figure 8. Quality of analysis and data at the five stages of HCP analysis: status (SQ: B43), take (SQ:C33), impact (SQ:D47), mitigation (SQ:E49), and monitoring (SQ:F80). Histograms show the number of species with analysis falling into each of six quality categories ranging from poor to excellent. Above each histogram is the percentage of species for which plans were scored as "adequate" as opposed to "not adequate" by a separate, binary ranking for that step of HCP analysis (SQ:B42, C32, D46, E48, F79).

HCP Handbook (FWS and NMFS, 1996) suggests both (1) that USFWS and NMFS encourage state and local governments and private landowners to undertake regional HCPs and (2) that “low effect” HCPs will be expedited and simplified as much as possible. “Low effect” HCPs are usually of small area and are defined as having minor or negligible effects on listed or candidate species and on other environmental resources. There has been a great proliferation of small HCPs, especially HCPs concerning the golden-cheeked warbler in Travis County, Texas, which account for 36% of all currently approved plans.

Our univariate analyses of overall adequacy provide some evidence that the area covered by a plan is related to four aspects of species-based planning—status, impact, mitigation, and monitoring (Figure 9) — but the lack of significant results from multiway MANOVAs suggests that these results are weak (Table 12). Looking toward the future, we cautiously share the general view that larger scale HCPs should be encouraged, but past HCPs lend no evidence that the largest HCPs will necessarily be “better” scientifically.

Among our 43 sample HCPs, none permitted before 1995 exceeded 30 years duration; since 1995, a number of plans have been signed whose duration exceeds 50 years. These increases in plan duration have important implications for land-use planning by the permittee and for the likelihood of plan success from a biological standpoint. Longer plans may be advantageous for permit holders because they relieve the threat of changes in regulations governing land use. Likewise, plans of longer duration may be advantageous to species if they result in more careful research, more flexibility in take activities, or greater protection or enhancement of habitat. On the other hand, a 100-year HCP that lacks provisions for adjustments in land use practices in the face of declines in focal species could result in severe biological losses with no regulatory means to avoid them.

Our MANOVA results suggest that HCP duration had contrasting effects on the three stages of analysis—the analyses of status, take, and monitoring (Table 12). For example, plans of longer durations were characterized by higher quality status assessments, but lower quality take assessments. These results indicate that the effects of plan duration are complex — neither consistently increasing nor decreasing the quality of science in support of the assessments.

8.3. The Existence of Recovery Plans and Scientific Adequacy

Under the Endangered Species Act (ESA), the federal government is charged with drafting recovery plans for listed species. The development of these plans entails the collection and collation of detailed information related to the abundance, distribution, habitat needs, and life history of a species, the identification of primary threats to the species, and formulation of management prescriptions that will result in the de-listing of the species. Although, for a variety of reasons, recovery plans have not been established for most listed species (Tear et al., 1993), it seems clear that recovery plans ought to provide much of the information and management context needed for the formulation of good HCPs. In particular, it has been argued that recovery plans can provide a global context for activities proposed under an HCP, particularly through assignment of critical habitat needed for species recovery (USFWS and NMFS, 1996; National Audubon Society, 1997).

Of the 97 treatments of species in our sample of HCPs, 59 had recovery plans established prior to the development of the respective HCPs. In some, the text describing these attributes of

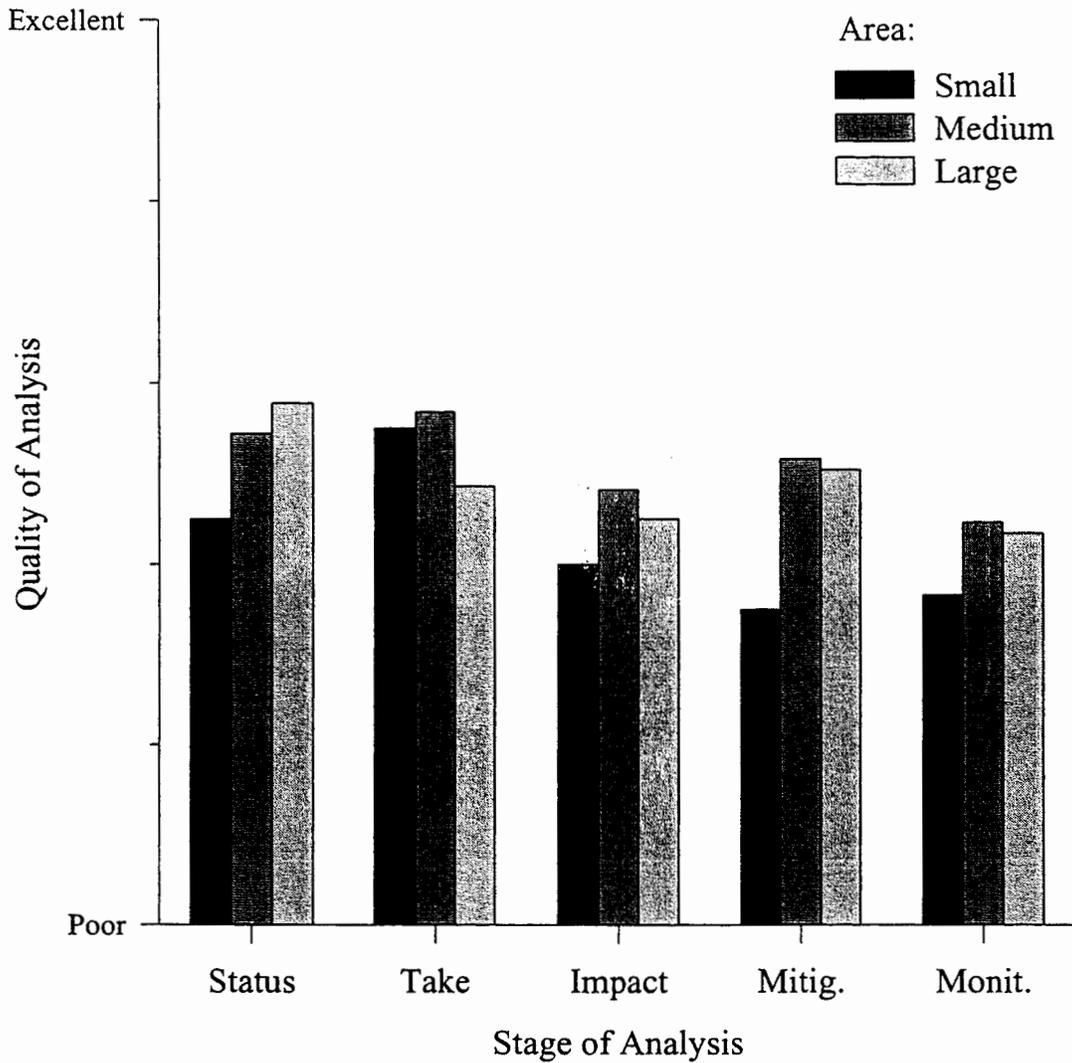


Figure 9. The effect of HCP area (PQ:28) on the quality of analysis and data at the five stages of HCP analysis (SQ:B42, C32, D46, E48, F79). In general, the results suggest that HCPs covering small areas (0-10 ha) are less likely to analyze status, mitigation, and monitoring adequately, whereas those covering large areas (>1000 ha) do a poorer job of analyzing take.

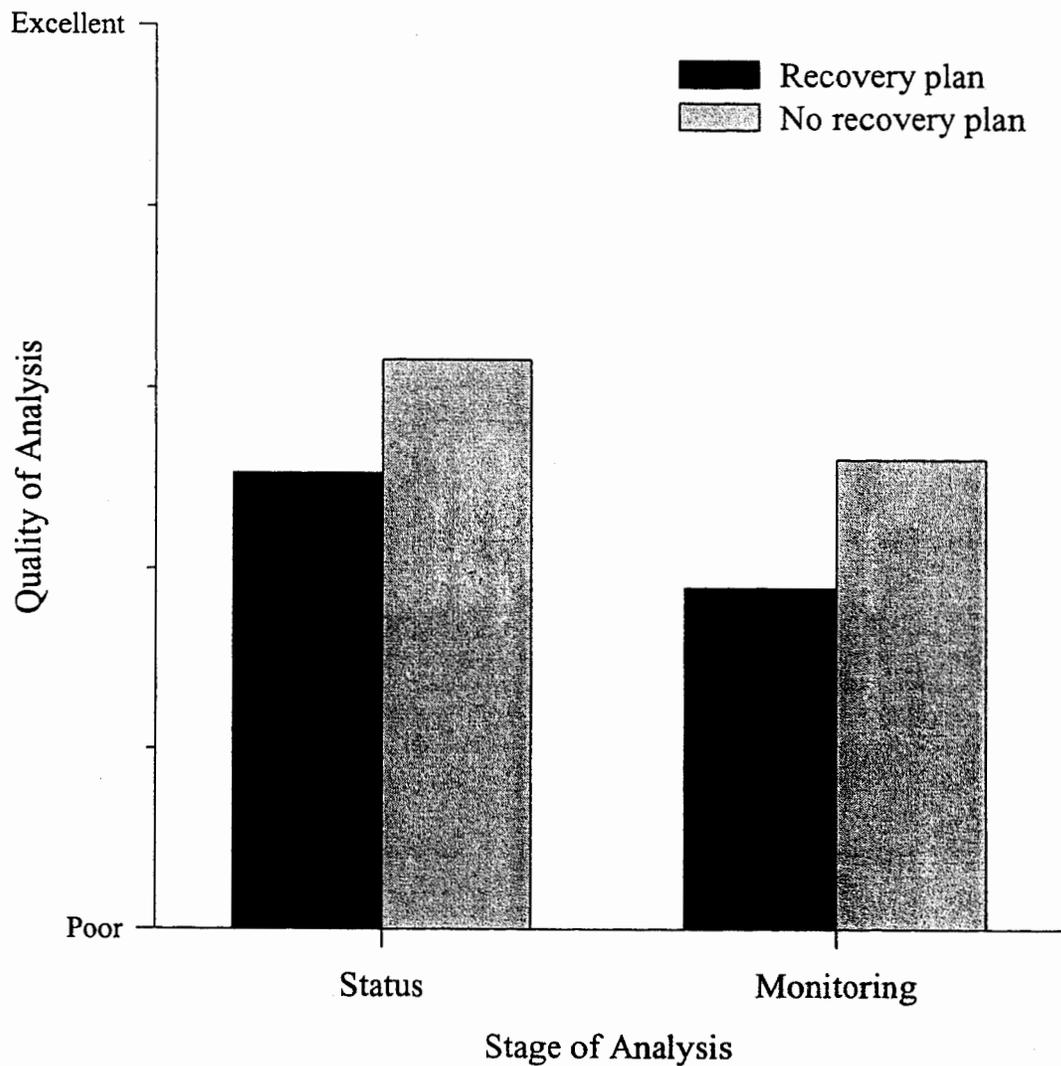


Figure 10. The effect of the existence of a recovery plan (SQ:A8) on the quality of analysis and data at several stages of HCP analysis (SQ:B42, F79). The results show that for both status and monitoring, the presence of a recovery plan is associated with a less adequate analysis.

species closely match the wording within the recovery plans themselves. Specific mitigation techniques, such as the design and placement of artificial nest boxes for red-cockaded woodpeckers (*Picoides borealis*) or the translocation of Utah prairie dogs (*Cynomys parvidens*), were borrowed directly from recovery plans in the development of HCPs. Discussions with HCP applicants and USFWS officials confirm this impression. Typically, when a recovery plan exists, it is used extensively by applicants in developing an HCP.

However, in contrast to expectations, there was evidence that adequacy of HCPs was negatively linked to the existence of a recovery plan (Table 12; Figure 10). In fact, using our yes/no delineations of adequacy, the trend was in the opposite direction for three of the five steps of HCP analysis (Table 13); a species was more likely to have adequate information included in its HCP if it did *not* have a recovery plan.

We also asked whether there was a relationship between critical habitat designation for a species and the quality of HCP analyses for those species that did have recovery plans. As for recovery plans, we found no evidence that adequacy of HCPs was positively linked to the existence of a critical habitat designation (Table 13). Again, the trend was in the opposite direction for each of five categories of information collected from HCPs. On average, a species was more likely to have adequate information included in its HCP if it did *not* have a critical habitat designation.

8.4. Quality of Different Types of HCPs

Treatment of multiple species in the same HCP is appealing to both landowners and the government because it can provide a single planning process with which to address simultaneously all of the potential rare species issues for an area. Furthermore, by obtaining incidental take permits for many listed and currently unlisted species, multispecies HCPs can provide far higher assurance to landowners that they will not encounter future impediments to development plans. This assurance is an especially important incentive to landowners in areas with high densities of proposed and candidate species (e.g., California and Florida). Increasing the number of species (from single species plans to multispecies plans) tended to increase the quality of impact assessment, but had no impact on all other assessments (Table 12). A second way of including many species under the mantle of HCP planning is through "habitat-based" HCPs. For example, the NCCP program in southern California (see website for a narrative description of this plan) takes this approach—species are grouped according to the habitat communities they require, and planning relies in part on the assumption that adequate protection for each species can be gained through protection for each habitat type. In habitat-based plans, information about habitat and fragmentation, and trends in those habitat characteristics, is used as the primary indicator of species status. Theoretically, information about habitat quality and quantity can be related in a rigorous, scientific manner to population status for a particular species, and in this way, habitat characteristics can legitimately be used as a proxy for missing information on population status. Overall, our MANOVAs show positive effects of habitat-based planning on the scientific quality of HCPs (Table 12; Figure 11). For example, one-way analyses and comparisons of yes/no adequacy rating provide evidence of positive effects on status, take, and monitoring assessment. Taken together, these results suggest that habitat-based planning has not resulted in lower scientific quality in HCPs and may in fact result in better, more scientifically defensible, planning efforts.

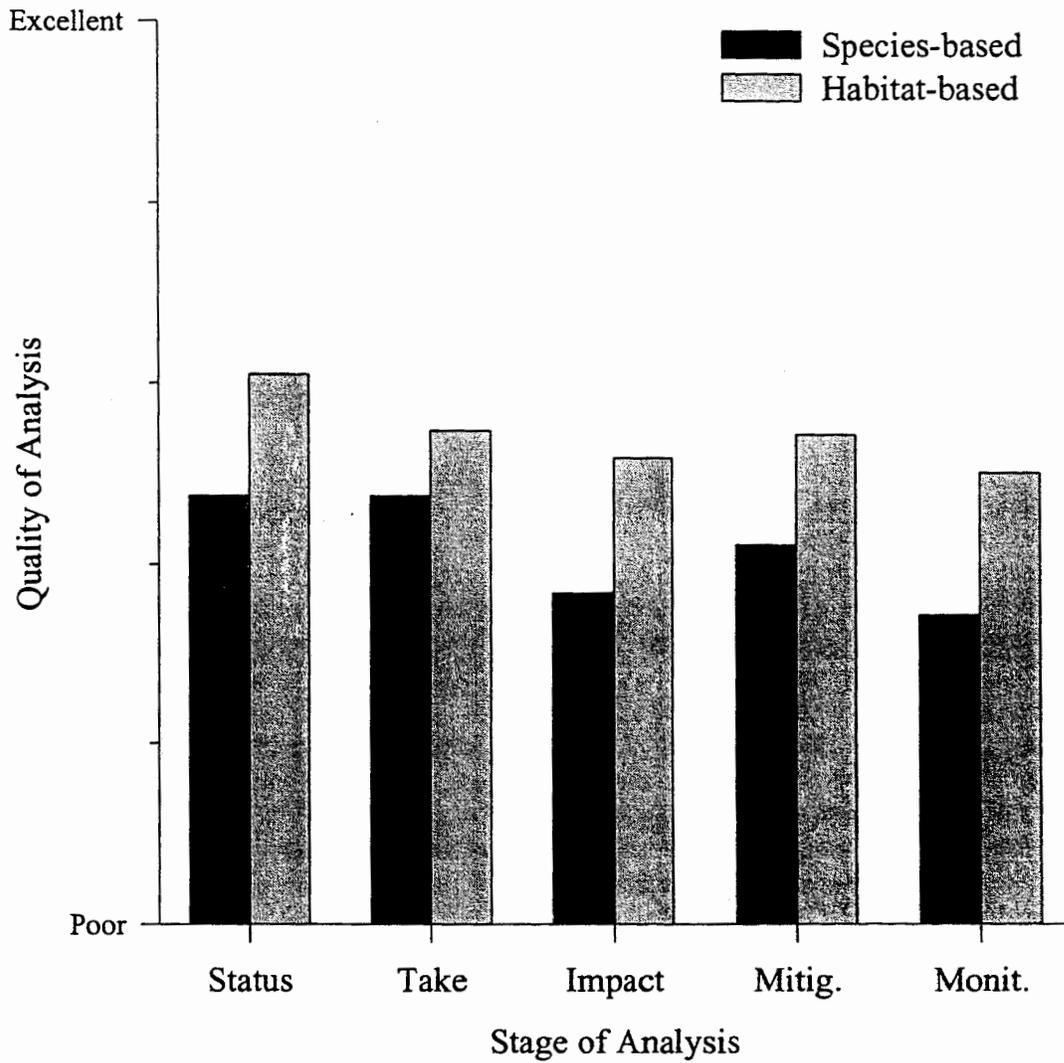


Figure 11. The effect of using a species-based versus habitat-based planning approach (PQ:8) on the quality of analysis and data at the five stages of HCP analysis (SQ:B42, C32, D46, E48, F79). The results indicate that at all stages of analysis, habitat-based HCPs are associated with better analysis and data.

8.5. Scientific Quality in Relation to Taxonomy and Date the HCP Was Signed

Major taxonomic groups differed strongly in how well or poorly planning was done, and also how these differences are manifested at different planning stages. We divided the species covered in our HCPs (except for the one fish species) into six taxonomic groups. Overall, taxonomic group was strongly related to adequacy of planning (Table 12), and these differences are also evident at three of the five stages of analysis: impact, mitigation, and monitoring (Table 12; Figure 12). Surprisingly, taxonomically determined differences in adequacy ratings seem to be much more easily explained by the difficulties posed by biology than they are by the political profiles or universal appeal of different groups. For example, plants had the most effective monitoring programs, probably as a result of their sessile—and thus easily studied—lifestyles. In contrast, mammals scored low with respect to impact assessment, monitoring, and mitigation. This pattern is probably due to the difficulty of obtaining good estimates of abundance, population trends, and demography for such mobile and largely nocturnal animals. Birds and herps (reptiles and amphibians) had intermediate ratings for each of the steps of analysis (Figure 12).

The date of issuance of the incidental take permits for our 43 focal HCPs ranged from a single plan in 1983 (San Bruno Mountain, the first HCP completed) to 25 plans in 1996-97. For several stages of planning, and for overall quality, more recent plans are better than older ones (Table 12). Perhaps the most biologically important aspect of this improvement is in mitigation analysis; before 1995, only 10% of species covered included “adequate” analysis of mitigation, whereas from 1995-1997, 59% of species were adequately analyzed. Similar improvements have occurred in all other steps of analysis, indicating that HCPs are—as their advocates have claimed—becoming more rigorous scientific documents.

9. CONCEPTUAL CHALLENGES TO THE QUALITY OF SCIENCE IN HCPs

Many of the gaps in HCP science reflect an absence of basic natural-history information, an absence of straightforward monitoring protocols, or inadequate reporting of data, but the HCP process is also challenged by subtler scientific issues, which are not easily remedied by greater care and thoroughness. The three conceptual hurdles we found to be most widespread were a failure to appreciate the potential complexity of assessing impact, the neglect of occasionally pertinent ecological theory, and violation of the precautionary principle in habitat planning.

9.1. Take Is Not the Same as Impact

As a first approximation, “impact” is clearly proportional to take, but simply reporting the number of individuals removed by an activity does not estimate the impact of this take on a species’ viability or potential for recovery. At a minimum, there should be some indication of what proportion of a population (locally and globally) corresponds to a given take and of whether the take represents a loss from part of the species range that is a major source of population growth and vitality (as compared to a sink population, see Pulliam, 1988, and Wootton and Bell, 1992). In an ideal world one would perform some sort of population viability analysis to assess the impact of take on a population’s viability, but data sufficient to conduct these analyses are scarce, and the analyses themselves conjure up an entire series of additional problems. However, for some cases involving well-studied species and large areas of land that

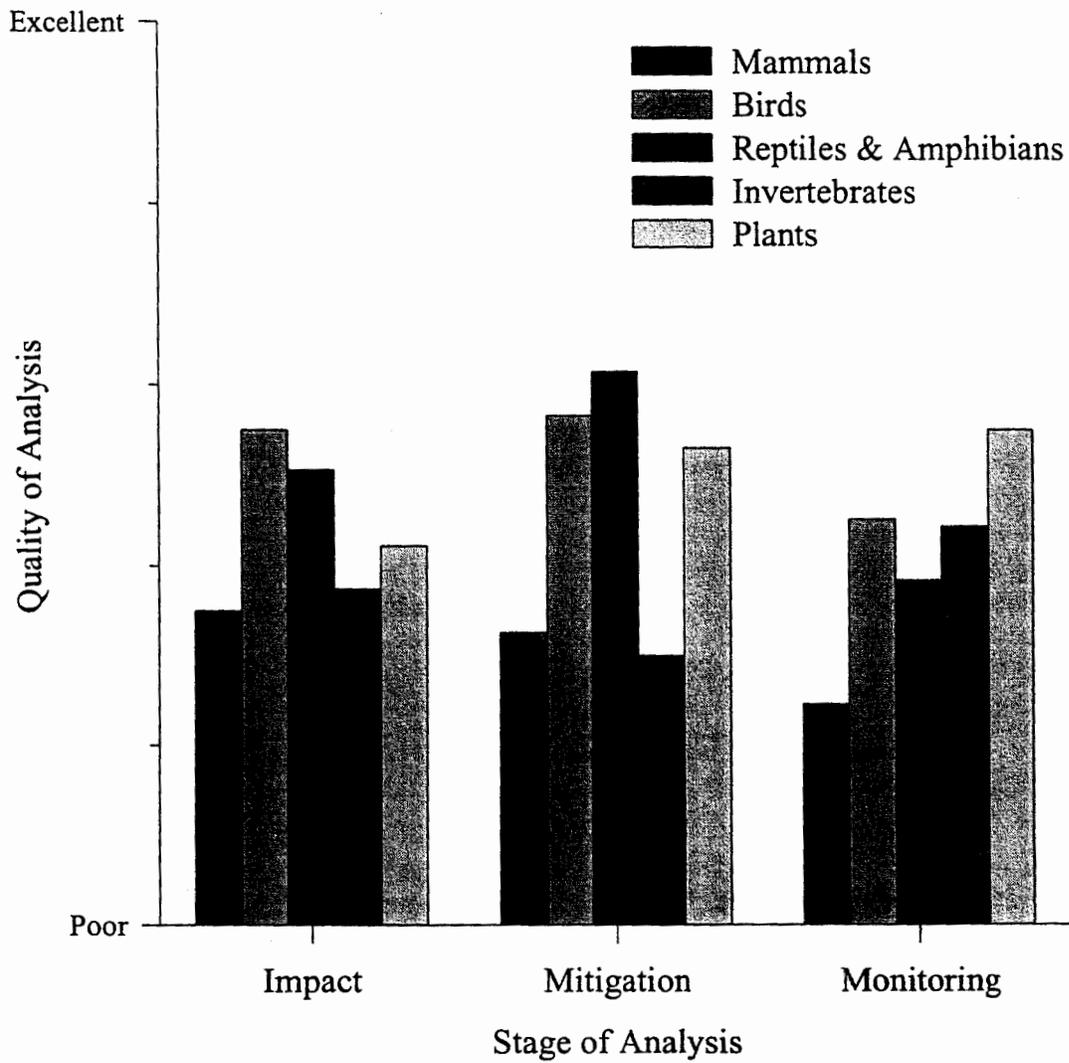


Figure 12. The effect of taxonomic group (SQ:A3) on the quality of analysis and data at several stages of HCP analysis (SQ:D46, E48, F79). Note that mammals have among the lowest scores of any group for all three steps of analysis.

comprise major portions of a species' range, some sort of viability analysis would be worthwhile (and indeed some HCPs do include population viability analyses). A more down-to-earth question would be to ask of any given take, what is lost beyond simply numbers? Is a genetically unique subpopulation lost? Is a substantial portion of genetic variability lost? Is a unique combination of species and habitat lost? Preparers of HCPs cannot be faulted for their limited assessments of take because the HCP handbook gives very little guidance on this matter. This is an area where a combination of population biologists and USFWS scientists could work together to develop some more specific guidelines.

9.2. The Use of Quantitative Methods and Ecological Theory in HCPs

Ecologists and conservation biologists have developed a large body of theory aimed at predicting impacts of management on populations and species (Burgman et al., 1993; Meffe and Carroll, 1994). The conservation literature abounds with suggestions that theory can lead to sound management decisions. We sought both to test and to refine this statement, using two related analyses. First, we determined the extent to which HCPs used quantitative tools and "theory" to assess impacts and mitigation strategies. We divided "theory" into ideas and methods arising from six different subdisciplines: population genetics, population ecology, behavioral and physiological ecology, island biogeography, community ecology, and ecosystem ecology. As an example, an HCP applying genetic theory might estimate inbreeding depression resulting from reduced population sizes related to the planned take. In the same HCP, the effect of take on a species might be estimated from a population model incorporating the influence of habitat loss on population size. We also determined the type of data used to bring a theory to bear on impact or assessment and the quality or appropriateness of the use of theory.

We found that most HCPs did not use theory to make assessments about the impacts of take or to support mitigation strategies. Of the 97 species-plan examples we examined, the six different categories of theory were applied to impact analysis between 8 and 44 times (for some species more than one variety of theory was applied) and to mitigation analysis between 8 and 50 times (Table 14; QB responses to SQ:D1-6 and E1-6). Genetic theory was used least, and theory related to population ecology was applied most often. When theory was used, it most often took the form of a quantitative statistical analysis; such analyses were clear and relevant about 60% of the time and inadequate in the remaining cases. None of the HCPs we analyzed used more sophisticated theories—quantitative models—to project the impacts of take on populations. Such models were also used very infrequently (8 cases total) to project the success of mitigation and minimization efforts. It is important to emphasize that we did not score HCPs as inadequate simply because they failed to use theory. We remark on the absence of theory in HCPs largely as a commentary on a major lack of connection between academic conservation biology and conservation practice.

9.3. Uncertainty and the Precautionary Principle

In many fields of environmental analysis, uncertainty is increasingly recognized as the universal background against which all decision-making takes place. This tenet and its consequences have become known as "the precautionary principle." This principle, long applied in fields as diverse as engineering and economics, holds that in the face of poor information or great uncertainty, managers should adopt risk-averse practices. That is, management actions should be chosen such that there is a correspondence between the uncertainty or lack of information underlying the decision and the size of the potential negative impact resulting from

that decision. Adoption of these ideas can be formal or informal. That none of the HCPs we reviewed made explicit mention of the precautionary principle does not mean that the writers and evaluators of these plans did not use risk-aversion criteria in formulating HCP strategies. If HCPs adhere to the ideas of the precautionary principle, we would expect to see four clear patterns:

1. As available information becomes increasingly scarce or uncertain, HCPs should be of shorter duration and/or cover a smaller area.
2. As available information becomes increasingly scarce or uncertain, HCPs should increasingly avoid impact or be restricted to reversible impacts.
3. In all cases, but particularly when mitigation success or take levels are highly uncertain, mitigation measures should be applied before take is allowed.
4. HCPs should include contingencies based on the impact of take and whether or not mitigation efforts succeed. Such contingencies can only be applied in the context of adequate monitoring. Adaptive management in HCPs would provide for various management alternatives according to various future conditions.

One way of assessing the extent to which a precautionary approach is adopted in HCPs is to contrast strategies of mitigation for cases where data were judged to be sufficient and insufficient. For example, if there are insufficient data regarding the impact of take, then one might expect avoidance of take to be more commonly pursued than if there are sufficient data regarding impact. This was not the case. In fact, the precautionary approach of avoidance was either equally likely or even less likely where data were insufficient than where they were sufficient ('). Another precautionary approach is to minimize take, and again this precautionary strategy was either equally likely or even less likely to be pursued when data were lacking (Figure 13). Finally, according to our rating scheme, the most precautionary scenario would involve a mitigation approach that clearly minimized impact to the maximum possible extent. It is worth noting that this line of reasoning is not legally required of USFWS but rather is a more stringent scientific standard for mitigation than current law dictates. We found many HCPs that did pursue such a cautious approach, but it was no more likely when data were insufficient than when data were adequate (Figure 13). In several HCPs, adaptive management is mentioned (even if not clearly developed) as a component of the management scenario. One might think these instances would be most likely where data were lacking. Ironically, the opposite is true—plans for which the data regarding mitigation reliability were judged insufficient were significantly *less likely* to include a discussion of adaptive management than were plans with adequate data: 45% of the 38 cases with insufficient data (SQ:E48) included a discussion of adaptive management (PQ:61), whereas 77% of the 48 cases with adequate data did so ($\chi^2 = 9.5$, $P < 0.05$). In summary, although some HCPs are reassuringly cautious, greater caution was not related to lack of critical information about status, take, and impact. Thus, a precautionary approach does not seem to be evident as a pattern among a large sample of HCPs. Put another way, there is no evidence that the quality of data regarding status, take, and impact influences the approach to reducing impact adopted by HCPs.

10. RECOMMENDATIONS

In this section, we outline scientific standards to which we think HCPs should be held.

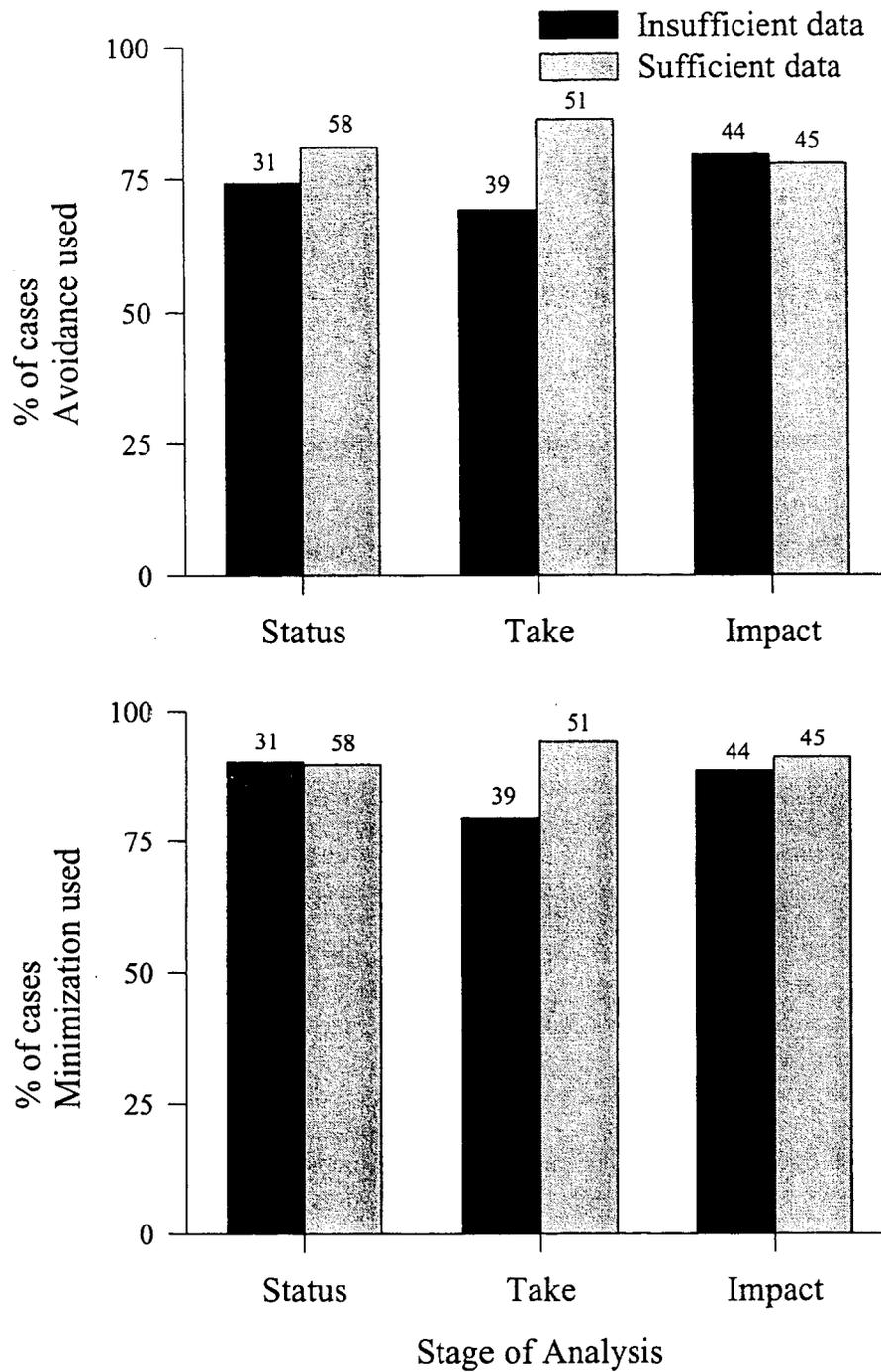


Figure 13. The percentage of cases in which avoidance (SQ:E32 QH) and minimization (SQ:E33 QH) measures were used when supporting data for status, take, and impact were either sufficient or insufficient (SQ:B42, C32, D46).

Our standards identify specific attributes that HCPs should have to be considered scientifically credible. We make these recommendations based on a thorough review and analysis of science in HCPs, but we also recognize that practical constraints may make it difficult to meet these standards. In many cases the landowner or contractor designs an HCP in the absence of critical data. The information required to develop an HCP is often nonexistent. Because this situation was common in the plans we reviewed, and it is likely to recur, we also provide a set of practical recommendations for handling a shortage of data or desired information scientifically. When data are lacking, uncertainty is large and unavoidable. It then becomes imperative that this uncertainty be explicitly acknowledged and measured in some way (even if only on a three-point scale of high, medium, low). We conclude by offering general policy recommendations.

10.1. Standards for a Scientifically Based HCP

Ideally an HCP would be based on knowledge of the basic population biology of all species covered in the incidental take permit, their ecological requirements, and a quantitative estimate of the impact of take on population viability. The plan would evaluate the cumulative effects of multiple plans and activities on covered species, as well as potential interactions among effects. Given limited resources and information available during HCP development, these standards will be difficult to achieve. Nevertheless, we need standards toward which planners can strive and against which HCPs can be measured.

The foundation of any HCP, and its supporting documents, must be data. Assertions such as "take will be 54 animals" do not constitute data. Data must *exist, be accessible, and be explicitly summarized* in the HCP in order to be scientifically credible. The absence of any of these three "ingredients" precludes a scientifically based HCP. Existence of the data is not sufficient; they must be included in the HCP and available for analysis. It is still possible for scientists to debate how best to use or interpret data, but there is no question that the data must exist in the first place. Data standards should be formalized: all large-area HCPs (or HCPs that cover a major portion of a federally listed species' range) should include an inventory and summary of available data on each covered species, including its overall distribution, abundance, population trends, ecological requirements, basic life history, and the nature of the causes of endangerment. Smaller HCPs can simply point to other HCPs or readily available data sources and inventories. All sources of data should be formally documented. An explicit acknowledgment describing what data are not available should also be included to allow a more accurate assessment of uncertainty and risk in the planning process. In order to provide more concrete suggestions, we consider status, take, impact, mitigation, and monitoring separately.

Status

Adequate determination of status requires that data on distribution, population trends, habitat needs and trends, and threats be examined. The analysis should be both local (within the HCP) and global (so that whatever is going on within an HCP can be put in a biological context). Determining status requires knowledge of a substantial amount of natural history—the threats to a species cannot be identified without considerable knowledge of that species' natural history. Similarly, population trends should be based on more than just a few years of census information.

Take

Take can generally be assessed either by census of a population and prediction of the portion that will be lost or by establishment of relationships between habitat area (and quality) and expected number of individuals contained within that habitat, which in turn allows one to predict reductions in population due to reductions in habitat. An explicit quantitative model should link the activity for which the HCP is initiated to loss of individual organisms, if at all possible.

Impact

Impact does not equal take. This simple fact must be emphasized, because it is neglected or overlooked in a large portion of existing HCPs. Measurement of impact on population or species viability requires data on population processes both within and outside of the HCP (minimally the same data discussed for "status"). If an HCP comprises a large area and a substantial portion of a species' range, then some attempt should be made at developing a "model" (explicit, but not necessarily mathematical). This model should link take to key population processes. For example, taking 40% of a global population from a source population for the species' whole range is very different from taking 40% of a global population from a sink area. Similar arguments can be made for genetic and evolutionary impacts. Careful thinking about impacts can alter how one goes about summarizing take. For example, the types of individuals taken may be as important as their numbers—the removal of young reproductive individuals usually has the greatest impact on population growth and recovery, so avoidance or preferential take of this age class will profoundly influence the impact of the take. This possibility demonstrates that the quantification of take must be conceptually linked to insights about the population-level impacts of take.

Mitigation

The details of proposed mitigation measures must be explicitly described and accompanied by data regarding their effectiveness. Documenting effectiveness requires information on two levels. First specific effectiveness of the proposed measure should be documented. For example, if transplantation is proposed, what proportion of the transplanted individuals survive to reproduce? Second, the more general effectiveness of the mitigation measures in minimizing impact must be analyzed, so the outcome of mitigation actions must be linked to population processes of the target species.

Monitoring

Without adequate and appropriate monitoring, the success of plans cannot be evaluated. The principal criterion for determining the adequacy of monitoring should be the ability of a monitoring plan to evaluate the success of mitigation measures and the consequent effect on protected species. Monitoring frequencies, methods, and analyses should be designed to permit appropriate modification of mitigation measures in response to species status and should be explicitly documented in the HCP. Monitoring data should be incorporated into centralized data bases to facilitate access to information on the overall status of species and to facilitate assessment of cumulative impacts. Even if monitoring does not lead to rectifying mistakes in its associated HCP, it can furnish information from which future HCPs can be designed so that mistakes are not repeated.

Peer Review

Finally, HCPs should be open to peer review (review by scientists specializing in conservation biology). Although HCPs are the property and responsibility of the applicant, they concern protection of public resources (endangered and threatened species). Thus, the data, analyses, and interpretations made regarding status, take, impact, mitigation, and monitoring should be reviewed to ensure that the scientific foundations of the plans are sound. Peer review is already a standard for science in other regulatory arenas and should be incorporated into the HCP process. The need for peer review is not universal; small HCPs without large irreversible impacts require less scrutiny than large HCPs of long duration and broad ecological impacts.

10.2. Scientific Approaches to a Paucity of Data

The standards we have defined are difficult, if not impossible, to achieve because of a current paucity of pertinent data, but HCPs are not therefore fundamentally unscientific. They must simply use existing data in a scientifically credible fashion. Before we discuss recommended approaches to habitat conservation planning with data shortages, we must address two more general issues about data.

First, when pertinent data are lacking, the top priority before developing an HCP should be to acquire those data. How the data are collected, and by whom, is an issue that will have to be resolved among resource agencies such as USFWS and HCP developers, but there is no surer way to garner scientific credibility than to use data. When collection of all desirable data is not practicable, then the planning process should proceed with caution commensurate with the anticipated risks and uncertainties.

Second, when critical data are absent, an HCP should not be initiated or approved. It would be wrong to call the HCP process scientific, or even rational, if there were no option to halt the process in the absence of crucial information. We need not have all the desired data to produce an HCP—the planning process would be paralyzed because data will always be determined to be insufficient. Rather, the absence of crucial data for certain types of HCPs must be in principle a possible reason for not allowing take until the problem has been corrected. In general, the greater the impact of a plan, (e.g., plans with high impact are those with irreversible impacts, covering a large area or multiple species or spanning more than 20 years), the fewer gaps in critical data should be tolerated.

Shortage of Data on Status

When data on status are few, we must err on the conservative side. What must be avoided is the assertion of healthy status with few supporting data.

Shortage of Data on Take

For small-area HCP's (which we assume will involve small takes) an absence of data on take is acceptable, but for HCP's covering vast expanses of land, take must be quantitatively assessed; if it is not, the HCP process should not be entered into. This is a standard principle of risk assessment—when the hazards are large, the requirements for safety assurances become more severe. When take is not the most pertinent quantity to estimate (as when something like water quality for salmon is subtly degraded) but rather impacts are the issue, a careful assessment of impacts can replace attention to precise take numbers.

Shortage of Data on Impact

A scarcity of data on impacts of take can best be handled by best- and worst-case scenarios. Even without quantitative data, biologists can usually construct a worst-case scenario.

Shortage of Data on Mitigation

If no information validates mitigation as effective, then assessment of mitigation should precede any take. In addition, monitoring must be especially well designed in those cases where mitigation is unproven.

Absence of Explicit Description of Monitoring

Careful monitoring is in some cases a solution to data shortage. For example, when the effectiveness of mitigation is uncertain, monitoring can determine that effectiveness, but only if it is well designed (for example, as a before-and-after study of impact and control). When data are few, explicit measures are needed for using the information from monitoring to alter management procedures. That is, a precise criterion for "mitigation failure" must be specified, as well as procedures for adjusting management when that criterion is recognized. The key point here is that the existence of monitoring is not a solution to data shortage – a quantitative decision process must link monitoring to adjustments in management.

Responding to Uncertainty

In addition to the specific recommendations given above with respect to lack of data, there are general scientific principles for dealing with a lack of information. First, the precautionary principle argues that, in the face of poor information, risk-averse strategies should be adopted. That is, when data are extremely poor, HCP's should be limited to small areas or short duration. Scarce information requires particular care about activities that are irreversible (building a shopping mall as opposed to logging), and monitoring becomes more crucial for assessing the well-being of threatened species. Mitigation measures should be applied before take is allowed, so that their effectiveness can be evaluated. Perhaps the simplest approach would be to put in place scientific advisory panels for plans that lack information and have both long durations and large impact areas. This panel could advise on the development of the plan and its implementation; scientists from recovery teams would be logical choices as a starting point.

10.3. Policy Measures for Attaining More Effective Science in the HCP Process

The goal of our analysis was to evaluate the role of science in the HCP process. In this section we provide a set of recommendations for improving its quality and effectiveness. We recognize that science is not the primary motivation for HCPs and that they must address multiple, often conflicting objectives. They have political, economic, and social objectives as well as scientific ones. We also understand that Section 10 of the Endangered Species Act does not prescribe any scientific standard upon which the approval or disapproval of HCPs is to be based. Section 7 requires only that decisions be based on the "best scientific and commercial data available." While acknowledging these dimensions, we have nonetheless chosen to focus our study on evaluating how science is being used in the HCP process. Our assessment leads to

the following recommendations:

1. We recommend that greater attention be given to explicit scientific standards for HCPs, but that this be done in a flexible manner that recognizes that low impact HCPs need not adhere to the same standards as high impact HCPs. A formalized scheme might be adopted so that small HCPs draw on data analyses from large HCPs, assuring that applicants are not paralyzed by unrealistic demands.
2. For the preparation of individual HCPs, we recommend that those with potentially large impact (those that are large in area or cover a large portion of a species' range) include an explicit summary of available data on covered species, including their distribution, abundance, population trend, ecological requirements, and causes of endangerment. HCPs should be more quantitative in stating their biological goals and in predicting their likely impact on listed species. When information important to the design of the HCP does not exist, it may still be possible to estimate the uncertainties associated with impact, mitigation, and monitoring, and to still go forward, as long as risks are acknowledged and minimized. Flexibility can be built into mitigation plans so that managers can be responsive to the results of monitoring during the period of the HCP. When highly critical information is missing, the agencies should be willing to withhold permits until that information is obtained.
3. For the HCP process in general, we recommend that information about listed species be maintained in accessible, centralized locations, and that monitoring data be made accessible to others. During the early stages of the design of potentially high-impact HCPs and those that are likely to lack important information, we recommend the establishment of a scientific advisory committee and increased use of independent peer review (review by scientists specializing in conservation biology). This policy should prevent premature agreements with development interests that ignore critical science.

To pursue these measures will require major agency initiatives or policy alterations. First, the coordination of efforts to protect and recover threatened and endangered species must be improved. This coordination will be essential to the accurate estimation of the cumulative impacts of various management efforts for threatened and endangered species. The data pertaining to these management activities (e.g., HCPs, recovery efforts on federal land, safe-harbor agreements on nonfederal land) should be organized into a single distributed data base system. These data must be accessible to agency and academic scientists for analysis and evaluation of the effectiveness of HCPs and recovery efforts. Better coordination and accessibility of scientific examinations of endangered species recovery does not require any legislative change, but it would require a funding commitment to put a centralized data base in place. Frankly, we think that centralized and readily accessible data on endangered species could do for species protection what centralized and accessible data on criminals and outstanding warrants has done for public safety protection. Surely, if we can do this for law enforcement, we can also do it for environmental protection.

Second, both academic and agency scientists should become more involved in the HCP process, for example through encouragement of peer review and the establishment of advisory committees. Recovery plans are currently peer-reviewed, and the culture to obtain such review already exists in the pertinent government agencies.

Last, we encourage USFWS and NMFS to conduct their own review of the HCP process

from the perspective of identifying mechanisms for making the job of their agency scientists more clearly defined. This process could entail revision of the HCP handbook, pushes for better data access, and institutional commitment to peer review. The HCP process need not compromise the quality of its science just because it must balance science and negotiation with development interests. Clearly, it could sharpen the light cast by science if the guidelines for scientific input were improved. Reference to data, peer review, and significant adaptive management are too often absent from the HCP process. To remedy these deficiencies will require more resources. The USFWS is currently being asked to do too much with too few resources in this HCP process.

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Table 1. Key terminology pertaining to HCPs and the Endangered Species Act, and how this terminology relates to the review of scientific input.

Take:

As defined by the ESA (Section 3(15)), *take* means "to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct."

where:

Harass [refers to] an intentional or negligent act or omission which creates the likelihood of injury to wildlife to such an extent as to significantly disrupt normal behavioral patterns which include, but are not limited to, breeding, feeding, or sheltering. (50 CHR 17.3)

Harm [refers to] any act which actually kills or injures wildlife. Such act may include significant habitat modification or degradation where it actually kills or injures wildlife by significantly impairing essential behavioral patterns, including breeding, feeding, or sheltering. (50 CFR 17.3)

Our Scientific Perspective: In this analysis when we asked whether take was adequately quantified we sought either an assessment of the numbers of individuals that would be lost, or a quantitative assessment of habitat lost for which there was a good foundation for translating area of habitat lost into numbers of individuals lost. Simply reporting area lost, without a clear idea of how it translates into numbers of individuals, would not be accepted as an adequate assessment of take.

Minimization and Mitigation:

Minimization and mitigation usually take one of the following forms: (1) avoiding the impact (to the extent practicable); (2) minimizing the impact; (3) rectifying the impact; (4) reducing or eliminating the impact over time; or (5) compensating for the impact. Minimization and mitigation incorporate a wide variety of required components, such as establishing biological goals & objectives; habitat acquisition, restoration or enhancement; establishing or implementing monitoring program; or adaptive management strategies, if needed. The specific strategy or combination of strategies used will depend on the species and type of habitat involved.

An adequate minimization and mitigation program is one based on sound biological rationale, is commensurate with the impacts of the activity proposed under the incidental take permit, and can be implemented. It is not always practicable for mitigation to precede take, although minimization and mitigation must generally keep pace with impact.

Our Scientific Perspective: In this analysis, we sought not only to evaluate whether the proposed minimization and mitigation activities are appropriate given the expected impacts, but also to determine how well currently available data support their use and reliability.

Minimization and Mitigation to the Maximum Extent Practicable:

Where the adequacy of the minimization and mitigation is a close call, the record must contain some basis to conclude that the proposed program is the maximum that can be reasonably required by that applicant. This may require weighing the benefits and costs of implementing additional minimization and mitigation, the amount of minimization and mitigation provided by other applicants in similar situations, and the abilities of that particular applicant.

Our Scientific Perspective: We are not in a position to judge whether FWS met the "maximum extent practicable" standards. However, in cases where proposed minimization and mitigation activities may not be adequate, HCPs should clearly demonstrate why and how these activities are limited by practicability. We therefore assessed whether or not each plan contains language and data intended to show that the proposed minimization and mitigation activities are the maximum that could reasonably be required of the applicant.

Table 1. (continued)

Monitoring:

Two types of monitoring are required in HCPs: compliance monitoring and effects and effectiveness monitoring. *Compliance monitoring* is where the Service monitors the applicant's implementation of the requirements of the HCP, and permit terms and conditions.

Effects and effectiveness monitoring is where the applicant (or other approved, designated entity) monitors the impacts of the authorized incidental take (effects) and implementation of the minimization and mitigation strategies to determine if the actions are producing the desired results (effectiveness).

Our Scientific Perspective: We focus only on effects and effectiveness monitoring, which essentially represent monitoring aimed at tracking the response of a potentially impacted population to activities permitted under the HCP. If an HCP involves a very small piece of land with minimal likely population impact, a monitoring program might not be necessary, and in those cases our standards for assessing the clarity of monitoring were relaxed. In those cases, we simply required that the absence of a clear monitoring program was well-justified.

Table 2. Mandatory requirements of HCPs. These represent the five criteria for issuance of an incidental take permit (ITP), as described in the Endangered Species Act (16 U.S.C. §1539(a)).

The landowner (applicant for HCP approval) must specify:	Requirements by FWS / NMFS for HCP approval:
The impact which will likely result from such taking	The taking will be incidental to an otherwise lawful activity
Steps that will be taken to minimize and mitigate such impacts	The applicant will, to the maximum extent practicable, minimize and mitigate impacts of such taking
The funding available to take minimization and mitigation steps	There will be adequate funding to carry out the HCP
What alternative actions to such taking the applicant considered, and the reasons why such alternatives are not being utilized	The taking will not appreciably reduce the likelihood of survival and recovery of the species in the wild
Other measures that FWS / NMFS may require	The landowner agrees to include other measures that FWS or NMFS may have required, including reporting requirements that may be necessary to determine whether the terms and conditions are being complied with

Table 3. Relationship of overall adequacy scores to detailed questions for status, take, impact, and mitigation. To determine whether the overall adequacy ratings were valid reflections of the detailed information considered and omitted from each step in HCP planning, we regressed these ratings on three subquestions each (QB: was information used?, QC: what was the data quality?, and QD: how were the data used?) for seven variables (habitat data, trends in habitat, population data, genetics, metapopulation, community changes plus extrinsic factors, and catastrophes). In Appendix III, all single one-way regressions are reported. Below we summarize the results of the multiple regression for each “adequacy” summary score. Refer to Appendix III to see which independent variables were included in each model.

Adequacy Rating	Question	P-value	N	R ²
Status	QB	0.0001	94	0.26
	QC	0.05	41	0.59
	QD	0.05	65	0.64
Take	QB	0.005	13	0.92
	QC	0.0005	46	0.32
	QD	0.005	79	0.17
Impact	QB	0.01	35	0.59
	QC	0.005	31	0.58
	QD	<i>ns</i>	70	0.31
Mitigation	QB	<i>ns</i>	33	0.23
	QC	0.0001	12	1.00
	QD	<i>ns</i>	47	0.73

Table 4. Relationship of overall adequacy scores to detailed questions for three types of monitoring. To determine whether the overall adequacy ratings were valid reflections of the detailed information considered and omitted from each step in HCP planning, we regressed these ratings on three subquestions each (QL: what is quality of data to be collected?, QM: what is the connection between data and monitoring goals?, and QN: what is missing from planned data collection?) for seven variables (individual data, population data, individual rate data, genetics, metapopulation, community changes plus extrinsic factors, and habitat data). In Appendix III, all single one-way regressions are reported. Below we summarize the results of the multiple regression for each “adequacy” summary score. Refer to Appendix III to see which independent variables were included in each model.

Adequacy Rating	Question	P-value	N	R ²
Monitoring of Take	QL	0.05	63	0.42
	QM	0.0001	4	1.00
	QN	0.05	42	0.91
Monitoring of Status	QL	0.05	71	0.43
	QM	<i>ns</i>	3	0.25
	QN	<i>ns</i>	43	0.90
Monitoring of Mitigation	QL	<i>ns</i>	51	0.29
	QM	<i>ns</i>	3	0.25
	QN	0.05	45	0.88

Table 5. Checks on the importance of plan and school effects on answers to species-level questions. Results are shown for a set of mixed linear models using SAS PROC MIXED. We used these models to see if universities and plans differed with respect to ratings and whether these differences impacted the statistical significance of the relationship of the five adequacy ratings to the factors Date, Duration, Multiple Species (yes/no), Taxon, and Area. Each set of results shown was considering one fixed effect. Results reported are the p-values for models that do not (GLM p-value) and do (MIXED p-value) include the school and plan effects, and the variation explained by school effects and residual variation. Significant school effects are indicated by a low p-value in the mixed model row and a large school variation explained relative to residual variation.

Permit Date:

	Status	Take	Impact	Mitigation	Monitoring
GLM p-value	<.01	<.01	.02	.02	.04
MIXED p-value	<.01	<.01	.14	.27	.23
School variation	.01	.35	.13	.65	.26
Residual variation	1.17	1.20	.71	1.20	.99

HCP Duration:

	Status	Take	Impact	Mitigation	Monitoring
GLM p-value	.07	.01	<.01	<.01	.08
MIXED p-value	.15	.09	.32	.27	.31
School variation	.01	.20	.11	.50	.23
Residual variation	1.18	1.22	.70	1.20	.93

Multiple versus single species plans:

	Status	Take	Impact	Mitigation	Monitoring
GLM p-value	.83	.83	.15	.67	.43
MIXED p-value	.61	.73	.27	.52	.48
School variation	.18	.21	.25	.79	.30
Residual variation	1.21	1.17	.69	1.15	.94

HCP Area:

	Status	Take	Impact	Mitigation	Monitoring
GLM p-value	.02	.53	<.01	<.01	.06
MIXED p-value	.07	.73	.02	.06	.37
School variation	.01	.19	.19	.67	.33
Residual variation	1.20	1.18	.72	1.17	.98

Taxon:

	Status	Take	Impact	Mitigation	Monitoring
GLM p-value	.13	.74	.09	.03	<.01
MIXED p-value	.30	.35	.10	<.01	.19
School variation	.09	.25	.15	.88	.19
Residual variation	1.14	1.11	.63	.97	1.03

Table 6. Number of species (grouped by taxa) included in HCPs, and number of HCPs covering one or more species of these taxa (AQ:1c). Taxonomic groups are logical and convenient groupings, but do not represent taxonomic equivalents. Total number of plans in third column exceeds 208 because some plans cover species in more than one taxonomic group.

Taxa	Number of species included in at least one HCP	Number of HCPs covering taxa
Birds	22	143*
Fish	1	1
Mammals	13	32
Amphibians and reptiles	19	33
Invertebrates	18	16
TOTAL ANIMALS	73	227
Plants	15	7
TOTAL SPECIES	98	234

* >70 are for the golden-cheeked warbler in Travis County, Texas

Table 7. Proportion of cases, by data category, in which significant or starkly necessary species information was absent from HCP documents, despite being available in the literature (scored as QD=2 or 3). Separate results are shown for data regarding status (SQ:B1-24), take (SQ:C3-18), biological impact (SQ:D7-30), and mitigation (SQ:E7-30). Proportions 20% or higher are highlighted in bold. Sample sizes in parentheses. Data was not collected for certain categories under Take; in addition, note that several Take categories differ in emphasis (as indicated by an asterisk).

Data Categories	Status	Take	Impact	Mitigation
Habitat Affiliations	2 (94)		8 (85)	13 (85)
Amount & Quality of Feeding Habitat	9 (65)		9 (70)	24 (63)
Amount & Quality of Breeding Habitat	15 (67)		11 (63)	20 (65)
Amount & Quality of Migration Habitat	19 (42)		15 (48)	35 (55)
Trends in Habitat Quality	8 (85)	12 (74)*	6 (72)	11 (72)
Trends in Habitat Amount	6 (83)	10 (82)*	5 (74)	6 (80)
Habitat Fragmentation	13 (80)	7 (82)	5 (74)	6 (81)
Population Size	6 (88)	1 (82)	7 (72)	12 (73)
Trends in Population Size	3 (80)	4 (77)	5 (74)	7 (75)
Population Trends by Habitat Type	2 (63)	10 (84)*	1 (70)	8 (64)
Demographics	16 (74)	10 (74)	11 (65)	14 (66)
Basic Genetics	19 (72)		8 (66)	16 (71)
Genetic Structure	8 (73)		6 (66)	13 (71)
Movement Abilities	6 (64)	10 (69)	5 (66)	15 (65)
Extrinsic Factors	13 (77)	4 (72)	6 (70)	27 (77)
Interactions with Food Species	12 (61)	2 (68)	6 (63)	17 (60)
Interactions with Consumer Species	10 (72)	10 (68)	5 (65)	10 (74)
Indirect Interactions	3 (64)		0 (58)	2 (55)
Pollution	15 (79)	10 (77)	8 (64)	15 (78)
Climate Change	15 (74)		11 (63)	13 (71)
Successional/Disturbance Regimes	17 (89)		16 (77)	24 (83)
Environmental Variability	17 (84)		23 (65)	24 (80)
Catastrophes	15 (85)		19 (69)	19 (80)
Cumulative Impacts & Interaction Effects	23 (84)		14 (79)	24 (83)

Table 8. In cases where species data (by category) was included in the HCP (QA=1, 2, or 3), proportion of these in which the data was **not** used in a good or excellent manner (QC=0 or 1). Separate results are shown for data regarding status (SQ:B1-24), take (SQ:C3-18), biological impact (SQ:D7-30), and mitigation (SQ:E7-30). Proportions 50% or above are highlighted in bold. Only values for sample sizes ≥ 20 species are included. Given this criterion for inclusion, five categories (Amount & Quality of Migration Habitat, Basic Genetics, Genetic Structure, Interactions with Food Species, and Climate Change) were omitted because sample sizes were too low for all stages of analysis. Sample sizes in parentheses. Data was not collected for certain categories under Take; in addition, note that several Take categories differ in emphasis (as indicated by an asterisk).

Data Categories	Status	Take	Impact	Mitigation
Habitat Affiliations	11 (91)		26 (69)	19 (78)
Amount & Quality of Feeding Habitat	31 (45)		53 (34)	39 (36)
Amount & Quality of Breeding Habitat	21 (53)		32 (40)	23 (43)
Trends in Habitat Quality	18 (60)	25 (71)*	11 (47)	8 (47)
Trends in Habitat Amount	13 (67)	21 (38)*	19 (52)	24 (53)
Habitat Fragmentation	29 (56)	37 (40)	31 (48)	22 (49)
Population Size	17 (71)	6 (46)	23 (47)	19 (43)
Trends in Population Size	28 (54)	33 (30)	39 (44)	7 (40)
Population Trends by Habitat Type	29 (24)	23 (39)*	36 (25)	
Demography	50 (20)			
Movement Abilities	36 (33)	28 (29)	30 (30)	23 (34)
Extrinsic Factors		62 (21)	68 (22)	64 (25)
Interactions with Consumer Species	35 (20)	32 (22)	28 (29)	15 (27)
Pollution		15 (20)		
Successional/Disturbance Regimes	43 (46)		58 (31)	29 (44)
Environmental Variability	43 (28)			75 (20)
Catastrophes	58 (26)			63 (27)
Cumulative Impacts & Interaction Effects	46 (22)			48 (27)

Table 9. Local and global statistics on habitat quality (SQ:B28, B29) and trends in habitat quantity (SQ:B34, B35) for species included in HCPs. Sample sizes shown in parentheses.

	Within HCP area	Globally
Habitat quality		
Poor	39.7%	14.9%
Medium	51.3%	70.1%
Excellent	9.0%	14.9%
	(N=78)	(N=67)
Trends in habitat quantity		
Declining rapidly	6.7%	7.4%
Declining	56.0%	80.3%
Stable	37.3%	12.4%
Increasing	0%	0%
	(N=75)	(N=81)

Table 10. Six impacts considered to be most important on average, based on our evaluation (SQ:D32-45 QG). Two or more impacts could be considered important for any one species, so the percentages do not sum to 100%. We ranked categories of impact according to their effect on the species on a 4 point scale (1=no noticeable effect; 2=some effect but not of serious consequence; 3=moderately important effect deserving of consideration; 4=a serious effect that will significantly impact the population). The values reported are the means of these scores across all species in the HCPs reviewed for each impact category. The right-hand column shows the percentage of times these impacts were considered in HCPs (QE).

Category of impact, ranked	Mean importance of impacts (sample sizes in parentheses)	% of species for which impact was considered in the HCP (N=97)
1. Total acreage of habitat lost	3.13 (70)	85%
2. Percent of habitat lost	2.69 (70)	53%
3. Total individuals killed	2.54 (70)	52%
4. Fragmentation of habitat	2.54 (76)	66%
5. Cumulative impacts	2.45 (74)	27%
6. Altered interspecific interactions	2.37 (71)	45%

Table 11. Adequacy in addressing primary threat (SQ:E45) and in minimizing impacts (SQ:E47) to species in HCPs. Samples sizes shown in parentheses.

	Sufficient or above	Insufficient or below
Adequacy in addressing primary threat to the species (N=87)	10% excellent 18% above average 29% sufficient	25% significantly lacking 13% inadequate 5% extremely poor
	Sufficient or above	Insufficient or below
Adequacy in minimizing impacts to the maximum extent practicable (N=82)	12% excellent 13% above average 27% sufficient	16% significantly lacking 17% inadequate 15% extremely poor

Table 12. Significant effects on steps in HCP analysis. Columns show results for the adequacy of each of the five planning stages, the dependent variables; rows are for each of the independent variables considered. All p-values of 0.10 or less are shown for unweighted one-way and multi-way MANOVAs (first and second lines per cell) and weighted (by 1/(# species per plan)) one-way and multi-way MANOVAs (third and fourth lines per cell). Multiway analyses include only those independent variables showing any significant effects ($p < 0.05$) in preliminary multi-way analyses. Following each p-value in the table is a symbol denoting whether increasing values of the independent variable have positive (+) or negative (-) on the adequacy score. Probabilities for overall effects are Wilk's Multivariate λ .

	STATUS	TAKE	IMPACT	MITIG.	MONIT.	OVERALL
DURATION	<i>ns</i>	<i>ns</i>	<i>ns</i>	<i>ns</i>	<i>ns</i>	.08
	<i>ns</i>	<.01 (-)	<i>ns</i>	<i>ns</i>	<i>ns</i>	<.01
	<.01 (+)	<i>ns</i>	.03 (+)	.02 (+)	<i>ns</i>	<.01
	.02 (+)	<.01 (-)	<i>ns</i>	<i>ns</i>	<i>ns</i>	<.01
AREA	<i>ns</i>	<i>ns</i>	<i>ns</i>	<i>ns</i>	<i>ns</i>	<i>ns</i>
	.04 (-)	<i>ns</i>	.07 (-)	<i>ns</i>	<i>ns</i>	.09
RECOVERY PLAN	<.01 (-)	<i>ns</i>	<i>ns</i>	<i>ns</i>	<.01 (-)	<.01
	.03 (-)	.06 (-)	<i>ns</i>	<i>ns</i>	.09 (-)	<.01
	.04 (-)				.04 (-)	.08
SPECIES NUMBER	<i>ns</i>	<i>ns</i>	.08 (+)	<i>ns</i>	<i>ns</i>	<i>ns</i>
	<i>ns</i>	<i>ns</i>	.04 (+)	<i>ns</i>	<i>ns</i>	<i>ns</i>
HABITAT-BASED	.01 (+)	.05 (+)	<.01 (+)	.04 (+)	<.01 (+)	.03
	<i>ns</i>	<.01 (+)	<.01 (+)	<i>ns</i>	<i>ns</i>	<.01
	.01 (+)	<.01 (+)	<.01 (+)	.05 (+)	<i>ns</i>	<.01
	<i>ns</i>	<.01 (+)	.01 (+)	<i>ns</i>	<i>ns</i>	.01
TAXON	.03	<i>ns</i>	.07	<.01	.04	<.01
	<i>ns</i>	.01	.02	.04	<i>ns</i>	<.01
	<.01	<.01	<.01	<.01	.02	<.01
	.06	.01	<.01	.05	<.01	<.01
DATE	<.01 (+)	<.01 (+)	.03 (+)	.04 (+)	.02 (+)	.01
	.04 (+)	.03 (+)	<i>ns</i>	<i>ns</i>	<i>ns</i>	<i>ns</i>
	<.01 (+)	<.01 (+)	.03 (+)	.04 (+)	<i>ns</i>	<.01
	<.01 (+)	.01 (+)	<i>ns</i>	<i>ns</i>	<i>ns</i>	<.01

Table 13. Percent of species with and without recovery plans (SQ:A8) and critical habitat designations (SQ:A10) whose HCPs were deemed to have included adequate information and analysis to estimate status (SQ:B42), take (SQ:C32), impact (SQ:D46), mitigation (SQ:E48), and monitoring (SQ:F79) of the species. Of the 97 species analyzed, 59 had recovery plans and 21 had critical habitat designations. Sample sizes shown in parentheses.

Category	% of Species with Adequate Information			
	Recovery Plan		Critical Habitat Designation	
	<u>With</u>	<u>Without</u>	<u>With</u>	<u>Without</u>
Status	60 (58)	76 (21)	29 (21)	77 (52)
Take	58 (57)	43 (21)	45 (20)	56 (50)
Effect	52 (56)	40 (20)	35 (20)	52 (50)
Mitigation	52 (54)	55 (20)	45 (20)	48 (48)
Monitoring	42 (52)	61 (18)	37 (19)	46 (46)

Table 14. Use of ecological theory in HCPs to estimate the adequacy of impacts of take (SQ:D1-6) and of mitigation/minimization measures (SQ:E1-6). Six categories of theory are included: genetic (gene.), population ecology (popn.), behavioral/physiological (behav.), biogeographical (biog.), community ecology (comm.), and ecosystem (ecosys.). Analysis is rated as either expert opinion, qualitative data, quantitative data with limited or poor statistical analysis, quantitative data with clear and relevant analysis, or quantitative data with good modeling of processes to extrapolate into the future (QB responses). Data are for 97 species.

	Category of Theory					
	Gene.	Popn.	Behav.	Biog.	Comm.	Ecosys.
<u>Impact Assessment</u>						
Expert Opinion	4	0	9	9	7	5
Qualitative	1	9	11	5	11	2
Limited Quant.	1	17	3	3	5	2
Clear Quant.	2	18	7	5	12	13
Quant. Model	0	0	0	0	0	1
# Times Theory Used	8	44	30	22	35	23
<u>Mitigation Assessment</u>						
Expert Opinion	5	8	7	9	6	7
Qualitative	1	14	9	4	29	16
Limited Quant.	0	15	11	4	5	2
Clear Quant.	2	11	7	11	6	14
Quant. Model	0	2	0	3	2	1
# Times Theory Used	8	50	34	31	48	40

U.S. Fish and Wildlife Service's Response to AIBS/NCEAS's Study *Using Science in Habitat Conservation Plans*

The Service applauds the American Institute of Biological Sciences and the National Center for Ecological Analysis and Synthesis for undertaking an in-depth analysis of the scientific data used in Habitat Conservation Plans (HCPs). The final manuscript makes sound recommendations to the Service for improving HCPs. We appreciate these suggestions and will take them under consideration. The Service already has incorporated many of the recommendations into the development of new HCPs. Some of these recommendations coincide with amendments to our HCP Handbook that will be published in the *Federal Register* shortly (the HCP Handbook can be found on our webpage: www.fws.gov/r9endspp/hcp/hcpbook.htm).

Nevertheless, we do not agree with the report's conclusion that the Service lacks adequate scientific data and analysis to support many of the approved HCPs. We believe that the 233 HCPs currently in place are based on sound science. If we lack critical information regarding the biological needs of a species proposed to be covered under an HCP, we will not approve the plan until such information is obtained or an acceptable adaptive management clause is added to the HCP.

Background

In the summer of 1997, AIBS/NCEAS began an in-depth study that sought to measure the availability, use and analysis of scientific data in HCPs. The project involved a team of 106 graduate students and 13 faculty advisors from eight universities, and had representatives from all areas of conservation sciences. The team gathered data on 208 approved HCPs to obtain basic information on their contents and conducted a detailed analysis of a representative set of 43 HCPs as case studies, using questionnaires focused on both plans and species. The study did not attempt to judge the quality of HCPs but limited itself to an analysis of whether the data supporting HCPs were scientifically adequate. AIBS/NCEAS divided the analysis into five stages: species status; analysis of incidental take, biological impact of incidental take; mitigation (including avoidance, minimization, and mitigation measures); and monitoring.

Early this past summer, the Service reviewed and commented on the draft study. We provided factual corrections, missing data, and recommendations for improvement. We also addressed concerns about methodology and how information was gathered, analyzed, and used to arrive at the final conclusions. Most of our data corrections were made and many of our recommendations were incorporated into the final document. However, because of the short review time, large amounts of data to review, limited staff and large staff workloads, we were unable to review all of the information collected by AIBS/NCEAS. Therefore, not all of the information used in the final analysis was verified by the Service.

The Service believes many of the report's conclusions are based on questionable methodology. The study applied a standard set of questions to each HCP that was not always relevant or applicable. For example, the study assumed that the Service should consider climate change data for all HCPs when the effects of climate change would not be necessary to determine the success of many HCPs. In addition, the AIBS/NCEAS reviewers may have overlooked relevant information in other documents the Service used when analyzing HCPs.

Specific Issues

Status/Take/Impact

According to the study, the Service adequately addressed take of listed species in only 56 percent of the

reviewed HCPs. Furthermore, the study stated that the Service did not fully analyze the impacts of take in many HCPs. We disagree. Predicting take is a statutory requirement. For an HCP to be approved, the applicant must include a "complete description of the activity sought to be authorized" and specify "the impact that will likely result from such taking."

Take can either be quantified by the number of individual species affected by an activity or the amount of habitat that will be lost. In many cases, quantifying habitat loss provides a better estimate of take because some species experience population fluctuations on a seasonal or temporal basis. Information regarding take and the effects of take may have been estimated in a way not readily captured by the questionnaire or the reviewer may not have understood the manner that take was estimated.

AIBS/NCEAS also may not have reviewed all the relevant documents. For example, the Service analyzes the actual amount, impact, and cumulative effects of take most thoroughly in the biological opinion prepared when issuing incidental take permits. It appears that this information may have been overlooked.

Mitigation

The study suggests that there are important gaps in the quality of the data underlying mitigation proposed in many HCPs. It concludes that given the uncertainty caused by such gaps, mitigation measure should be evaluated prior to the onset of take. While it is true that well-tested minimization and mitigation procedures would be most effective in reducing the overall impact to species, this usually is not practical.

The law requires the Service to use the best scientific information available at the time when evaluating an HCP. To meet this requirement, the Service consults with species experts, draws upon current ecological and conservation biology theory, and uses the best available ecological and biological information to develop mitigation measures. Service biologists gather data from a wide variety of sources, including scientific experts, federal, state and local agencies, peer-reviewed journals, professional organizations, and the general public. Much of the information used in the development of HCPs is peer-reviewed, providing a consistent, reliable and sound basis for decision-making. The Service also uses the best land management practices, information and appropriate tools (e.g., modeling, population viability analyses) available.

The amount and nature of mitigation included in an HCP is highly variable and should be commensurate with the proposed impacts. Often it is not practical for mitigation to precede take. For example, forest HCPs may require certain forest canopy or vegetation characteristics as mitigation measures that may not yet exist given the current age of the forest but will develop as the forest matures.

Monitoring

The study states that only 22 of the 43 plans reviewed had a clear monitoring program and that monitoring of HCPs is generally inadequate. The Service disagrees. The scope of a monitoring program must be commensurate with the proposed impacts, scope, and duration of an HCP. These vary widely. Low-impact activities covered by an HCP do not require the same degree of monitoring that a large-scale, regional HCP requires. The AIBS/NCEAS study failed to make this distinction. AIBS/NCEAS also may not have understood that specific monitoring tasks may be assigned to other entities, such as the state or tribal agencies, as long as the Service and parties responsible for implementing the HCP approve the monitoring assignment.

The applicant and Service may agree to include a general monitoring plan in an HCP but defer working out site-specific details until after an incidental take permit is issued to get a better idea of the monitoring regime needed.

Conclusion

HCPs are a work in progress. We are committed to continually improving the HCP process and welcome

recommendations for strengthening the program. We believe that HCPs are one of the ways to conserve endangered species on private lands in the 21st century. As mentioned above, the Service and the National Marine Fisheries Service will soon propose amendments to our HCP Handbook, that will improve the HCP process by:

Establishing measurable biological goals and objectives. Biological goals and objectives were not required in HCPs, however, in the future they will be specified in all HCPs. These goals and objectives will provide clear guidance for both the applicant and the Service while developing appropriate species conservation through an HCP.

Incorporating adaptive management into an HCP when there are significant biological data gaps or uncertainty. When an HCP incorporates an adaptive management strategy, the agreement would clearly state the range of possible adjustments and the circumstances under which these adjustments would be triggered. This provides additional flexibility in managing a species in the future. It also allows the applicant to assess the potential economic impacts of the adjustments before agreeing to the HCP.

Developing better monitoring strategies. Monitoring strategies will be improved and made more consistent to better determine whether a permittee is complying with the HCP, whether biological goals and objectives are being met, and whether adaptive management provisions should be triggered.

Increasing public participation in the HCP process. This would provide a minimum 60-day public comment period for most HCPs and a minimum 90-day comment period for most large-scale, regional, or exceptionally complex agreements. HCPs that qualify as low effect--i.e., those defined as involving minor or negligible effect on listed species, their habitats, or other environmental resources--would have a 30-day comment period.

Providing guidance on factors to consider in establishing the duration of incidental take permits. These factors include duration of the applicant's proposed activities, possible positive and negative effects on covered species, the extent of scientific and commercial data underlying the HCP's operating conservation program, the length of time necessary to achieve the benefits of the conservation program, and the extent to which the program incorporates adaptive management strategies.

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EXECUTIVE SUMMARY

In 1991, with little fanfare, Southern California embarked on an experiment in regional wildlife conservation: the Natural Community Conservation Program, or NCCP. The NCCP grew in size and significance, and soon hundreds of thousands of acres and dozens of rare and endangered species were involved. Now, as it reaches fruition, the NCCP is recognized to be of singular consequence both for the region's future and for the future of habitat protection in this country. This report evaluates the California experiment. While we applaud its aspirations, we find the program wanting in several important respects: in clear standards, in adequate funding, and, above all, in the fulfillment of its scientific promise.

THE NCCP AND THE CALIFORNIA GNATCATCHER

In the spring of 1993, one of the hottest battles in the history of endangered species protection came to a close. Bruce Babbitt, the newly appointed Secretary of the Interior, announced his decision to add the California gnatcatcher, a songbird that thrives in the state's vanishing coastal scrubland, to the federal "threatened species" list. This outcome satisfied neither the land developers nor the conservationists who had been at loggerheads over the issue. The conservationists believed the gnatcatcher should have been placed on the more protective "endangered species" list; the developers were incensed that the species had been "listed" at all.

Fundamental to Babbitt's decision was his endorsement of the NCCP, then a novel conservation program struggling to get off the ground. The program sought to avert future gnatcatcher controversies by bringing developers and environmentalists together with government officials around a planning table, where, collectively, they would design a habitat reserve for the entire region. By placing the gnatcatcher on the "threatened" list, Babbitt gave himself latitude: he could diverge from the strict procedures that Congress mandated for endangered species and specify an individualized habitat conservation plan. Thus, through a "special rule" announced the same day as the gnatcatcher listing, the Natural Community Conservation Program became the policy of the federal government.

The NCCP was born at the right time. Deadlock over the northern spotted owl was heating up the Pacific Northwest, and in that light, the gnatcatcher experiment—with its emphasis on cooperation and preventive planning—looked very appealing. For land developers, it promised freedom from the project-by-project permit requirements of the Endangered Species Act. For conservationists, it offered proactive, multispecies planning on an ecosystem level. Add to this the "new Federalist" appeal of a process that delegates enormous power to local government—and one perhaps had the makings of what Secretary Babbitt called a national model. The NCCP, Babbitt enthused, was the future of conservation, and overcrowded, overdeveloped Southern California would be its crucible.

From the NCCP's inception in 1991, the Natural Resources Defense Council has been a hopeful, but cautious, participant. NRDC led the fight to list the gnatcatcher, supported th

legislation authorizing and funding the NCCP process, and assisted a consortium of regional environmental groups that negotiated the local plans. We have advised, cajoled, criticized, and, when necessary, litigated. We have taken the leap of faith that Secretary Babbitt's ambitious compromise requires because, in our opinion, the NCCP's potential benefits are worth the risk. But for all its continuing promise we cannot ignore that, in its pilot application, the NCCP has too often been marred by inadequate science, poor funding, and undefined or underenforced regulatory standards.

DUBIOUS SCIENCE, DUBIOUS DECISIONS

The nation's endangered species laws put a premium on good science. Agencies enforcing the California and federal Endangered Species Acts, for instance, are enjoined to use the "best scientific data available" in deciding when and whether to list species. California's NCCP Act, though, is silent on matters of scientific standards -- indeed, the Act avoids setting standards of any kind -- leaving the California Department of Fish and Game, the state's wildlife agency, with executive carte blanche. Considerable discretion has been left to municipal and county governments in each of five participating "subregions," two in Orange County and three in San Diego County, charged with formulating a portion of the larger reserve.

The process started off on the right foot, with the Department convening an independent body of respected conservation biologists, known as the Scientific Review Panel (SRP), to draft guidelines for local planners. But the SRP was disbanded soon after its guidelines were released, and its successor, an advisory group called to work on an ad hoc basis, has rarely if ever been consulted. Orange County's Central-Coastal plan, the first of the subregional designs to win federal approval, went from conception to signature without a word of formal, independent expertise; nor was it submitted, finally, to the scientific community for "peer review" and validation.

Out of the politically charged planning process have come several dubious results that independent scientific oversight might have avoided. Orange County's risky disposition of the endangered Pacific pocket mouse, Chula Vista's approval of interim development in the habitat-rich area around southern San Diego County's Otay Lakes, and the wildlife agencies' approval of tollroad projects destined to destroy or fragment thousands of acres of intact, species-rich scrub -- these are three such follies. And throughout the region, planners have been counting species adequately "covered" by the plans -- absolving landowners of future responsibility -- without preparing or producing basic data on their distribution, dispersal, and viability. There are efforts underway in several counties to restore scientific credibility to the process, but not soon enough to spare Southern California decisions that threaten the soundness of any final NCCP configuration.

IN THE MIDST OF UNCERTAINTY, NO MARGIN FOR ERROR

The NCCP cannot guarantee the survival of species. Given the limits of science and the unpredictability of ecological processes, habitat planning contains, by its nature, an irreducible element of risk: even the best-laid conservation plan can be undone by fire or drought or other natural events. But there are many degrees of risk, and in this regard it must be said that the current process risks species in needless, unacceptable ways.

Compounding the NCCP's scientific deficiencies are various plan provisions whose liberality undermines the integrity of the reserves. For example, several conservation plans in Orange, San Diego, and Riverside Counties (at various stages of completion) permit large-scale infrastructural development-including major roads-within reserve boundaries. In a number of subregions, the boundaries themselves have not been financially secured. Where the lines are ultimately drawn depends on the future availability of funding; and with the price of land acquisition alone easily running some localities into the tens of millions, and planners relying hopefully on municipal bond issue and federal appropriations to make up the shortfall, the proposed boundaries must be regarded with skepticism. Development, by contrast, is assured.

Nonetheless, under the U.S. Fish and Wildlife Service's two-year-old "No Surprises" policy, little can be done if the reserve plans fail to meet ecological expectations. Once a plan is signed, no additional fees or land may be exacted from participating property owners, no matter what the circumstances. The only new steps the Service can impose are on-site management duties; if other measures are necessary, the government will be

left holding the bag. To make matters worse, the Service has begun offering these same generous assurances on species that the plans themselves do not cover. A concession was made on 400 acres of woodland and chaparral in Orange County's Central-Coastal subregion, extending "No Surprises" guarantees to every species-covered, uncovered, or undiscovered-dependent on those habitats. The Service has also proposed broad, habitat-based coverage for much of the southwest San Diego subregion.

With participant landowners lobbying the state legislature for California Environmental Quality Act (CEQA) exemptions, what say the government retains over future development may be forfeit. Developers may get the regulatory assurances they want, but in Southern California the fate of endangered species is still far from secure.

FINDINGS AND RECOMMENDATIONS

In many respects, the NCCP program marks an important advance in conservation planning. It reaches across jurisdictional boundaries, recognizes the interdependency of species and habitat, and attempts to plan proactively, before most of the species on its lists become "endangered." Moreover, as a collaborative effort, it brings together a broad range of disparate interests, and it includes the public in a process from which it would otherwise have been excluded. But in Southern California, the NCCP's flaws are also evident. The program lacks clear standards and reliable sources of funding; perhaps most importantly, it fails to provide for independent scientific input adequate to the complexity of the undertaking.

If lawmakers in Sacramento and Washington are serious about the NCCP's future, they must make changes in the program's design. We recommend the following:

- For the NCCP to function properly, the state and federal governments must retain and enforce existing wildlife protection laws, including the federal Endangered Species Act, the California Endangered Species Act, and the California Environmental Quality Act, all of which have been repeatedly targeted in recent years for weakening.
- The NCCP Act should be revised to ensure that planning proceeds on a sound biological basis, with an independent scientific body involved at every stage of the process, and a system of peer review established for assessing subregional reserve boundaries and covered species lists.
- The public's participation in every stage of the process, from guideline development to reserve management, should be guaranteed by law and promoted in practice.
- Clear standards should be set for reserve design, ensuring not just species survival but recovery, restricting infrastructure development within habitat boundaries, establishing adjacent buffer zones, and securing habitat in perpetuity from conversion to other uses.
- The U.S. Fish and Wildlife Service should tighten its "No Surprises" policy, recognizing the potential for unforeseen circumstances that require additional contribution from participating landowners to ensure species recovery. Assurance to landholders should be species-based, not habitat-wide, and take proper account of scientific uncertainty and changing circumstances.
- The Service should revise its accounting methods in tracking the loss of habitat and endangered wildlife during the interim planning period and fulfill its legal obligation of reviewing interim development every six months until the reserve plans are approved.



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Chapter 1

BIRD ON A WIRE

Coastal sage scrub, a unique mix of sage and other drought-resistant shrubs found no place else in the country, once ranged from present-day Ventura County in the north, down through the lowlands to San Diego. Coyotes and mountain lions, desert mice and songbirds flourished in this arid environment.

But as the human population grew, the native vegetation yielded. In the nineteenth century, grazing and agriculture drove out the buckwheat and sagebrush; in the twentieth century, urban development continued the process, as the small towns born in the heyday of citrus grew to meet the needs of emergent industry. Thus began the age of sprawl. Little thought was paid to land conservation, commons, wilderness, or wildlife preserves; what public land the cities set aside in the municipal parks programs of the early 1940s was dwarfed by sprawl in the boom years that followed the war.

Today, according to the U.S. Fish and Wildlife Service ("Service"), scarcely more than 10 percent of the indigenous scrub habitat remains -- and that vestige consists of fragments scattered across Los Angeles, Orange, Riverside, San Bernardino, and San Diego, the southland's five counties.^[1] In 1931, an aerial photograph of Orange, Riverside, and San Diego counties would have revealed 180 distinct patches of coastal sage scrub; by 1990, there were four times as many patches, and each (on average) was less than one-tenth its 1931 size.^[2] The region's chaparral, grassland, and riparian habitats are likewise fragmented and depleted.

What are the effects of urban sprawl on coastal sage scrub? If you imagine habitat to be like a living organism, with specialized features and functions that sustain life through constant change, suburbanization would be the equivalent of a shock to the system, exhausting it, lowering its resiliency. An organism whose resiliency falters cannot respond well to environmental stress -- in just such a way coastal scrub has become dangerously vulnerable to erosion, fire, and the incursion of exotic plants. The result can be read in the decline of native wildlife. In the continental United States, there is no region with more endangered, threatened, and otherwise sensitive species than Southern California, and perhaps no habitat in the region with more sensitive species than coastal sage scrub. Not only are we squandering, by our reckless expansion, a valuable component of the human ecology -- a natural regulator of water runoff and soil erosion; we are losing what conservation science calls "a reservoir of biodiversity."^[3]

By the early 1990s, the forecast for sage scrub conservation looked bleak. Efforts to preserve the southland's dwindling habitat were overwhelmed by pressures to develop it. In the period between January 1991 and March 1993, over 7,600 additional acres of undisturbed scrub were cleared in Orange and San Diego counties alone, and thousands more, zoning permits granted, were slated for development, for condos, golf courses, and gated communities.^[4] The engine of sprawl was being fed by a seemingly endless, upward trend in the region's population. For Orange County, demographers predicted a 29 percent increase over twenty years, counting from the last census; for San Diego, a 5

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percent increase over twenty-five years. San Bernardino's population was expected to grow 75 percent by the year 2010, and Riverside's population to more than double (see Table 1). By then, should the razing and paving of the early 1990s have continued unabated, at least another third of this most depleted habitat would have been lost.^[5]

ENTER THE GNATCATCHER

There were no quick fixes, no obvious ways to slow the rate of municipal expansion to more responsible levels. Land acquisition, the outright buying of habitat for preservation, was impracticable in the coastal foothills, where real estate prices, mounting upwards of forty thousand dollars an acre, are among the highest in the nation. As for legal remedies -- even the combined power of state and federal environmental regulation could not compel most developers to replenish the sage scrub they were destroying. Between 1985 and 1990, within the City of San Diego, just three acres were preserved for every hundred lost; other local jurisdictions seem to have done as poorly.^[6] Among the region's habitats only its wetlands, its tidal ponds and marshes, were categorically covered by rigorous mitigation requirements.^[7] For coastal sage scrub, something new was needed. The answer came in the form of a small, bluish-gray songbird, a sage-scrub obligate that was swiftly approaching extinction.

The coastal California gnatcatcher (*Polioptila californica californica*), its fate bound up with the decline of coastal scrub, is a true casualty of urban sprawl. Over the decades, development has worn away at its habitat, which once extended as far north as Ventura County and as far south as San Diego, rendering 70 to 90 percent of it unsuitable. The populations that remain are islanded on shrinking patches of land, exposed to fire, drought, and the predatory habits of cowbirds, which thrive on gnatcatcher nestlings and eggs.^[8] Increasingly vulnerable to ecological change, the gnatcatcher has become to sage scrub habitat what canaries are to coal mines -- signs of the diminishing viability of their surroundings. In 1993, according to the Fish and Wildlife Service, fewer than 2,500 pairs remained.^[9]

In March 1993, the steady decline of the gnatcatcher triggered what may be the nation's strongest conservation law: the federal Endangered Species Act (ESA). Born of the great environmental awakening of the early 1970s, the same that produced our principal clean air and clean water legislation, the ESA was intended to redress the toll taken on native wildlife by years of "untempered" development.^[10] Its methods are analogous to those of emergency room doctors. First, it authorizes the U.S. Fish and Wildlife Service to perform a kind of triage, identifying species in immediate jeopardy of extinction as "endangered" ("in danger of extinction throughout all or a significant portion of [their] range") or "threatened" ("likely to become an endangered species in the foreseeable future").^[11] Then it takes emergency measures -- making money available for the acquisition of habitat, devising management plans, and, most controversially, making it illegal for anyone without a permit to "harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect" the species.^[12] These protective provisions remain in force until the species is deemed to have "recovered."^[13]

The ESA's emergency measures do more than ward off hunters who would take endangered species directly; they also protect the species from such indirect incidental harms as habitat modification, which urban development entails.^[14] Adding the gnatcatcher to the government's list of endangered species would thus have had profound consequences for the future of coastal sage scrub. Development would have been (presumptively) barred on every gnatcatcher-occupied acre. Given the bird's estimated home range of thirty-five acres, this would have meant that as many as 89,000 acres of coastal scrub, widely distributed across the valuable coastal foothills, would have fallen under federal protection.^[15]

Exemptions would have been available; the Fish and Wildlife Service regularly issues "Incidental Take Permits" to developers under section 10 of the ESA. But prospective developers would first have had to present project-specific conservation plans, minimizing the impact of their projects and compensating (or "mitigating") for any habitat they intended to disturb.^[16] An analogous provision under the California Endangered Species Act, the Golden State's supplementary version of the federal law, would have placed a commensurate burden on landowners; responding to building interests, the state -- in defiance of its own experts -- refused even to *consider* the gnatcatcher for listing.^[17]

The coastal gnatcatcher first went through ESA triage in 1982; it was identified as a potentially endangered species, and a call went out for information on its condition. But the Service took no further action until the fall of 1990, when, under a provision of the ES allowing interested parties to submit "petitions" on a species' behalf, the Palomar Audubon Society and the San Diego Biodiversity Project, then subsequently NRDC and the Manomet Bird Observatory of Massachusetts, formally requested that the gnatcatcher be placed on the official federal list of endangered species. Along with their petition, NRDC and Manomet Bird Observatory delivered a detailed scientific assessment, or "status review," prepared by the country's leading gnatcatcher authority, Dr. Jonathan Atwood. The evidence was clear -- the species was in peril. On September 17, 1991, the Service proposed adding *Polioptila californica californica* to the federal endangered species list.^[18]

NATURAL COMMUNITY CONSERVATION PLANNING

Meanwhile, California Governor Pete Wilson was proposing an alternative habitat conservation program that he hoped would eliminate the need for listing the gnatcatcher and other sensitive species. A skeletal outline of that program was passed by the State Legislature as the Natural Community Conservation Planning Act of 1991 (NCCP), its goal: to provide "for the regional or areawide protection and perpetuation of natural wildlife diversity, while allowing compatible and appropriate development and growth."^[19]

The NCCP differs from the Endangered Species Act in several important respects. For one thing, it is broader in scope, eschewing the ESA's conservative species-by-species, project-by-project approach for an open-ended process that in theory could encompass hundreds of species and thousands of landowners. And it is intended to avert the need for last-ditch ESA measures, to preserve declining species before they reach the point of endangerment. Land developers, conservationists, and municipal officials would meet under the aegis of the California Department of Fish and Game and together develop a wildlife reserve for their region -- a process wholly unlike that of the reactive ESA.^[20] Unfortunately, where the ESA is rigorous and mandatory, the NCCP is vague and elective, failing to set even minimal standards for an appropriate reserve design, or, of more immediate concern, to give landowners sufficient incentive to participate.

With the gnatcatcher listing decision pending in Washington, the NCCP's pilot program was directed at Southern California's beleaguered coastal sage scrub. In San Diego County, agreements were signed to integrate two large-scale planning areas, one in the county's northwest quadrant and one in the southwest, into the program. In Orange County, three planning areas were founded, each concentrating on the holdings of a major player; in Riverside County, a multi-species conservation plan was contemplated.^[21] Yet the NCCP's flaws were evident. Within each planning area, relatively few acres were actually "enrolled" -- only 14 to 15 percent overall (with a much higher percentage in Orange County, whose participating developers held greater stakes). Predictably, many of the enrollments that were made had more to do with economic expediency than biological significance.^[22] With so few of the essential parties at the table, planning a scientifically sound reserve was, in some cases, impracticable.

All the while, development on unenrolled lands continued unabated. In Orange and San Diego counties alone over 7,600 acres of coastal sage scrub were razed during the program's inaugural years, hardly a mark off the preceding period, with most of the clearing done below 300 meters, where the gnatcatcher usually nests.^[23] A bill to amend the California Environmental Quality Act (CEQA), then circulating around the legislature, would have required developers to submit a detailed Environmental Impact Report prior to modifying any unenrolled scrubland. But this proposal satisfied no one. Developers argued that the NCCP rendered any additional measures superfluous; conservationists perceived that the CEQA, for all its procedural requirements, was a weak substitute for the substantive restrictions of the ESA.^[24] Without a strong incentive to bring developers to the table, the NCCP was doomed to fail.

THE NEW PARADIGM

Despite its modest beginnings, the NCCP had captured the imagination of Bruce Babbitt, the newly appointed Secretary of the Interior. He was struck by its vision of compromise between environmental and business interests, which, in the wake of the northern spotte

owl controversy, represented for him the necessary future of conservation. "We need to find common ground," the Secretary remarked, "to find parallel tracks that show the compatibility of environmental protection and economic development.... If we don't, we'll run ourselves right off a cliff."^[25] The gnatcatcher began to seem like Southern California's version of the spotted owl -- and many feared the political consequences of another "environmental train wreck." Already there were calls in Congress to liberalize the ESA.

Thus the Secretary took an unusual step. On March 30, 1993, over a year and a half after it proposed adding the gnatcatcher to the endangered species list, the Service released its final decision, designating the bird a *threatened* species instead. Ordinarily, threatened species are entitled to essentially the same protections that Congress prescribed for endangered species.^[26] In the gnatcatcher's case, however, a "special rule" was proposed, deviating from practice to accommodate California's NCCP and its more "holistic" approach to conservation.^[27] Had the gnatcatcher been deemed endangered, the Service would have had far less discretion.

The special rule modified the ESA's requirements in several significant ways. First, it expanded the bounds of the "incidental take" exemption, from one targeted at individual development projects to one broad enough to cover all the acres, jurisdictions, and landholders implicated in an NCCP plan. Since no plan could be implemented -- no habitat freed for development -- without its final approval, the Service had with this one stroke established itself within the planning process, taking up a supervisory position alongside the California Department of Fish and Game. Second, the Service retained the ESA's prohibition against take for developers who elected not to participate in the process; the separate costs of applying directly to the agency for a permit, it was hoped, would persuade landowners and jurisdictions to sign themselves up. Finally, the Service withdrew itself from the business of issuing permits during the interim period, while plans were in the works; it effectively delegated that task to the municipalities by pre-approving an undeclared amount of "incidental take" consistent with NCCP guidelines, reserving for itself a kind of veto power over individual projects.^[28] (See sidebar, *The Special Rule.*)

There were reasons to believe that this unexpected special rule diluted the uncompromising language of the Endangered Species Act. Under the ESA's permitting process, commercial considerations intrude only in cases of economic hardship; under the NCCP, commercial interests take a principal role in plan design.^[29] Under the ESA, the Service negotiates the terms of every exemption; under the NCCP, it must rely for the most part on the good faith of municipalities, which, unfortunately, are more exposed to local economic pressures.^[30] And while, under the ESA, developers seeking a permit must adhere to defined standards -- minimizing impacts on habitat and guaranteeing funds for conservation -- under the NCCP, their responsibilities are often unclear.^[31]

Still, as a supplement to the ESA, the California program held obvious promise. Just as emergency medicine cannot work effectively without preventive care, so the Endangered Species Act, though an essential tool, is itself insufficient -- engaged too late in the game when what it was intended to save is almost beyond saving. Most species on the endangered and threatened lists remain far from recovery, which alone should make us consider the NCCP's merits. Significantly, the state program is proactive, attempting to recover species before the emergency measures of the state and federal Endangered Species Acts are necessary. And in targeting multiple species and ecosystems for conservation, it takes a more comprehensive approach than either of these statutes, which protect species and habitat piecemeal. At least in theory, the NCCP is a manifestation of the new thinking in land stewardship: that to save a species, it is necessary to preserve the ecological system of which it is a part, "the full variety of life and its associated patterns and processes."^[32]

Ultimately, the NCCP will be measured by its success at preserving the biodiversity of Southern California's coastal sage scrub. That is the bottom line; and since the scrubland is, in the Service's words, "one of the most depleted habitat types in the United States,"^[33] the NCCP must be held to strict account. In the struggle to preserve biodiversity, the most promising event to transpire in the program's first two years was the creation of a Scientific Review Panel (SRP), a body of five eminent conservation biologists, charged with reviewing the relevant scientific data and formulating guidelines for the habitat reserve. How well the NCCP has acted on these guidelines, and how well it has dealt with matters of scientific uncertainty, is the subject of this report.

Notes

1. U.S. Fish and Wildlife Service, Special Rule Concerning Take of the Threatened Coastal California Gnatcatcher, *Federal Register*, 58 (March 30, 1993): 16751.
2. *Ibid.*, 16751-52. The data cited by the Service indicates a 58-61 percent decline of coastal sage scrub in the tri-county area between 1945 and 1990, and a four-fold increase in the number of patches, from 186 to 736, between 1931 and 1990.
3. P.F. Brussard, D.D. Murphy, and J.M. Reed, Research and Monitoring Needs (Sacramento: California Department of Fish and Game, Aug. 1993), 3-4.
4. California Department of Fish and Game, Detailed Information Regarding the Department of Fish and Game's 90-day Review of the Petition to List the Gnatcatcher as Endangered, Memorandum to Robert R. Treanor (March 20, 1995), 4.
5. This figure represents the ratio of (1) the projected consumption of coastal sage scrub in Orange and San Diego counties over twenty years, taking the loss between January 1991 and March 1993 as a base rate, to (2) the number of acres of coastal sage scrub remaining in Orange and San Diego counties as of March 1993.
6. U.S. Fish and Wildlife Service, Special Rule, 16753.
7. United States Code 16 (1996): § 1344 *et seq.* Under the provisions of the Clean Water Act, developers seeking to dredge or fill in "wetlands adjacent to waters of the United States" must first obtain a permit from the U.S. Army Corps of Engineers. Of some 14,000 development applications filed in 1989, approximately 10,000 were conditionally approved. David Salvesen, *Wetlands: Mitigating and Regulating Development Impacts* (Washington, D.C.: Urban Land Institute, 1990), 29.
8. Erica Fleishman and Dennis D. Murphy, A Review of the biology of the coastal sage scrub (Sacramento: California Department of Fish and Game, Aug. 1993), 40-42; Jonathan L. Atwood, Status Review of the California Gnatcatcher (*Polioptila Californica*) (Manomet, Mass.: Manomet Bird Observatory, Dec. 1990), 18-21.
9. U.S. Fish and Wildlife Service, Special Rule, 16743. The survey was taken before the Orange County wildfires of 1993; the consequent loss has not been determined.
10. United States Code 16 (1996): § 1531(a)(1) ("Findings").
11. United States Code 16 (1996): § 1532(6), (20) ("Definitions").
12. United States Code 16 (1996) §§ 1534, 1533(f)(1)(B)(i), 1538(1), 1532(19).
13. United States Code 16 (1996): § 1533(f).
14. United States Code 16 (1996): § 1538(1); *see also* California Fish and Game Code (1996) § 2080. Although the U.S. Fish and Wildlife Service and the California Department of Fish and Game have long interpreted their respective acts to bar incidental "take," the actual meaning of the statutory language has been disputed. On the federal level, the matter was settled by the U.S. Supreme Court in a 1995 case, *Babbitt v. Sweet Home Chapter of Communities for a Great Oregon*; but a contrary 1995 Opinion from the California Attorney General (Opinions of the Attorney General 78 (May 15, 1995): 137) leaves some doubt as to the state Act's application.
15. U.S. Fish and Wildlife Service, Special Rule, 16749.
16. United States Code 16 (1996): § 1539(a).
17. California Fish and Game Commission, Notice of Findings (Aug. 30, 1991) (finding "insufficient evidence to indicate that the petitioned action may be warranted"); Memorandum from California Department of Fish and Game to Robert R. Treanor, Executive Director (May 6, 1991) (making contrary finding).
18. *Federal Register* 56 (Sept. 17, 1991): 47053. The NRDC-Manomet petition had been filed concurrently with the California Fish and Game Commission, the agency charged with enforcing the state's Endangered Species Act; but the Commission refused even to acknowledge that a listing decision might be warranted. See "Preserve the Endangered Species Act" in the chapter on Recommendations.
19. California Fish and Game Code (1996): § 2805(a) ("Definitions"). The Natural Community Conservation Planning Act begins at section 2800.
20. California Fish and Game Code (1996): §§ 2810 ("Historical and Statutory Notes"), 2825 ("Nonregulatory guidelines").
21. U.S. Fish and Wildlife Service, Special Rule, 16754-55; Riverside County Habitat Conservation Agency, Status of Habitat Conservation Activities in Western Riverside County, California (Riverside: RCHCA, June 1996), 4.
22. U.S. Fish and Wildlife Service, Special Rule, 16754.
23. California Department of Fish and Game, Memorandum to Treanor (March 20, 1995), 4; *see also* U.S. Fish and Wildlife Service, Special Rule, 16753. As of March 1993, ninety-nine

percent of all gnatcatcher sightings occurred at or below 300 meters. *Ibid.*, 16751.

24. Senate Bill No. 1248, as amended in Assembly July 21, 1992 (Mar. 14, 1991), § 3.

25. Department of the Interior, News Release: Gnatcatcher To Be Listed As "Threatened"; Interior's Babbitt Promotes Regional Conservation Efforts (Washington: Office of the Secretary of the Interior, Mar. 25, 1993).

26. Code of Federal Regulations 50 (1996): § 1731(a).

27. U.S. Fish and Wildlife Service, Proposed Special Rule to Allow Take of the Threatened Coastal California Gnatcatcher, *Federal Register*, 58 (March 30, 1993): 16759; Code of Federal Regulations (1996): § 17.41(b) ("Special rules -- birds"). Because it is authorized pursuant to ESA § 4(d) ("Protective regulations"), it is sometimes known as "the 4(d) rule."

28. Code of Federal Regulations (1996): § 17.41(b)(2), (3) ("Special rules -- birds"); California Department of Fish and Game and California Resources Agency, Southern California Coastal Sage Scrub Natural Community Conservation Planning: Process Guidelines (Sacramento: California Department of Fish and Game, Nov. 1993), 12-13 (establishing Service review of interim projects, with silence indicating approval).

29. *Compare* United States Code 16 (1996): § 1539(b) ("Hardship exemptions") with California Fish and Game Code (1996): § 2810 ("provides a mechanism by which landowners and development proponents can effectively participate in the planning process").

30. *Compare* United States Code 16 (1996): § 1539 ("Exceptions") with Code of Federal Regulations (1996): § 17.41(b)(2) ("Special rules-birds").

31. *Compare* United States Code 16 (1996): § 1539(a)(2) with California Fish and Game Code (1996): § 2825.

32. Introduction, *BioDiversity*, ed. E.O. Wilson (Washington: National Academy Press, 1988).

33. U.S. Fish and Wildlife Service, Special Rule, 16751.



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Chapter 2

PROCESS AND PRINCIPLE

The Natural Community Conservation Planning Act of 1991 is a rather slender frame on which to hang an ambitious conservation program. The Act provides little more than general authority: plans developed under the program may "provide for the regional or areawide protection and perpetuation of natural wildlife diversity, while allowing compatible and appropriate development and growth." The legislation is virtually silent as to matters of content, standards, and procedure. Responsibility for developing the NCCP is effectively delegated to the Department of Fish and Game ("Department"), a division of the California Resources Agency, which the Act authorizes to prepare nonregulatory guidelines and enter into agreements "for the development and implementation of natural community conservation plans."^[34] Some members of the State Senate had wanted to provide the Department with more direction -- but there was little interest among their colleagues in legislative oversight, and their proposal died in committee.^[35]

To find method in the NCCP, one should look first to the planning documents that emerged in the first several years of the coastal sage scrub program, particularly to the land enrollment and process agreements prepared by the Department and the programmatic documents drafted by the NCCP's independent team of scientific advisors, the Scientific Review Panel (SRP). At the broadest level of the project are the Department's Process Guidelines and the SRP's Conservation Guidelines for Southern California Coastal Sage Scrub. Together, these directives establish general procedures for designing comprehensive NCCP plans and for permitting private development while the plans are in the works. These, too, are sketchy, however, because the SRP opted to leave nearly all of the specifics to planners at the local level.^[36]

For logistical reasons, the coastal belt of scrubland was divided into several focus areas, defined by geography, wildlife ecology, and human land-use patterns. Intact, contiguous blocks of scrub, such as on the Otay Mesa east of San Diego, were to be managed as single units, irrespective of municipal boundaries and variable public-private ownership. Initially, the SRP recommended grouping the focus areas into thirteen different administrative units, or "subregions," straddling the five counties.^[37] What has emerged in practice are four major planning units, two in Orange (the Central-Coastal and the Southern) and two in western San Diego County (the MSCP and MHCP) [see sidebar, *Acronyms and Abbreviations*], and a number of associated habitat management areas scattered about the region. (A detailed description of these units appears in the next chapter.) Left largely to their own devices, the subregions and subareas have had varying track records.

In this chapter, we review each of several essential ingredients of a well-functioning NCCP and consider how successfully they have been integrated into the coastal sage scrub program. Has the public been involved at every stage of the process? Has planning proceeded on a sound scientific basis, under clear regulatory standards? Have the incentives given to participating landowners been reasonable? Has adequate funding been secured for implementation of the plans? And, finally, have development and species status during the interim period been responsibly monitored? Local lapses in

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each of these categories argue for greater standardization, either at the legislative, the administrative, or the programmatic level -- a point to which we return in the final chapter

PUBLIC INVOLVEMENT

In the NCCP Act, public input is recommended but not required, one of several features that the Department of Fish and Game "may include" in its nonregulatory guidelines.^[38] The Department, in turn, has left the matter of public participation largely up to the subregions -- the issue received some attention in the Process Guidelines, but little explication. Public participation is a critical issue for the environmental community. Without the meaningful involvement of citizens, planners lack the political will to make hard choices; without a place at the table for conservationists, developers (whose place is assured) could easily set the tone of negotiations. The Department recognized the importance of including environmentalists in the planning process: "[They are] a major constituency for conservation decisions as well as a significant source of scientific information and a possible future land steward in plan implementation." But in defining the role of "conservation organizations," the Department noted only vaguely that it would "vary according to the needs of each subregional NCCP effort."^[39]

The level of public participation and conservationist involvement has varied from place to place. All four major subregions, the Southern and Central-Coastal in Orange County and the MSCP and MHCP in western San Diego County, appointed environmentalists to their policy boards, known as "working groups," but the working groups themselves have held differing degrees of authority. In Orange County, where meetings are closed to the public the groups have generally been limited to critiquing actions that the project team has taken; on occasion, as in the case of the Pacific pocket mouse (see Chapter 3), even the unanimous decisions have been ignored. By contrast, the San Diego subregions are striving to plan by group consensus in open meetings, generating policy papers that are later incorporated into official documents.^[40] Unfortunately, the purview of the San Diego working groups does not extend beneath the subregional level to the local jurisdictions -- Poway, Carlsbad, the City of San Diego -- where much of the line-drawing, map-making, and on-the-ground work is taking place.^[41]

Because its participation was mandated by neither the legislature nor the Department of Fish and Game, the environmental community has sometimes had to assert itself just to remain in the room. Consider, for example, its near omission from the Planning Agreement of the Central-Coastal subregion, which established a procedure for reserve design. Under an early draft of the Agreement, conservation groups and the general public would have been limited to "informational presentations" during the planning process and to commenting once a plan was prepared; the county's major landowner, on the other hand, would have taken charge of drafting the plan and assessing its environmental impact.^[42] A number of groups objected and the Agreement was revised, giving the County primary responsibility for the plan, and entitling "conservation representatives" to "regular discussions" with the design team.^[43]

Even in the final stages of the process, a seat at the table is not guaranteed. As originally planned, there was to be no direct public representation on the Board of the NCCP Non-Profit Corporation, the body entrusted with managing the Central-Coastal reserve. The Board was to be composed exclusively of landowners, municipal officials, and representatives of the wildlife agencies. Three public positions were added only after conservationists and citizens criticized the scheme.^[44]

SCIENTIFIC INTEGRITY

The nation's environmental laws are predicated on good science. Wildlife agencies enforcing the state and federal Endangered Species Acts, for instance, are enjoined to use the "best scientific data available" in deciding whether to list species.^[45] The NCCP Act, though, is silent on questions of science, setting neither substantive, procedural, nor evidentiary standards for data-gathering and reserve planning, deferring instead to the judgment of the Department of Fish and Game. It merely suggests that "one or more advisory committees" (of unspecified credentials) be appointed.^[46] Yet for an NCCP plan to have any chance at success, science must be its cornerstone. Planners cannot work effectively without thorough knowledge of coastal sage scrub and the wildlife it supports, including the distribution and range of resident species; their reproductive and migratory needs; the ecological roles played by predators and fire; and the complicating effects of

human development. And a plan's biological integrity cannot be ensured without independent scientific consultation and review.

The Department started off on the right foot by assembling (after consultation with environmentalists and landowners) an independent Scientific Review Panel -- a slate of conservation biologists and geographers with national recognition and local expertise -- to "develop scientifically credible planning area recommendations, field survey techniques, and biological conservation guidelines."^[47] Assuming that each planning area would present unique problems and opportunities, the SRP decided to couch its recommendations for planners in generalized terms, as a set of seven reserve design "tenets," such as "keep habitat contiguous" and "conserve target species" (see Chapter 3).^[48] It would be up to each subregional team to translate the tenets into local standards. How wide should a wildlife corridor be to link two patches of habitat? Which species should a plan cover? Having placed so much scientific responsibility on the subregions, the Department of Fish and Game ended extramural consultation. The SRP was disbanded in the fall of 1993, and for several months the NCCP forged ahead without a replacement. In 1994, under pressure from the environmental community, the Department appointed six scientific consultants, including several former members of the SRP, to render advice on an *ad hoc* basis, but it demurred from consulting them on subregional affairs.^[49]

The Department's position has made for a scientifically suspect process. Orange County Central-Coastal plan, the first of the subregional designs to win federal approval, received no formal input from biologists who were independent of the landowners and the regulatory agencies, nor was the plan submitted, finally, to the scientific community for "peer review" and validation. The politically-charged proceedings in this and other subregions yielded some ecologically dubious decisions that independent oversight might have prevented. The siting of three eight-lane tollroads, the San Joaquin, the Foothill and the Eastern, through some of Orange County's most intact sage scrub habitat. The Central-Coastal plan's reckless treatment of the Pacific pocket mouse, an extremely rare species once believed extinct, and only recently rediscovered on a four-acre plot of land at Dana Point.^[50]

There has been some belated interest in restoring scientific credibility to the process. In response to criticism from the environmental community, the NCCP Non-Profit Corporation, the body charged with managing the Central-Coastal reserve for the next seventy years, was directed to appoint a technical advisory committee "consisting of scientists knowledgeable in the fields of ecology, conservation biology, reserve management, [and] habitat restoration."^[51] And in Orange County's Southern subregion, The Nature Conservancy is launching a scientific advisory group to develop locally-relevant design principles, assess the ecological requirements of individual species, and formulate flexible strategies for the management of the reserve.^[52] But these efforts are only a first step, not an adequate substitute for the comprehensive procedural standards that an amendment to the NCCP Act could provide.

Good science takes time, and this necessity often conflicts with the tight budgets and schedules of the NCCP's researchers. For all the studies and surveys conducted over the years, many of them on the California gnatcatcher, in the fall of 1993 the available scientific information on coastal scrub was still sparse. The SRP, whose mission was to review data, soon found itself proposing and initiating research. Its ambitious agenda had six topical branches: inventories of sage-scrub residents; wildlife corridor use; population viability; genetic variation within species; the abundance, distribution, and life cycles of sensitive species; and biodiversity.^[53] (see sidebar, *The Biodiversity Concept*) In a perfect world, planning would not begin before all these data were collected and studied; but some studies can take years to perform, and developers (and municipalities) are usually less willing than conservationists to wait for the results.

The pressure development places on science is evident in the rapid expansion of the "covered species list," the manifest of plants and animals that the plans purport to protect. In the Central-Coastal subregion, what began as three critical species -- the gnatcatcher, the coastal cactus wren, and the orange-throated whiptail lizard -- ended up as forty-two; in southwest San Diego County, the list has rounded eighty-five.^[54] Many of these species have been deemed "covered" in the most summary fashion, without any hint in the published plans of quantitative analysis -- and this despite the loss, in some cases, of more than half their potential or actual habitat.^[55] Landowners cannot be faulted for wanting to develop their properties; at the same time, though, there is a price to be paid. Plans that cannot meet the basic regulatory standards applicable to any conservation plan under the ESA -- namely, to "not appreciably reduce the likelihood of the survival and

recovery of the species in the wild" -- should have species removed from their lists.^[56]

ASSURANCES TO LANDOWNERS

We'll just have to take a crap shoot. This process has got to be one or two steps better than the postage-stamp pieces of sage scrub being left [undeveloped] now. We just don't know if one or two steps better is enough.

-- Staff member, Department of Fish and Game^[57]

Although reassuring landowners is appropriate to win their participation in the NCCP, the Service has been offering too much, making promises that drastically reduce its future options should the program, which is one of undeniable risk, go awry. Compounding the scientific concerns discussed above are various plan provisions whose liberality undermines the integrity of the reserves. To begin with, several conservation plans -- the Orange County's Central-Coastal design and Riverside County's blueprint for the Stephens' kangaroo rat (a program allied, if not affiliated with the NCCP) -- permit large-scale infrastructure development, including major roads, within reserve boundaries. The Riverside plan does not put a cap on future development; and in neither case are future projects conclusively sited, actually drawn into the reserve map.^[58] Another problem for the reserves is the so-called "edge effect," the inevitable incursion of civilization along their perimeters. While a number of plans, such as the City of San Diego's, create buffer zones and regulate adjacent uses, others are less careful.^[59] The Central-Coastal plan, for instance, makes no provision to shield the reserve from significant adjacent noise pollution, such as from the former El Toro Marine Corps Air Station, whose runway may be extended to accommodate a commercial airport.^[60]

In a number of subregions, the boundaries themselves have not been financially secured. Where the lines are ultimately drawn depends on the future availability of funding, and with the price of land acquisition alone easily running in some localities into the tens of millions, and planners relying tenuously on municipal bond issues and federal appropriations to make up the shortfall, the present designs cannot be assured.^[61] Even the reserve boundaries are realized, they may well become shaky again. In the Central-Coastal subregion, the County of Orange may unilaterally alter the reserve design after seventy-five years. The applicable standard, "no net loss of habitat value," would not prevent officials from carving out new acres for development.^[62] If the Service objects to the County's modifications, it will have no recourse but to sue.

Nonetheless, under the U.S. Fish and Wildlife Service's two-year-old "No Surprises" policy -- an initiative of debatable legality,^[63] -- little can be done if the reserve plans fail to meet ecological expectations. Once a plan is signed, no additional fees or land may be exacted from participating property owners, no matter the situation. Even in the case of unforeseen, "extraordinary" circumstances -- an appreciable decline in habitat or in the population of a species -- new on-site management duties are the only thing the Service can impose. Any other measures are the government's responsibility.^[64] The "No Surprises" policy was explicitly incorporated into the approved Central-Coastal plan, but as a directive with nationwide applicability, it tacitly extends to the other subregions as well.^[65]

To make matters worse, the Service has begun offering those same generous assurances on species that the plans themselves were not designed to cover. First, a concession was made on 400 acres of woodland, cypress, cliff, and chaparral scattered across Orange County's Central-Coastal subregion; "No Surprises" guarantees were attached to every species -- covered, uncovered, or undiscovered -- dependent on those habitats.^[66] Suppose that, ten years from now, a woodland species not expressly covered by the plan is found to be on the verge of extinction; even though no specific effort had been made on its behalf, no account taken of its unique microclimatic and genetic needs, the cost of acquiring land and managing the species would fall exclusively upon the government. This policy was defended as a special case, an instance of equity, whereby the Service offered to share the burden of managing secondary, non-sage-scrub habitats. Moreover, the agency observed, the 400 acres at issue were small "both in absolute terms and [as a percentage] of the woodland, cypress, cliff, and chaparral protected under the plan."^[67] But within several months, the Service was proposing similar, habitat-based coverage for ten vegetative types -- including gnatcatcher-occupied coastal sage scrub -- throughout the southwest San Diego subregion.^[68]

In these ways, the NCCP threatens to recede beyond the government's reach -- and not

just the reach of the Endangered Species Act. Other applicable wildlife protection laws, such as the Migratory Bird Treaty Act and the Bald Eagle Protection Act, have also been made subject to the Service's guarantees.^[69] On the state side, a bill has been proposed to exempt participant landowners from certain provisions of the California Environmental Quality Act; if the bill becomes law, their projects' impacts on habitat, no matter how severe, would go unassessed.^[70] While business is getting its assurances, government may be losing its ability to respond.

FUNDING

The NCCP process does not end when consensus on a reserve design has been achieved. It is also necessary to establish the reserve -- and that takes money. While the NCCP Act is silent on budgetary issues, the Endangered Species Act sets a strict standard, requiring would-be developers to guarantee adequate funding for their conservation plans -- or risk rejection.^[71] This provision is vital -- without it, the soundest plan would be mere speculation, but it places a heavy burden on the subregions. With coastal scrubland fetching upwards of forty thousand dollars per acre -- over a million per acre in such prized districts as the Dana Point Headlands on the Orange County shore -- the NCCP's seven million dollar budget falls far short of the funding needed to acquire the several reserves outright and manage them into the future.^[72] The Central-Coastal subregion estimates its plan will cost \$34 to \$39 million over the next twenty years, with \$9 to \$10 million spent on land acquisition; the cost of the MSCP reserve in southwest San Diego runs into the *hundreds* of millions, with land acquisition for the thirty-year program estimated at \$5 to \$9 million *per year*.^[73] Of course, the subregions cannot simply seize the land. When a land-use regulation deprives a landowner of all economic use of his property, due process demands that "just compensation" be given.^[74]

Thus far, a principal source of land has been the private developer, required to mitigate for the habitat he disturbs. Nearly half the Central-Coastal reserve, for instance, was secured from The Irvine Company as mitigation for prior projects.^[75] Riverside County raised over \$30 million for Stephens' kangaroo rat habitat by levying a local mitigation fee on every acre of new development within a 500,000-acre region.^[76] Unfortunately, state and federal appropriations do not begin to meet the need, and voter initiatives have failed to yield results. (Californians recently voted down a "Parkland Bond," which would have raised some \$2 billion for conservation and recreation programs.)^[77]

There is talk of legislation in Congress that would help remedy the problem of shortfall -- bill to establish a revolving loan fund, financed in part by petroleum reserve sales, for the acquisition of urban habitat.^[78] Alternatively, the Congress might free some of the untapped millions already lying in the Land and Water Conservation Fund, which for twenty years has grown on the proceeds of surplus government property.^[79] A guaranteed stream of income from the federal government would go far. But financing the reserves will probably require more creative solutions, ones that depend less on budget-addled legislatures and more on market forces.

In this regard, "conservation banking" -- an idea tried with some success elsewhere in the country -- has begun to attract attention. The premise is simple. A landowner dedicates a parcel of significant habitat to open space; the land may later be sold at a profit to private developers who seek off-site mitigation for their own projects. In April 1995, with the blessing of the California Resources Agency, Bank of America assigned 180 private acre in the Carlsbad Highlands to wildlife habitat and opened the NCCP's first conservation bank; given high local demand, the dedicated acres sold out in little more than a year. Now the City of Carlsbad, encouraged by this first success, is considering new banking arrangements to ease the burden of land acquisition; additional banks have opened elsewhere in San Diego County.^[80] Other promising financing schemes have yet to be tried, including the use of transferable development credits for landowners, and property tax reassessments on real estate adjacent to the reserve, whose market value will tend to rise. The latter arrangement has the further advantage of equity. It lifts the burden from new developers, who for some time have borne much of the cost of conservation, and spreads it among more of those who stand to benefit financially. Without the use of every available means, some subregions will find it difficult to guarantee adequate funding for their NCCP plans.

INTERIM DEVELOPMENT

In adopting its "special rule" for the California gnatcatcher, the Service made an allowance for "interim development," projects proposed while the plans were in the works. Incidental take of the species would be permitted, the agency announced, so long as it conformed with the SRP's Conservation Guidelines.^[81] This provision had two effects. First, it let the SRP set the ground rules -- a reasonable decision, given the consonance of their criteria with the ESA's.^[82] Second, it effectively withdrew the federal government to the sidelines of the permitting process, handing over the business of receiving and approving applications to the subregions, and reserving for itself a kind of veto power. Thus, rather than petition the Service for a permit, a builder could make his appeal to the county government, potentially a less onerous process. But the Service did not cede all of its leverage. If it believed an approved project fell short of the SRP's criteria, it could withhold its permission; and for truly insensitive projects, it could threaten to reject the entire plan. (In fact, to protect the vital Otay Ranch from residential overkill, the agency did exactly this.)^[83] The reasonableness of interim development under the NCCP depends on the Service's vigilance; unfortunately, the results have been mixed.

The SRP set a specific cap on development during the interim period. In each subregion, no more than 5 percent of the region's coastal sage scrub could be taken, and then primarily land of lesser habitat value. The area's largest contiguous block of scrubland, being by definition of "higher value," would be left untouched. Correctly identified, the biologists noted, about 50 percent of the sage scrub in each subregion would fall into the upper category; "lower value" habitat would comprise between 10 to 25 percent.^[84] The rationale for the 5-percent rule was simple. Since by conservative estimates the same amount of habitat might successfully be restored, an interim loss of 5 percent was not thought to compromise the region's long-term ecological prospects.^[85] What the SRP envisioned, then, was a *quid pro quo*: a limited amount of low-grade habitat to be taken now, an equivalent amount to be restored later.

The Service and the Department of Fish and Game were to be the region's accountants, tallying each approved land conversion against the maximum allowed, making sure that, per the special rule, permitted development "did not exceed the [SRP's] restrictions."^[86] I was also to keep track of the total number of gnatcatchers affected, counting them against a 116-pair "ceiling," the statistical equivalent of a 5-percent cap.^[87] As it turned out, the rate of development had slowed -- a result as much of the lingering California recession, perhaps, as of the new restrictions. In the two years that followed the listing, only 740 acres of coastal scrub were approved for clearing, less than half of what previously would disappear in one year.^[88] Nonetheless, the Service made two mistakes in its role as accountant. First, it let the gnatcatcher loss count rise above the established limit^[89] -- an outcome it might have avoided by faithfully reviewing the Conservation Guidelines every six months, as the special rule requires.^[90]

Second, the agency made a misleading distinction between take approved under the special rule and take approved through normal channels, the permit and consultation processes of the ESA. Using this method, it failed to account for several of the most damaging projects, including the San Joaquin, Eastern, and Foothill Transportation Corridors.^[91] These three federal tollroads will disturb thousands of acres in Orange County's Central-Coastal and Southern subregions, laying swaths of traffic through gnatcatcher habitat of the highest value. (See Chapter 3, *Orange County*.) Given the principles embodied in the Conservation Guidelines, the Service's exclusion of these projects from its tally was unjustifiable.^[92]

Notes

34. California Fish and Game Code (1996): §§ 2805, 2810, 2825.

35. Interview with Steve Johnson, The Nature Conservancy (Aug. 9, 1996). (Mr. Johnson participated in drafting the NCCP Act of 1991.) The bill, introduced in the Senate Committee on Natural Resources and Wildlife, would have set minimal requirements for public consultation in the planning process and basic standards for Departmental approval of completed plans, barring implementation of any plan that would "adversely impact any threatened or endangered species listed under federal or state statute." Senate Bill No. 1248, as amended in Assembly Sept. 10, 1991 (Mar. 14, 1991), § 4(a).

36. Interview with Mike O'Connell, NCCP Program Director, The Nature Conservancy (Aug. 21, 1996).

37. California Department of Fish and Game and California Resources Agency, Southern California Coastal Sage Scrub Natural Community Conservation Planning: Conservation Guidelines (Sacramento: California Department of Fish and Game, Nov. 1993), 3, 18.
38. California Fish and Game Code (1996): § 2025(a)(5) ("Nonregulatory guidelines").
39. California Department of Fish and Game and California Resources Agency, Southern California Coastal Sage Scrub Natural Community Conservation Planning: Process Guidelines (Sacramento: California Department of Fish and Game, Nov. 1993), 18.
40. Interview with Dan Silver, Coordinator, Endangered Habitats League (July 15, 1996). Mr. Silver is a member of all four working groups. See also City of San Diego, Multiple Species Conservation Program: MSCP Plan Public Review Draft, 1-8 ("The Working Group has served ... as the vehicle for building consensus").
41. Interview with Craig Adams, member, MSCP Working Group (July 22, 1996).
42. Interview with Ann Notthoff, Senior Planner, NRDC (Dec. 18, 1996). Ms. Notthoff was NRDC's representative at the planning agreement meetings.
43. California Resources Agency, California Department of Fish and Game, *et al.*, Memorandum of Agreement Regarding the Preparation of a Natural Community Conservation Plan for the Coastal/Central Orange County Subregion of the Coastal Sage Scrub Natural Community Conservation Program (Mar. 30, 1993), 11.
44. County of Orange Environmental Management Agency, Central and Coastal Subregion Natural Community Conservation Plan/Habitat Conservation Plan Joint Programmatic Environmental Impact Report No. 553 and Environmental Impact Statement SCH No. 93071061: Response to Comments (Santa Ana: County of Orange, Mar. 1996), 144-45, 213 (adding one public representative "based on the comments submitted"); California Resources Agency *et al.*, Implementation Agreement regarding the Natural Community Conservation Plan for the Central/Coastal Orange County Subregion of the Coastal Sage Scrub Natural Community Conservation Program (Santa Ana: County of Orange, May 1996), 41 (adding three public representatives).
45. United States Code 16 (1996): § 1533(b)(1)(A) ("Basis for determinations"); California Fish and Game Code (1996): § 2074.6 ("Review of status of species; report").
46. California Fish and Game Code (1996): § 2825(a)(3) ("Nonregulatory guidelines"); see generally § 2800 *et seq.*
47. California Department of Fish and Game, Report on the Status of the Natural Communities Conservation Planning Program, 1991-1992 (Sacramento: California Department of Fish and Game, 1992), 2. The SRP's five members were: Dr. Dennis Murphy, Chair (Stanford University); Dr. Peter Brussard (University of Nevada, Reno); Dr. Michael Gilpin (University of California, San Diego); Dr. Reed Noss (private consultant); and Dr. John O'Leary (San Diego State University).
48. California Department of Fish and Game and California Resources Agency, Conservation Guidelines, 9.
49. California Department of Fish and Game and California Resources Agency, Natural Community Conservation Planning: Innovation in Multi-Species Protection in the Coastal Sage Scrub Habitat of Southern California: Report to the Legislature (Sacramento: California Department of Fish and Game, Aug. 1995), 9-10 (list of advisors); letter from Dan Silver, Coordinator, Endangered Habitats League, to Michael Spear, Regional Director, U.S. Fish and Wildlife Service (July 23, 1994) (technical committee's contracts overdue; insufficient funds for committee); interview with Dan Silver (July 15, 1996).
50. County of Orange Environmental Management Agency, Central and Coastal Subregion Natural Community Conservation Plan/Habitat Conservation Plan (Santa Ana: County of Orange, Dec. 7, 1995), II-233 to II-235.
51. California Resources Agency *et al.*, Implementation Agreement Regarding the Natural Community Conservation Plan for the Central/Coastal Orange County Subregion, 43.
52. The Nature Conservancy, Memorandum on Integrating Science into the Orange County Southern NCCP (Sept. 2, 1996); interview with Mike O'Connell, NCCP Program Director, The Nature Conservancy (Aug. 21, 1996). The Conservancy proposal does not include a provision for scientific "peer review."
53. California Department of Fish and Game and California Resources Agency, Conservation Guidelines, 6-7.
54. County of Orange Environmental Management Agency, Central and Coastal Subregion Natural Community Conservation Plan, II-219 to II-225; interview with Michael Beck, member, MSCP Working Group (July 15, 1996).
55. *Ibid.*; see also Letter from Gail C. Kobetich, USFWS Field Supervisor, to Larry Eng, NCCP Program for Coastal Sage Scrub (Mar. 10, 1995) (noting that paucity of data for most "covered" species complicates the Service's evaluation of the MSCP).
56. United States Code 16 (1996): § 1539(a)(2)(B)(iv) ("Permits").
57. Deborah B. Jensen *et al.*, *In Our Own Hands: A Strategy for Conserving California's Biological Diversity* (Berkeley: U. of California Press, 1993), 246.

58. County of Orange Environmental Management Agency, Central and Coastal Subregion Natural Community Conservation Plan, II-310 to II-324 ("Infrastructure Policies"); County of Riverside *et al.*, Riverside County Habitat Conservation Plan Implementation Agreement: Final Review Draft (Apr. 1, 1996), 12 ("Construction of Public Facilities").
59. City of San Diego, City of San Diego MSCP Subarea Reserve Plan: Draft (San Diego: City of San Diego, Oct. 9, 1995), 41-43.
60. Interview with Elisabeth Brown, member, Central-Coastal Working Group (Sept. 17, 1996).
61. *See, e.g.*, County of Orange Environmental Management Agency, Central and Coastal Subregion Natural Community Conservation Plan, II-345, II-348, II-350.
62. California Resources Agency *et al.*, Implementation Agreement Regarding the Natural Community Conservation Plan for the Central/Coastal Orange County Subregion, 45-46; interview with Pete DeSimone, member, Central Coastal Working Group (July 16, 1996).
63. *See, e.g.*, Notice from Kimberley K. Walley and Eric R. Glitzenstein, Meyer & Glitzenstein, to Bruce Babbitt, Secretary of the U.S. Department of the Interior, *et al.*, Notice of Violation of the Endangered Species Act in Connection with the DOI and DOC's Issuance of an August 11, 1994, Memorandum Which Instituted a New "Policy" Entitled "No Surprises: Assuring Certainty for Private Landowners in Endangered Species Act Habitat Conservation Planning" (June 13, 1996), 5-9 (arguing that the directive violates ESA §§ 2, 7, and 10).
64. U.S. Fish and Wildlife Service and National Marine Fisheries Service, No Surprises: Assuring Certainty for Private Landowners in Endangered Species Act Habitat Conservation Planning (Washington, D.C.: Department of the Interior, Aug. 11, 1994).
65. California Resources Agency *et al.*, Implementation Agreement Regarding the Natural Community Conservation Plan for the Central/Coastal Orange County Subregion, 112-15; U.S. Fish and Wildlife Service and National Marine Fisheries Service, No Surprises, 2 (applies to all Habitat Conservation Plans).
66. California Resources Agency *et al.*, Implementation Agreement Regarding the Natural Community Conservation Plan for the Central/Coastal Orange County Subregion, 98-101.
67. County of Orange Environmental Management Agency, Central and Coastal Subregion Natural Community Conservation Plan/Habitat Conservation Plan: Response to Comments, 49-52.
68. City of San Diego, Multiple Species Conservation Plan: MSCP Plan Volume I (Aug. 1996), 3-26; *see also* letter from Gail C. Kobetich, U.S. Fish and Wildlife Service Field Supervisor, and Ron Rempel, NCCP Program Manager, to Ron Roberts, Chairman, San Diego County Board of Supervisors (Apr. 29, 1996), 1 (offering habitat-based assurances).
69. *See, e.g.*, California Resources Agency *et al.*, Implementation Agreement Regarding the Natural Community Conservation Plan for the Coastal/Central Orange County Subregion, § 8.3.7 (MBTA); City of San Diego *et al.*, Draft Implementing Agreement (Aug. 16, 1996), 18 (MBTA and BEPA).
70. Assembly Bill No. 795, as amended in Assembly Jan. 22, 1996 (Feb. 22, 1995).
71. United States Code (1996): § 1539(a)(2)(B)(iii) ("the applicant will ensure that adequate funding for the plan will be provided").
72. City of Carlsbad, Habitat Management Plan for Natural Communities in the City of Carlsbad, California: Public Review Draft (Carlsbad: City of Carlsbad, June 1994), 113; letter from California Environmental Law Project to Gail Kobetich, U.S. Fish and Wildlife Service Field Supervisor, and Tim Neely, County of Orange Environmental Management Agency (Jan. 26, 1996), 26.
73. County of Orange Environmental Management Agency, Central and Coastal Subregion Natural Community Conservation Plan, II-344; City of San Diego, Multiple Species Conservation Program: MSCP Plan Public Review Draft, 5-4; letter from Acting Regional Director, U.S. Fish and Wildlife Service Region 1, to Director, U.S. Fish and Wildlife Service (Feb. 8, 1996) ("Funding Needs for Habitat Conservation Plans in California in FY 1997 and Beyond") (land acquisition in the MSCP subregion to cost between 5.2 and 9.2 million dollars per annum).
74. The U.S. Supreme Court has ruled that any land-use regulation that deprives an owner of "all economically viable use" of his land constitutes a "taking," entitling him to "just compensation" under the Fifth Amendment of the U.S. Constitution; in some cases, the loss of some economically beneficial uses constitutes a taking as well. *See Lucas v. South Carolina Coastal Council*, Supreme Court Reporter 112 (1992): 2895.
75. County of Orange Environmental Management Agency, Central and Coastal Subregion Natural Community Conservation Plan, II-341 (17,877 acres as mitigation for prior projects out of 38,738 total acres conserved).
76. Riverside County Habitat Conservation Agency, Status of Habitat Conservation Activities in Western Riverside County, California (Riverside: Riverside County Habitat Conservation Agency, June 1996), 2.
77. Within the federal and state budgets, several funds exist to facilitate land acquisition. On the federal level, several hundred million dollars are potentially available from the Land and

Water Conservation Fund alone. Other significant federal sources include the National Fish and Wildlife Challenge Grant and the Pittman/Robertson Wildlands Acquisition Program. State sources include the Environmental Enhancement and Mitigation Program, the Habitat Conservation Fund, the Wildlife Restoration Fund, and the Environmental License Plate Fund.

78. Wildlife Habitat Acquisition and Enhancement Act of 1996: Alternative #2-6/Draft (Aug. 21, 1996); see also letter from The Growth Management Institute to the Hon. James Saxton, U.S. House of Representatives (Aug. 12, 1996) (noting Rep. Saxton's plans to introduce the bill in Congress).

79. United States Code 16 (1996): § 4601-5 ("Land and water conservation fund; establishment").

80. Interview with Don Rideout, City of Carlsbad Planning Department (July 24, 1996) (on BOA conservation bank in Carlsbad); County of San Diego, San Diego County Subarea Plan: Draft (San Diego: County of San Diego, April 24, 1996), 4-24 to 4-25 (on conservation banking within Metro-Lakeside-Jamul Segment).

81. Code of Federal Regulations 50 (1996): § 17.41(b)(3) ("Special rules -- birds").

82. Code of Federal Regulations 50 (1996): § 17.41(b)(2), (3) ("Special rules -- birds") (to apply, SRP Guidelines must first "meet the standards set forth in 50 C.F.R. 17.32(b)(2)").

83. Letter from Gail C. Kobetich, U.S. Fish and Wildlife Supervisor, to Larry Eng, NCCP Program for Coastal Sage Scrub (Mar. 27, 1995), 1.

84. The other factors in assessing value include the presence of natural vegetation and target species, and the land's proximity to other patches of coastal scrub. Chaparral and grasslands that connected blocks of scrubland are thought to be of "intermediate value," and thus are also immune from interim development. California Department of Fish and Game and California Resources Agency, Conservation Guidelines, 11-14.

85. *Ibid.*, 3-4 (predicating 5% interim loss cap on "5% enhancement potential for existing CSS habitat"); see also *ibid.*, 15-16 (suggesting that public agencies restore habitat lost to interim development in case planning process fails).

86. Code of Federal Regulations 50 (1994): § 17.41(b)(3)(iii) ("Special rules -- birds").

87. Interview with Nancy Gilbert, U.S. Fish and Wildlife Service Carlsbad Office (July 29, 1996).

88. Memorandum from the California Department of Fish and Game to Robert R. Treanor, Executive Director of the California Fish and Game Commission (June 16, 1995), 7.

89. U.S. Fish and Wildlife Service, Reintroduction of Formal Consultation of the Special Rule for the Coastal California Gnatcatcher (Oct. 18, 1996).

90. Code of Federal Regulations 50 (1996): 17.41(b)(4) ("Special rules -- birds").

91. Interview with Nancy Gilbert, U.S. Fish and Wildlife Service, Carlsbad Office (July 29, 1996).

92. "The baseline should reflect the extent of CSS as of March 25, 1993, the time the SRP conservation strategy recommendation was made and the [Service's] listing of the California gnatcatcher was published. Only those projects approved by [the Department and the Service] prior to March 25, 1993, and explicitly meeting the requirements of the Endangered Species Act should be excluded from the baseline." California Department of Fish and Game and California Resources Agency, Conservation Guidelines, 10.



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Chapter 3

SEARCHING FOR COMMON GROUND

With the listing of the gnatcatcher, the planning process began in earnest. Efforts in Orange County were concentrated on three distinct subregions, two in the fragmented "Central-Coastal" area (which were soon combined) and the third in the county's "Southern" quadrant, remarkable for its large, contiguous blocks of unspoiled habitat. The focus in San Diego County was on the highly urbanized seaboard, which planners apportioned into two regimes -- a northern and a southern -- known respectively as the Multiple-Habitat Conservation Program (MHCP) and the Multiple-Species Conservation Program (MSCP). Planning in the county's rural east would proceed more gradually. Other significant management programs of varying affiliations with the NCCP could be found in Los Angeles, Riverside, and San Bernardino counties.

Initially, the NCCP's architects reserved eighteen months for subregional planning, from May 1, 1992 to October 31, 1993.^[93] In that time, local governments were to assemble land developers, conservationists, and other parties with a stake in the proceedings; marshal all the necessary data; and produce -- by consensus -- a plan that was both politically feasible and biologically sound. Completed plans would then be submitted to the California Department of Fish and Game and the U.S. Fish and Wildlife Service for formal review. Not surprisingly, the eighteen-month deadline proved unrealistic. Of the major subregional plans, only Orange County's Central-Coastal has been passed on to the wildlife agencies and endorsed. At least one of the other plans, the MSCP, is now nearing completion, having just recently been approved by the City of San Diego.^[94] Before briefly discussing the subregions, we should consider the regulatory standards by which the plans are to be evaluated.

How large should a reserve be to pass muster? How diverse? How contiguous? Like the state and federal Endangered Species Acts, the NCCP should caution us toward conservatism. Once approved, an NCCP plan becomes subject to the Service's "No Surprises" policy, a long-term guarantee to participating landholders that no further exactions will be made.^[95] Only under "extraordinary circumstances" -- defined in the Central-Coastal plan, for example, as a significant, unforeseen decline in habitat or in the population of a target species -- might a landholder be compelled to do more; but in no event would additional lands be required.^[96] (See Chapter 2, *Assurances*.)

For a decision with such finality and with such serious implications for the future of Southern California, the standards the wildlife agencies will use to review the plans are distressingly murky. Any sensible evaluation of an NCCP plan must begin with the "basic tenets of reserve design," the set of advisory criteria developed by the Scientific Review Panel and included in its *Conservation Guidelines*. (See sidebar, *Basic Tenets of Reserve Design*.) Optimally, a designer would preserve coastal sage scrub in large, variegated blocks (known as "cores"), and secure them as far as possible from human intrusion. Special land bridges (known as "corridors") would link the blocks together, connecting now-divided populations and providing routes for species migration and dispersal. Unfortunately, the SRP's tenets are couched in relative terms that do not help in

determining the actual merit of a specific plan.

The Service and the Department have agreed to apply the federal and state Endangered Species Acts. At first blush, these statutes -- conceived to guard against individual acts of species "take" on discrete parcels of land -- seem unsuited to the task of evaluating comprehensive, subregional plans. Yet a number of their provisions contain appropriate (somewhat general) standards. Consider the criteria that a subregional plan -- like any incidental take permit under the ESA -- must meet for each "covered" species:

- (i) [T]he taking [from development authorized by the plan] will be incidental;
- (ii) the applicant [that is, the lead agency] will, to the maximum extent practicable, minimize and mitigate the impacts of such taking;
- (iii) the applicant will ensure that adequate funding for the plan will be provided;
- (iv) the taking will not appreciably reduce the likelihood of the survival and recovery of the species in the wild; and
- (v) ["such other measures that the Secretary may require as being necessary or appropriate for the purposes of the plan"] will be met.^[97]

Under the third criterion ("adequate funding"), a plan such as the Central-Coastal subregion's, which relies for the greater portion of its budget on unsecured federal and state appropriations, would be justly subject to criticism.^[98] And the ESA's emphasis on species "recovery" (criterion iv) hints at a higher standard than the subregions, with their focus on "viability," have been applying; indeed, the Service is obliged by another provision of the Act to formulate a *recovery* plan for every listed species.^[99] That it has approved a major subregional plan without taking this basic step does not alter the requirements of the law. The ESA's standards, general as they may be, must be reckoned with.

ORANGE COUNTY: THE CENTRAL-COASTAL SUBREGION

The first subregion to complete its NCCP plan consists of two geographically distinct areas comprising some 208,000 acres: the Coastal section, running through the San Joaquin Hills from Newport Beach south to Dana Point; and the Central section, extending across the plains into the foothills of the Santa Anas and the Cleveland National Forest. Initially, the County had considered managing its coastal and central sections separately -- an arrangement suggested by the SRP in its Conservation Guidelines -- but decided to try "conservation planning at the largest feasible scale."^[100] In a practical sense, the subregion was designed around the area's principal landholder, The Irvine Company, which ultimately committed nearly 21,000 acres to the reserve -- more than half the total reserve area.

The concentration of so much property in the hands of one party eased the problem of land acquisition. Most of the land The Irvine Company would contribute (almost 18,000 acres) had already been dedicated to habitat conservation, as mitigation for prior projects. The remainder of the reserve (17,000 acres) consisted almost entirely of public lands, such as state and county parks and portions of the former El Toro Naval Air Station. On May 7, 1993, a Planning Agreement was signed by the County, eleven incorporated cities, the state and federal agencies, and several landholders, The Irvine Company included. The process was underway.

Following the SRP's lead, planners began to design a system of "cores" and "corridors," the cores being contiguous blocks of habitat, and the corridors narrow land bridges linking them. Unfortunately, one of the essential cores, the twenty-thousand-acre coastal Laguna Greenbelt, was slated to be traversed by a major eight-lane highway, the San Joaquin Hills Transportation Corridor -- creating a direct loss of 155 acres of high-quality habitat and fragmenting thousands more.^[101] The alignment's problems were clear in the light of the SRP's Conservation Guidelines, but the Service refused to reconsider its approval of the tollroad, and after legal challenges were exhausted, construction began. Subsequently, one of the critical wildlife corridors, the Salt Creek passage connecting the Central to the Southern, was lost to the plan when Laguna Niguel, exercising its right under the voluntary NCCP, withdrew from the process.^[102]

The Pacific Pocket Mouse

The Pacific pocket mouse is an extremely rare species, with individuals numbering only in the dozens. For some twenty years it evaded the census-takers and was actually thought to be extinct. Its rediscovery in 1993 occasioned an emergency listing procedure, which put the species on the endangered list within six months. There are only two known populations of pocket mice in the world today: one, the larger, is on Camp Pendleton, a Marine Corps base at the county's southern edge; the second can be found on the Dana Point Headlands, along the shore. It is imperative to conserve both. What small chance the species has to survive and recover depends significantly on the genetic diversity inherent in those isolated populations. Nonetheless, the City of Dana Point approved residential development on the animal's four acres of Headlands habitat, prompting the developer, Chandis-Sherman, to sit down with Service officials and negotiate terms. As mitigation, the company offered a fund to study the species for several years, with an eye toward transferring it to less valuable ground.^[103] The Central-Coastal (see sidebar, *Central-Coastal at a Glance*) working group was unanimous in its decision to leave the Headlands and the pocket mouse out of the NCCP, to be dealt with separately and directly through the normal permitting process, but its counsel was ignored.^[104]

The plan's "conditional coverage" of the pocket mouse falls short of the ESA's standards for incidental take. In the first place, it fails to demonstrate that the conservation plan "will not appreciably reduce the likelihood of the survival and recovery of the species in the wild."^[105] No studies have been made of the viability of the mouse in translocation -- the likely outcome, given the exorbitant cost of the Chandis-Sherman property -- or of the genetic value of the Dana Point population. Two years ago, the Service turned down another pocket mouse resettlement scheme as "highly experimental."^[106] Second, as the plan guarantees only half of the \$700,000 necessary for further study, population enhancement, and translocation and fails to provide any specific funding for habitat acquisition in the event translocation proves infeasible, it hardly ensures the "adequate funding" required by law.^[107]

The Perpetuity Problem

Land set aside for development is, for all practical purposes, irrevocably lost for conservation. Yet, in seventy-five years, the management agreement for the Central-Coastal plan will expire. Although the various deed and grant restrictions, conservation easements, and open-space dedications that support the reserve have been made in perpetuity, expiration will allow the County, which will by then own nearly all the land within the system, to modify the reserve design "consistent with the NCCP." Consistency is here defined as "no net loss of habitat value." Thus, the County may permit the loss of an undefined number of acres of reserve land provided its overall "value" -- as determined by the County -- is maintained. The Service will not have a say in the matter.^[108]

The adoption of such a nebulous scheme in the first NCCP to be approved sets an unfortunate precedent for the other subregions. Preserving habitat is an essential element of species and ecosystem conservation, and no amount of study or "adaptive management" can justify further habitat loss once the reserves have been established.

ORANGE COUNTY: THE SOUTHERN SUBREGION

At the outset, the southern Orange County subregion, extending from Chiquita Canyon in the north to Camp Pendleton, a former Marine Corps base, in the southeast, held a great deal of promise. While the sage scrub west of Interstate 5 had been fragmented by development, on the eastern side it was more or less intact. Together with the Marine base and Cleveland National Forest (to the north), this acreage formed an extensive, contiguous range -- by far the largest in the county -- that was home to significant populations of the California gnatcatcher, coastal cactus wren, and southwestern arroyo toad.^[109] Moreover, land-use negotiations in the eastern section posed far fewer of the complex logistical problems plaguing planners in San Diego. Nearly a third of the undeveloped acreage, owned by the National Audubon Society and the County, was already dedicated to open space and managed for its habitat values. Most of the remainder belonged to a handful of large developers, such as the Rancho Santa Margarita Company, Dove Canyon, and Coto de Caza. The result should have been flexibility, allowing designers to concentrate development in the subregion's already

fragmented west end. But to date, the preferred design has been one that flouts the SRP basic tenets, turning the undeveloped eastern core into a patchwork bisected by another massive tollroad project.

On the planning map, future development zones appear as large white bubbles, puncturing the open space east of Interstate 50. A "bubble" that TRW, an aerospace and defense contractor, has slated for a missile manufacturing plant was sited in the otherwise intact southeast corner, disrupting the subregion's continuity with the intact habitat found in Camp Pendleton, and disturbing the riparian habitat of the endangered arroyo toad.^[110] The Rancho Santa Margarita Company would have transformed upper Chiquita Canyon, which contains some of the richest gnatcatcher habitat in the county -- and a source population that helps sustain the species -- into a complex of golf courses and estates.^[111] In sum, siting of the development bubbles contradicted four of the SRP's seven basic tenets: disrupting habitat contiguity; blocking corridors essential to wildlife movement; decreasing biodiversity by uprooting rare grasslands that are dispersed within the scrub (at Chiquita Canyon, Ortega, Trampas, and Blind Canyon); and disturbing an important population of a target species.^[112] The long, narrow shape of the bubbles only exacerbated the problem, exposing far more undisturbed habitat to contact with development than the projects warranted. Writing to the planning consultant, the Service expressed its dismay. "A potential solution," it suggested, "would be to consolidate the development bubbles into a main development area located near already existing development to the west, taking care to preserve the habitat linkage to the Coastal-Central subregion."^[113]

As it stood, the plan was a practical argument for independent scientific review. Despite criticism from members of the working group, however, the consultant refused to develop a "biologically preferred alternative," as the ESA (as well as the National Environmental Policy Act and the California Environmental Quality Act) requires. The consultant relented only at the Service's behest.^[114] Fortunately, the preferred design was recently reopened for negotiation, thanks in part to a new willingness on Santa Margarita's part to work toward consensus.^[115] This time around, the working group, with the assistance of The Nature Conservancy, has assembled a biological advisory committee to develop locally-relevant conservation guidelines, determine the habitat needs of covered species, and design flexible, adaptable strategies for management.^[116] A new timeline has been set for reanalysis and negotiation, with the preliminary scientific work begun last fall and final, workable plan to be delivered for approval in sixteen months.^[117]

A second major issue in the subregion is the Foothill Transportation Corridor. In the north the Antonio-Oso Parkway alignment of the Foothill Transportation Corridor, eight lanes of highway, would bisect upper Chiquita Canyon; in the south, on its way through San Mateo Creek to Camp Pendleton, the tollroad would traverse rich habitat for an extraordinarily high concentration of protected species, including not just the gnatcatcher but the least Bell's vireo, southwestern willow flycatcher, Pacific pocket mouse, tidewater goby, Riverside fairy shrimp, and arroyo southwestern toad. In addition to the harm wreaked by the bulldozers, these sensitive areas would suffer the noise and smog of vehicular traffic, and, with a major road, a classic growth-inducer, running through them, the areas will inevitably be exposed to further build-out. The Antonio-Oso segment of the Foothill Corridor received the Service's approval through a special consultation process that the ESA prescribes for federal projects -- which is to say that the Transportation Corridor Agency, the tollroad's advocate, bypassed the NCCP.^[118] A number of conservation groups threatened to sue but relented in exchange for the acquisition of over 1,000 acres surrounding the alignment in Chiquita Canyon -- a major repository of gnatcatchers that Rancho Santa Margarita had proposed turning into a golf course.^[119] The fate of both the southern segment of the Foothill tollroad and the southern subregion of the NCCP as a whole remain in doubt.

SAN DIEGO COUNTY: THE MULTIPLE-SPECIES CONSERVATION PROGRAM

San Diego County is a safe harbor for threatened and endangered species. More sensitive plant and animal species -- over 200 obligates of tidal pools and San Diegan sage scrub -- reside here than in any other region of the continental United States. The Multiple Species Conservation Program (MSCP) comprises a 900-square-mile study area in the county's biodiverse southwest: sage scrub and chaparral interspersed with grassland, significant wetlands along Imperial Beach, and scatterings of eucalyptus

groves.^[120] A program begun in 1991 to provide mitigation for the City of San Diego's expanding sewer lines has become the largest -- and in terms of species coverage the broadest -- component of the sage-scrub NCCP.^[121] If successful, the MSCP will create an estimated 172,000-acre preserve, comprising the full range of habitats in the southwest region of the county.

A quick comparison with the Orange County subregions shows that San Diego presents very different logistical problems. Whereas much of Orange County's undeveloped habitat is concentrated in the hands of a few major developers, in San Diego the land is variously owned. One cannot convoke a meeting of The Irvine Company, the wildlife agencies, and a conservationist or two and hammer out a reserve design among them; conservation planning here is a complex negotiation of collective governance and local power.

Once a set of general guidelines was promulgated, the stage switched from the subregional to the subarea level: Chula Vista, Poway, the City of San Diego, Santee, and San Diego County, each of which developed its own reserve design under common principles. Agreement among these jurisdictions on the scope of their plans was not a foregone conclusion, and the conservation community played a significant role in attainin consistency.^[122] Unfortunately, certain procedural standards observed at the subregional stage were lost in transition to the subarea level. Working groups were not convened in the local jurisdictions -- indeed, the cities have fallen back on their conventional planning methods, which allow for less public input. Subarea-specific alternatives analyses, required by the ESA, the CEQA, and the National Environmental Policy Act, have not been performed.^[123]

At the heart of the MSCP is a contiguous block of sage scrub and chaparral in the vicinity of Otay Ranch, along the border with Mexico, that hosts an important source population o California gnatcatchers. The habitat falls into three separate jurisdictions: the City of San Diego, San Diego County, and Chula Vista, each of which has at one time or another in the last several years approved large-scale development in a critical area. In 1994, permits were issued for several such projects -- one in the Otay region of the City of San Diego, another on nearby Otay Ranch -- over the objections of the Service, which noted their inconsistency with the MSCP.^[124] Similarly, the Service has consistently opposed Chula Vista's siting of a University of California satellite in the Otay Valley.^[125] On reviewing a draft version of the MSCP in March 1995, the agency described this schedule of proposed development as a threat to gnatcatcher viability, compromising the entire plan, and it was eliminated from the reserve design.^[126]

Last August, a new version of the subregional plan, updated with the work of the subareas, was released for public comment, but environmentalists noted numerous flaws. Its buffer zones were narrower and more permeable than several alternatives that planners had considered; several of its core preserves were left open to low-density residential development, which an earlier draft deemed "incompatible" with conservation goals.^[127] It accommodated a future state tollroad, Highway 125, that would run straight through the Otay area.^[128] And its list of covered species had expanded from the 1995 high of 57 to a final tally of 85.^[129] The Service's new policy of habitat-based assurances for "sufficiently covered" habitat types, gnatcatcher-occupied sage scrub among them, quietly extended the list by dozens.^[130]

In March of this year, the City of San Diego approved its component of the MSCP, a plan hailed by Secretary Babbitt as "the jewel of habitat conservation plans." While not all flaw identified in the draft were corrected, changes were made sufficient to secure the tentativ support of many environmental groups who anticipate that the program, if ultimately successful, will preserve about three-quarters of the study area's best remaining habitat and, on balance, connect cross-jurisdictional habitat in a biologically acceptable manner. Funding remains a serious problem -- acquisition costs are estimated at \$300 million -- a do other jurisdictional approvals, including San Diego County's.

SAN DIEGO COUNTY: THE MULTIPLE-HABITAT CONSERVATION PROGRAM AND MULTIPLE-HABITAT CONSERVATION AND OPEN SPACE PLAN

The Multiple-Habitat Conservation Program (MHCP) occupies the northwest quadrant of San Diego County, overlapping the MSCP in the vicinity of Poway. Spun off from its south-county sister program in 1992, it has taken the back seat; when the other program

is fully approved, which may happen as early as this year, work on the north-county plan will probably intensify. (Reserve mapping for the subregion's unincorporated lands, recently made by County decision a subarea of the MSCP, will proceed concurrently.)^[131] While subarea planning is still in a developmental state, two north-county jurisdictions, seizing the initiative, are actually nearing completion. The City of Carlsbad launched its habitat preservation program in 1991, while developing the Open Space and Conservation Element of its General Plan; it hoped, perhaps unrealistically, to complete the process last January.^[132] The City of Poway, which lies in both the southern and northern subregions, recently submitted its plan for public comment along with the MSCP.^[133] Both exemplify a "softline" approach to planning, whereby a reserve's border are established over time, according to given standards and design principles. These plans have an inherent uncertainty about them, more so than most "hardline" plans (though not where the hardline commitment to land acquisition depends on unsecured government funds). They compensate for uncertainty to some degree by setting higher preservation goals.

Northwest San Diego County has been described as "an expensive plate of spaghetti." Its habitat is highly fragmented, and its real estate often prohibitively priced.^[134] But in the rural east, where a third habitat program, the County's Multiple-Habitat Conservation and Open Space Plan, is in the offing, there are wide open tracts of land, some in the public domain (Cleveland National Forest, Rancho Cuyamaca State Park, Bureau of Land Management property), and much of the rest zoned for agriculture. The border formed by this subregion with its neighbors to the west might serve in effect as an urban limit line, keeping higher-density development out and consequently protecting San Diego's interior watersheds, which feed its fragile coastal pools. Although the planning process here is still in the early stages, the MHCP has recently committed to appoint an ad hoc panel of scientific advisors to be consulted as needed in development of the plan.^[135]

RIVERSIDE, SAN BERNARDINO, AND THE PALOS VERDES PENINSULA

Conservation planning in Riverside and San Bernardino counties, which border the coastal counties on the east, does not belong officially to the NCCP. In part, this is because their sage scrub, being of high elevation, does not host as many gnatcatchers, and in part because of the constraints the state program, through the "special rule," places on interim development. But planning in these counties follows a parallel process known as Habitat Conservation Planning (HCP) -- a kind of forerunner of the NCCP that places local jurisdictions and landholders in direct negotiation with the Service for a large-scale Incidental Take Permit. On the Palos Verdes Peninsula, in Los Angeles County, an NCCP subarea planning process is just getting underway.

Riverside County

The Multi-Species Habitat Conservation Plan (MSHCP) for western Riverside County, a 1.3- million-acre area occupying the southeastern inland valleys of the Los Angeles Basin was launched in June 1994. In a Memorandum of Understanding with the state and federal wildlife agencies, the Riverside County Habitat Conservation Agency, a consortium of local governments, agreed to graft a multiple-species project onto a single-species Habitat Conservation Plan (HCP), designed for the endangered Stephens kangaroo rat, once that plan had been approved. In June 1996, one month after the Service and Department signed off on the plan, the Agency voted to commence negotiations on the larger project, to define which habitats and species would be covered.^[136] A first phase of research on the California gnatcatcher had begun with the signing of the Memorandum of Understanding two years before: mapping vegetative types, ownership patterns, and existing land-use designations, and rating habitat by its suitability for the species.^[137]

On their own initiative, scientists at the University of California at Riverside have assembled a Biological Research Unit to advise the project, taking on as their first task the job of collating all available relevant data. Thus far their input has not been solicited.^[138] The infusion of independent scientific advice would be beneficial: on its HC for the Stephens' kangaroo rat, the Conservation Agency critically misapplied a population viability model, taking a comparative analysis for an absolute judgment on the size of the reserve.^[139] Indeed, there are a number of reasons why the Riverside project should give

us pause. In the first place, the HCP on which it builds is a deeply flawed document that (for example) fails to provide external buffer zones or to adequately regulate adjacent land use, and pre-approves an undefined amount of infrastructure, including major roads, within reserve boundaries.^[140] And the County has assured landowners that it will use only public lands in the reserve^[141] -- a move that significantly compromises its planning options.

San Bernardino County

The single habitat conservation program in western San Bernardino County is situated in the 200 square-mile San Bernardino Valley. For the most part, the habitat there is alluvia fan sage scrub, not coastal sage scrub; the target species are the San Bernardino kangaroo rat, the San Diego jackrabbit, and the San Diego horned lizard, not (primarily) the California gnatcatcher. The seeming irrelevance of the NCCP to the county's alluvial fan habitat was what first dissuaded the Board of Supervisors from joining the state program; now it is the SRP's cap on interim development that keeps them out.^[142]

While planning for the valley is still in the early stages, it is worthwhile to mention a few promising developments. Every jurisdiction with significant habitat in the area, with the exception of the City of Redlands, has signed on to the County's program. And according to the San Bernardino Planning Department, that substantial portion of habitat which lies in the outwashes of the surrounding foothills is already under a conservation easement for flood control.^[143]

The Palos Verdes Peninsula

Isolated from the other subregions at the southern end of Santa Monica Bay, the small Palos Verdes Peninsula is Los Angeles County's last vestige of coastal sage scrub and its sole contribution to the NCCP. More than this, it is a singular haven of biodiversity. The Peninsula has been connected to the mainland only since the close of the last Ice Age; before that, it was one of the Channel Islands, a celebrated chain off California's Central Coast. Its ancient affiliation can still be found today in the unique island species that dwell there.^[144] On February 20, 1996, the City of Rancho Palos Verdes, home to most of the peninsula's remaining open space, entered into an agreement with the wildlife agencies to develop a conservation plan for coastal sage scrub.^[145] The process of data-gathering and planning has just begun.

Thus far the planners have addressed themselves to six species -- the gnatcatcher, the coastal cactus wren, the San Diego horned lizard, the Palos Verdes blue butterfly, the El Segundo blue butterfly, and the bright green dudleya -- not all of which are sage-scrub obligates.^[146] There is some debate within the working group about whether the plan should be expanded to the peninsula's several habitats or limited to coastal sage scrub.^[147] If they do decide on a multi-habitat plan, with the Service extending habitat-based assurances to landowners, it will be crucial for researchers to identify those species yet unknown, the unregarded birds, butterflies, and arthropods unique to the peninsula and the Channel Islands.^[148]

Notes

93. U.S. Fish and Wildlife Service, Special Rule, 16754.

94. Deborah Schoch, "Pact Creates 37,000-Acre Wildlife Preserve," *Los Angeles Times* (July 18, 1996), A3 (Central-Coastal plan signed).

95. U.S. Fish and Wildlife Service and National Marine Fisheries Service, No Surprises.

96. California Resources Agency *et al.*, Implementation Agreement Regarding the Natural Community Conservation Plan for the Central/Coastal Orange County Subregion, 112-15.

97. United States Code 16 (1996): § 1539(a)(2)(B) ("Permits").

98. County of Orange Environmental Management Agency, Central and Coastal Subregion Natural Community Conservation Plan, II-345, II-348, II-350. The state and federal contribution represents \$32 million out of a total budget of \$52 to \$55 million.

99. United States Code 16 (1996): § 1533(f) ("Recovery plans").

100. *Ibid.*, I-14 to I-15.
101. U.S. Fish and Wildlife Service, Conference Opinion on the San Joaquin Hills Transportation Corridor, Orange County, California (1-6-93-C-98) (Carlsbad: U.S. Fish and Wildlife Service, Feb. 26, 1993), 7-8.
102. Of course, Salt Creek is still subject to the requirements of the ESA. Interview with Elisabeth Brown, member, Central-Coastal Working Group (July 12, 1996).
103. County of Orange Environmental Management Agency, Central and Coastal Subregion Natural Community Conservation Plan, II-233 to II-235.
104. Interviews with Elisabeth Brown (July 12, 1996), and Dan Silver (July 15, 1996), members, Central-Coastal Working Group.
105. United States Code 16 (1996): § 1539(a)(2)(B)(iv).
106. U.S. Fish and Wildlife Service, Emergency Rule to List the Pacific Pocket Mouse as Endangered, *Federal Register* 59 (Feb. 3, 1994): 5308.
107. United States Code 16 (1996): § 1539(a)(2)(B)(iii).
108. California Resources Agency *et al.*, Implementation Agreement Regarding the Natural Community Conservation Plan for the Central/Coastal Orange County Subregion, 45-46; interview with Pete DeSimone, member, Central-Coastal Working Group (July 16, 1996).
109. Interview with Pete DeSimone, member, Southern Working Group (July 16, 1996).
110. Interviews with Elisabeth Brown (July 19, 1996) and Pete DeSimone (July 16, 1996), members, Southern Working Group.
111. Interview with Dan Silver, member, Southern Working Group (July 15, 1996).
112. Letter from Paul Beier, Professor of Biology, University of Arizona, to Rod Meade Consulting (Nov. 1994), 2 (loss of grassland).
113. Letter from Gail C. Kobetich, U.S. Fish and Wildlife Service Field Supervisor, to Rod Meade, R.J. Meade Consulting (Oct. 28, 1994), 2-3.
114. Interview with Dan Silver, member, Southern Working Group (July 15, 1996) (criticism of consultant's failure to prepare alternative); United States Code 16 (1996): § 1539(a)(2)(A)(iii) (conservation plan must specify "what alternative action to such taking the applicant considered and the reasons why such alternatives are not being utilized"); letter from Gail C. Kobetich, U.S. Fish and Wildlife Service Supervisor, to Rod Meade, R.J. Meade Consulting (Oct. 28, 1994), 2 (calling for consideration of alternatives).
115. Interview with Pete DeSimone, member, Southern Working Group (July 16, 1996).
116. The Nature Conservancy, Memorandum on Integrating Science into the Orange County Southern NCCP; interview with Mike O'Connell, NCCP Program Director, The Nature Conservancy (Aug. 21, 1996).
117. *Ibid.* According to this schedule, the team of scientific advisors will have "roughly 3 months" to complete their part of the process.
118. United States Code 16 (1996): § 1536 ("Interagency Cooperation").
119. Foothill/Eastern Transportation Corridor Agency, Foothill Transportation Corridor Antonio-Oso Parkway Biological Assessment/Conservation Plan (Santa Ana: Foothill/Eastern TCA, Oct. 20, 1995).
120. City of San Diego, MSCP Public Review Draft, 2-3.
121. *Ibid.*, 1-8.
122. Personal communication from Michael Beck, member, MSCP Working Group (Sept. 16, 1996).
123. Interview with Craig Adams, member, MSCP Working Group (July 22, 1996).
124. Interviews with Craig Adams (July 22, 1996) and Michael Beck (Sept. 16, 1996), members, MSCP Working Group.
125. See, e.g., letter from U.S. Fish and Wildlife Service to City of Chula Vista (Nov. 13, 1991).
126. Letter from U.S. Fish and Wildlife Service to City of San Diego (Apr. 14, 1995); City of San Diego, Multiple Species Conservation Plan: MSCP Plan Volume 2 (San Diego: City of San Diego, Aug. 1996) (Chula Vista subarea plan).
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128. City of San Diego, Multiple Species Conservation Plan: MSCP Plan Volume 2 (County of San Diego subarea plan).

129. *Ibid.*, 3-22, 3-31 to 3-48.

130. *Ibid.*, 3-26 (list of "sufficiently conserved vegetation communities"); letter from Gail C. Kobetich, U.S. Fish and Wildlife Service Field Supervisor, and Ron Rempel, NCCP Program Manager, to Ron Roberts, Chairman, San Diego County Board of Supervisors (Apr. 29, 1996), 1 (offering habitat-based assurances).

131. Interview with Michael Beck, member, MHCP Working Group (July 15, 1996).

132. City of Carlsbad, Habitat Management Plan: Public Review Draft, S-1; interview with Don Rideout, City of Carlsbad Planning Department (July 24, 1996).

133. City of San Diego, Multiple Species Conservation Plan: MSCP Plan Volume 2.

134. Interview with Dan Silver, Coordinator, Endangered Habitats League (July 15, 1996).

135. Interview with Michael Beck, County Planning Office (July 15, 1996).

136. Riverside County Habitat Conservation Agency, Status of Habitat Conservation Activities in Western Riverside County, 4.

137. See generally Western Riverside County Habitat Consortium, Western Riverside County Multi-Species Conservation Plan: Phase 1-Information Collection and Evaluation (Riverside: WRCHC, Feb. 1995).

138. Interview with Jane Block, Riverside County Director, Endangered Habitats League (July 25, 1996).

139. Comments of Anthony E. Metcalf, San Bernardino Valley Audubon Society, in Riverside County Habitat Conservation Agency, Final Joint EIS/EIR Regarding Authorization for Incidental Take and Implementation of a Long-term Habitat Conservation Plan for the Stephens' Kangaroo Rat in Western Riverside County, California: Responses to Comments (Riverside: RCHCA, Feb. 1996), 529-30.

140. Riverside County Habitat Conservation Agency, Habitat Conservation Plan for the Stephens' Kangaroo Rat in Western Riverside County, California (Riverside: RCHCA, Mar. 1996), 146-148.

141. Interview with Brian Loew, Executive Director, Riverside County Habitat Conservation Agency (July 31, 1996).

142. Interview with Randy Scott, Titles Planning Manager, County of San Bernardino Planning Department (Sept. 5, 1996).

143. *Ibid.*

144. Palos Verdes Peninsula NCCP Working Group, Conceptual Plan for the Palos Verdes Peninsula Subarea: Draft (June 1996), 3.

145. City of Rancho Palos Verdes *et al.*, Planning Agreement for the Palos Verdes Peninsula NCCP Subarea (Rancho Palos Verdes: Rancho Palos Verdes, Feb. 20, 1996), 1. The peninsula's three other municipalities – Rolling Hills Estates, Rolling Hills, Palos Verdes Estates – have thus far declined to join.

146. *Ibid.*, 2.

147. Interview with Carolynn Petru, Director of Planning, Building, and Code Enforcement, City of Rancho Palos Verdes (July 22, 1996).

148. Interview with Angelika Brinkmann-Busi, member, Palos Verdes Peninsula Working Group (July 18, 1996).



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Chapter 4

FINDINGS AND RECOMMENDATIONS

Whatever its faults, the southland's NCCP is a harbinger of widespread regional planning Northern California's Coastal Salmon Initiative -- whose mission to preserve the Coho salmon, steelhead trout, and other freshwater species may encompass riparian habitat from the Sacramento River Basin to the Oregon border -- is being assimilated by the state's Resources Agency into the NCCP process.^[149] At the Department of the Interior, NCCP-related "special rules" for several imperiled species, including the controversial Northern spotted owl, are reportedly in the works.^[150] And in Congress, some proponent of Endangered Species Act reform want to nationalize the NCCP paradigm, making California-style localized planning available to communities coast-to-coast.^[151]

There are many reasons to applaud the program, both in terms of the reserves developed to date and the promise that it holds for the future:

- It represents in many respects a more enlightened approach to habitat management: planning across jurisdictional boundaries, conserving interdependent habitats and species on a broad geographic scale, and protecting wildlife in advance of endangerment and extinction. Both the U.S. Department of the Interior and the California Resources Agency should be commended for the energy and commitment that they have devoted to putting these ideas into practice.
- It is a collaborative process, involving the public to a considerable degree in decisions that would otherwise have been settled between landowners and government officials.
- It recognizes the essential importance of the ESA in wildlife conservation. Secretary Babbitt and the Fish and Wildlife Service deserve enormous credit for listing the gnatcatcher in the face of tremendous political pressure not to do so.
- It brings local jurisdictions, landowners, and conservationists to the table, a development that in embattled Southern California should not be taken for granted. Landowners in San Diego and Orange counties who enrolled their properties in the program voluntarily accepted its restrictions on interim take.

But there are ways in which the program can and should be improved. If the wildlife agencies, the state legislature, and the U.S. Congress consider the program a "national model," if the scientific promise of the NCCP is to be fulfilled, and, most fundamentally, if the recovery goals of the ESA are to be achieved, we believe that the following recommendations must be incorporated into the program:

Preserve the federal Endangered Species Act.

The NCCP, standing alone, provides no protection for ecosystems or species; it merely authorizes a collaborative, voluntary process to provide some protection through

agreements among regulatory agencies, landowners, and local governments. To bring developers to the table, a strong incentive is indispensable; recent attempts by legislators to weaken the federal Endangered Species Act threaten to weaken the NCCP. For example, in the last Congress, even the so-called "moderate" reform proposal (H.R. 2375) would have diluted the Act with cost-benefit language that might well have kept the gnatcatcher, with its penchant for pricey real estate, off the threatened species list. And without the listing, the NCCP would have continued to languish. During the program's first two years, landowners enrolled little of their property and land "conversions" continued unabated; it took the gnatcatcher listing in 1993 to turn matters around. One cannot overemphasize that without the Endangered Species Act and the supervisory authority of the Fish and Wildlife Service, the NCCP would surely fail.

Do not dilute other federal and state environmental laws.

Citing the NCCP and its collaborative planning process, developers have increasingly lobbied the California legislature and the U.S. Congress to reduce or dilute protections not only under the ESA but under other environmental statutes as well: the California Environmental Quality Act, the Federal Water Pollution Control Act, the Migratory Bird Treaty Act. These proposals do no service to the goals of the NCCP, nor are they consistent with the purposes for which these other statutes were enacted. The NCCP was never intended as -- nor does it in practice provide -- a comprehensive scheme to render all other environmental statutes obsolete.

Require independent scientific consultation and review.

Given the program's extraordinary complexity and its susceptibility to political and economic pressure, its science must be beyond reproach. Yet the NCCP Act makes no provision for independent scientific consultation or review. It should be amended to establish in each subregion an independent scientific advisory group that would translate the broad tenets of reserve design into locally-relevant principles, assess the needs of covered species, and formulate flexible strategies for long-term management. The Act should also require that plans be submitted to the scientific community for appropriate peer review.

Guarantee adequate public participation throughout the planning process.

The quality of public participation in the NCCP process has varied from subregion to subregion. The Act should be amended to: (1) ensure that each working group and reserve management committee has public representation and that their meetings are regularly announced and open to the public; (2) install working groups on the subarea, as well as the subregional planning level; and (3) require that policies adopted by the working groups receive meaningful consideration from the project's consultants.

Set clear standards for reserve design.

The regulatory standards prescribed by the ESA should be the fundamental test against which the sufficiency of plans are judged. Reserve design criteria should include: (1) minimum standards for external buffer zones, with restrictions placed on adjacent land use; (2) strict limits on the placement of infrastructure on reserve lands; and (3) a mandate for reserves to be retained in perpetuity, with no net loss of acreage. Finally, plans should be evaluated on their contributions to species recovery, as the Endangered Species Act requires, not merely on species survival.^[152]

Scale back the blanket assurances made to landowners.

Under current arrangements, once a plan is adopted, no additional fees or land may be exacted of participants -- not even in the case of "extraordinary," unforeseen circumstances. Under the Service's extension of its "No Surprises" policy, the same guarantees apply to wildlife that the plan has not specifically addressed. In giving such broad assurances, the Service may foreclose essential future options, taking on itself the potentially infeasible expense of species relocation, habitat acquisition, and other emergency measures, should plans go awry. The Service should scale back its assurances to NCCP participants. They should be species-based, not habitat-wide, and take proper account of scientific uncertainty and changing circumstances. Furthermore, no assurances should be made under any plan before reliable funding mechanisms have been identified or are in place.

Create a secure source of funding for land acquisition and management.

The Central-Coastal plan will cost Orange County more than \$50 million over its first twenty years; the price tag of the MSCP for southwest San Diego County, which has far more land to acquire, has been estimated at \$300 million. Adequate sources of funding for these plans have neither been secured nor identified. The government should consider creating a loan fund for regional land acquisition or appropriating untapped dollars from the Land and Water Conservation Fund. In addition, the subregions should explore other financing options, such as conservation banking, which has already been tried with some success; or dedicating a portion of the local property tax (corresponding to the marginal increase in the value of adjacent real estate) to the reserve.

Ensure that the interim permitting process is properly supervised.

In tracking species take and habitat loss during the interim planning period, the U.S. Fish and Wildlife Service should cease making a distinction between take approved under the "special rule" and take approved through the ESA's normal channels, the consultation process of section 7 and the permitting process of section 10. Using this method, it has underestimated the ecological impact of interim development, failing to account for the thousands of acres of habitat destroyed or disturbed by the San Joaquin, Eastern, and Foothill Transportation Corridors and other projects. All such projects should be counted against the fund of permissible species and habitat take, as the NCCP's Conservation Guidelines require. In addition, the Service should fulfill its legal obligation of reviewing interim development every six months until the reserve plans are approved.

Notes

149. Interview with John Gaffin, member, Coastal Salmon Initiative Policy Committee (July 22, 1996); Nancy Vogel, "State, landowners unite to form wildlife preserve," *Sacramento Bee* (July 17, 1996), A8 (statement of California Resources Secretary Douglas P. Wheeler).

150. U.S. Fish and Wildlife Service, Proposed Special Rule for the Conservation of the Northern Spotted Owl, *Federal Register* 60 (Feb. 17, 1995) (permitting incidental take of the Northern Spotted Owl in California contingent on the completion of an NCCP plan); interview with Katrina Martin, U.S. Fish and Wildlife Service Sacramento Office (Aug. 8, 1996).

151. Discussion Draft of Unnumbered H.R. Bill, Endangered Species Reauthorization Act of 1996 (June 7, 1996), § 5 (establishing "Natural Systems Conservation Plans").

152. United States Code 16 (1996): § 1533(f) ("Recovery plans").



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**Table 1
Population Projections for Selected Regions of Southern California**

Region	Population in thousands*		Percentage
	1990	2010	Growth
Orange County	2,410.6	3,107.3	28.9
Palos Verdes Peninsula	64.8	70.7	9.1
Riverside County	1,170.4	2,556.1	118.4
San Bernardino County	1,418.3	2,476.8	74.6
San Diego County	2,498.0	3,267.2 (2015)	50.7

*Except as noted
Source: Southern California Association of Governments (SCAG); San Diego Association of Governments (SANDAG), July 1996.

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The Special Rule

On March 30, 1993, the U.S. Secretary of the Interior proposed a "special rule" listing the coastal California gnatcatcher as a threatened species. Among its provisions:

- Incidental take of the coastal California gnatcatcher will not be considered a violation [of the Endangered Species Act] ... if it results from activities conducted pursuant to the State of California's Natural Community Conservation Planning Act of 1991, and in accordance with a NCCP plan for the protection of coastal sage scrub habitat, prepared consistent with the State's NCCP Conservation and Process Guidelines, *provided that*:
 - (i) The Natural Community Conservation Plan has been prepared, approved, and implemented pursuant to [the] California Fish and Game Code...; and
 - (ii) The Fish and Wildlife Service has issued written concurrence that the NCCP plan meets the standards set forth [in its regulations on incidental take].... The Service shall monitor the implementation of the NCCP plan and may revoke its concurrence ... if the NCCP plan, as implemented, fails to adhere to [those standards].
- During the period that a NCCP plan ... is being prepared, incidental take of the coastal California gnatcatcher will not be a violation of [the ESA] if such take occurs within an area under the jurisdiction of a local government agency that is enrolled and actively engaged in the preparation of such a plan and such take results from activities conducted in accordance with the NCCP Conservation Guidelines and Process Guidelines.
- The Service will monitor the implementation of the NCCP Conservation and Process Guidelines as a whole, and will conduct a review every six months to determine whether the guidelines, as implemented, are effective in progressing toward or meeting regional and subregional objectives during the interim planning period. If the Service determines that the guidelines are not effecting adequate progress..., the Service shall consult with the California Department of Fish and Game ... to seek appropriate modification of the guidelines. If appropriate modification of the guidelines or their application ... does not occur, the Service may revoke the interim take provisions of this special rule on a subregional or subarea basis.

SOURCE: Code of Federal Regulations 50 (1996): § 17.41(b) ("Special rules-birds").

Acronyms and Abbreviations

Like any complex public project, the NCCP for coastal sage scrub seems to have a language all its own. Here is a list of the acronyms and shorthand used in this report:

CESA: California Endangered Species Act, a state statute modeled on the ESA.

CEQA: California Environmental Quality Act, a state statute that requires public and private developers to assess the environmental impact of their projects.

Central-Coastal: Central-Coastal subregion (Orange County).

The Department: California Department of Fish and Game, the state wildlife agency charged with implementing the NCCP Act.

ESA: Endangered Species Act, a federal statute that protects wildlife from extinction.

HCP: Habitat Conservation Plan, a species protection plan prepared by applicants for an incidental take permit under the ESA.

MHCP: Multiple-Habitat Conservation Program (northwest San Diego County).

MSCP: Multiple-Species Conservation Program (southwest San Diego County).

NCCP: Natural Community Conservation Planning.

The Service: U.S. Fish and Wildlife Service, the federal wildlife agency charged with enforcing the ESA.

Southern: Southern subregion (Orange County).

SRP: Scientific Review Panel, the NCCP's first independent advisory body, disbanded in 1993.

The Biodiversity Concept

During the 1980s, the term "biodiversity" became part of the public consciousness. The work of Professor Michael Soulé and other specialists lured scientists from neighboring disciplines, evolutionary biology and genetics, into the field. Policymakers at the World Bank and the U.S. Agency for International Development noted the relevance of biodiversity to economic sustainability. Americans learned that the destruction of the Amazon rainforest was driving species into extinction at a virtually unprecedented rate; the loss to our genetic legacy -- in undiscovered medicines, for example -- seemed incalculable. According to Harvard's E.O. Wilson, the growing interest in biodiversity was fueled primarily by a mounting sense of catastrophe.

How does one measure the diversity of life? To begin with, scientists consider species richness (also known as *alpha diversity*) -- the sheer variety of wildlife in a given location. In this respect, the California coast may be said to enjoy a wealth of seabirds. Within individual species, an important measure is genetic variation; species with small gene pools are often less adaptable to environmental change. On a much larger scale, biologists look for a diversity of ecological communities (*beta diversity*): the mix of grasslands and chaparral, forest and wetlands that characterizes Southern California. Whether the NCCP will succeed in preserving the coastal scrub community is an open question. Until now, research in this area has focused primarily on a few critical species, such as the gnatcatcher and coastal cactus wren. We still have much to learn about the habitat that sustains them.

Basic Tenets of Reserve Design

1. *Conserve target species throughout the planning area:* Species that are well-distributed across their native ranges are less susceptible to extinction than are species confined to small portions of their ranges.
2. *Larger reserves are better:* Large blocks of habitat containing large populations of the target species are superior to small blocks of habitat containing small populations.
3. *Keep reserve areas close:* Blocks of habitat that are close to one another are better than blocks of habitat far apart.
4. *Keep habitat contiguous:* Habitat that occurs in less fragmented, contiguous blocks is preferable to habitat that is fragmented or isolated by urban lands.
5. *Link reserves with corridors:* Interconnected blocks of habitat serve conservation purposes better than do isolated blocks of habitat. Corridors or linkages function better when the habitat within them resembles habitat that is preferred by target species.
6. *Reserves should be diverse:* Blocks of habitat should contain a diverse representation of physical and environmental conditions.
7. *Protect reserves from encroachment:* Blocks of habitat that are roadless or otherwise inaccessible to human disturbance serve to better conserve target species than do accessible habitat blocks.

SOURCE: Southern California Coastal Sage Scrub Natural Community Conservation Planning: Conservation Guidelines (Nov. 1993), 9.

Central-Coastal at a Glance

Date of Planning Agreement: May 7, 1993

Date of Implementation Agreement: July 17, 1996

Participating jurisdictions: Orange County, Costa Mesa, Dana Point, Irvine, Laguna Beach, Laguna Hills, Lake Forest, Newport Beach, Orange, San Juan Capistrano, Santa Ana, Tustin, Villa Park

Participating agencies: U.S. Fish and Wildlife Service, Department of Fish and Game, Department of Defense (El Toro Marine Corps Air Station), Transportation Corridor Agencies, local utilities

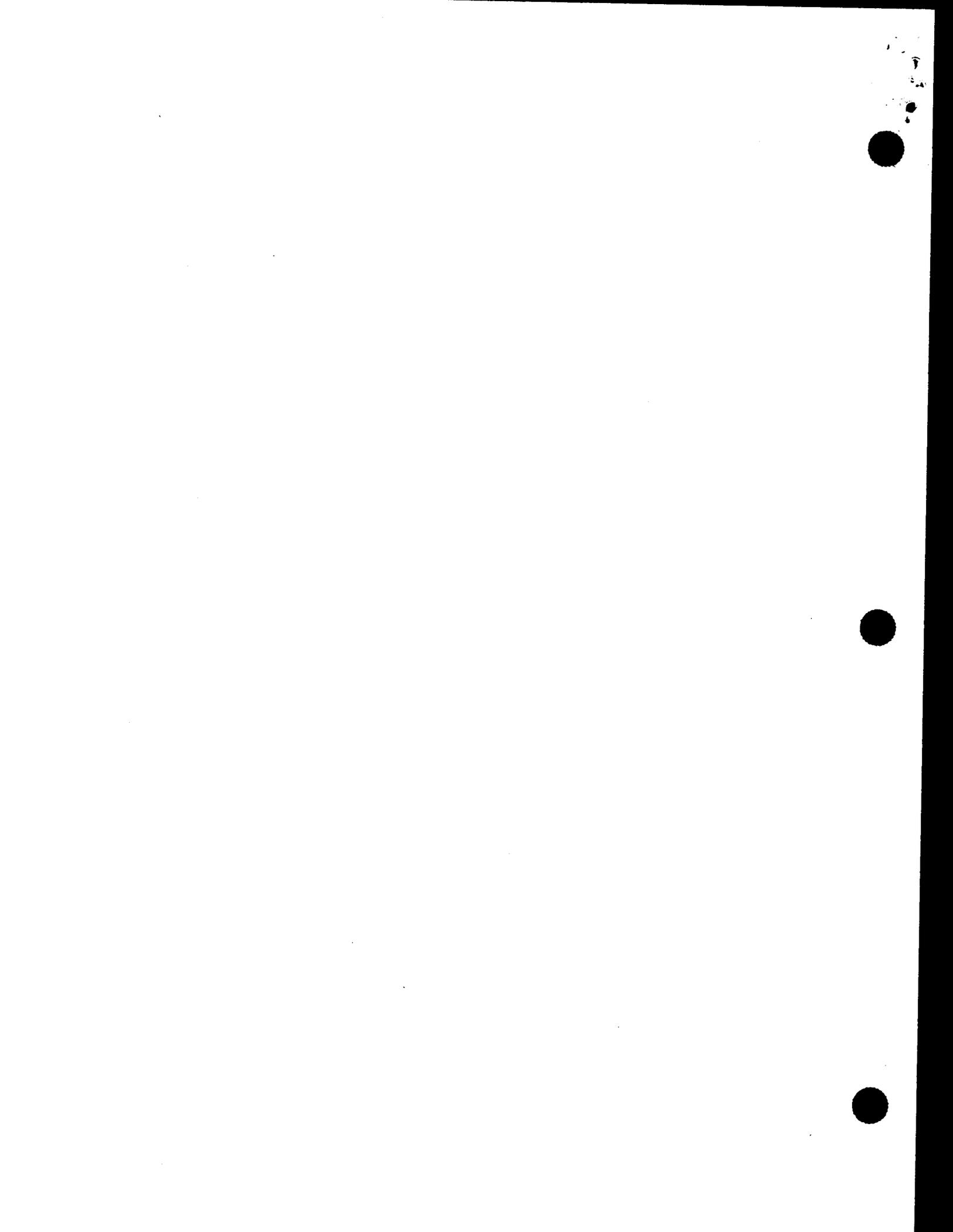
Participating private landholders: The Irvine Company, Chandis Securities Company, M.H. Sherman Company

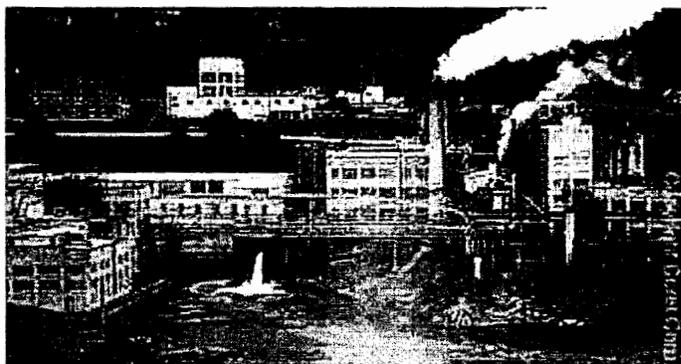
Land in planning area: app. 208,000 acres

Coastal sage scrub in planning area: 34,392 acres

Total land conserved: 38,738 acres

Total coastal sage scrub conserved: app. 18,800 acres





Frayed Safety Nets: Conservation Planning Under the Endangered Species Act

by Laura C. Hood

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The Endangered Species Act is the only federal law expressly designed to save wild species and the ecosystems on which prohibits killing or harming species listed by the federal government as endangered and destroying their habitat, regardless of law was enacted. However, countless acres of habitat have been destroyed and some species have declined in numbers or even controversy over private landowners' responsibilities has exploded.

The question of how to conserve endangered species on private land is terribly important. Nearly 90 percent of the 1,119 species at serious risk of extinction occur on nonfederal lands, and half occur exclusively on nonfederal lands. The dire status of list be blamed on habitat loss. Unfortunately, federal budget shortfalls and lack of political support for aggressive enforcement have endangered species habitat despite the ESA's prohibition against it. In recent years, the situation has taken a turn for the worse: the behest of special interests and private-property-rights advocates, give high priority to seeking to weaken the law.

Yet endangered species conservation does not have to be a confrontational, zero-sum game. In 1982, Congress amended the law to develop their property even if this led to destruction of some listed animals or their habitat. In exchange for this flexibility damage to a minimum and adopt conservation measures to offset it, such as setting aside endangered species habitat in place legally binding agreements initiated by landowners have been set forth in habitat conservation plans (HCPs). Despite the fact completed between 1982 and 1992. Since then, however, the Clinton administration has promoted them aggressively as a way to landowners while also protecting imperiled species. As a result, roughly 225 HCPs, in some cases covering more than a mile to a century, have been approved since 1992, and at least 200 more are in the works.

To encourage more private landowners to participate, the Clinton administration in 1994 adopted a no-surprises policy. This will not have to provide more land or money than called for under the plan, even if new scientific information shows that the original HCP was flawed or because of natural changes in the landscape. The administration also has promoted so-called safe landowners to restore and maintain endangered species habitat on their property and pre-listing agreements to conserve rare numbers dwindle so drastically that listing becomes necessary. In addition, the administration is using these conservation to land-use planning.

Although HCPs and other ESA-related conservation plans have tremendous potential, this report reveals that in many cases adequate scientific information or public input. Provisions in the plans for long-term biological monitoring, if they exist at all, surprises policy. HCPs and other agreements will be extremely difficult to modify if affected species continue to slide toward scientific information indicating the need for extra conservation measures, none of the plans we reviewed provided a way to responsibility by default to the federal government, which is unlikely to have funding to cover it. These drawbacks are alarm is permitted and habitat is destroyed despite great uncertainty about whether the landowners have provided enough mitigation.

For the last two years, dozens of the nation's leading ecologists and geneticists have been raising similar concerns about HCP conservation agreements. In a 1996 letter to members of Congress, a group of 167 scientists seriously questioned the scientific of the no-surprises policy. Most notably, a group of scientific experts on conservation planning led by Dennis Murphy, a bio Nevada-Reno and past president of the Society for Conservation Biology, in 1997 issued a set of science-based recommendations conservation agreements. Murphy and his colleagues asserted that such agreements have been developed without scientific guidance become habitat giveaways that contribute to, rather than alleviate, threats to listed species and their habitats (see Appendix B concern about the lack of funding available to modify approved plans if circumstances change and species decline.

This report presents substantial evidence bearing out scientists' concerns but also shows that many HCPs and other ESA-related other areas. Our findings show that as they are now being developed, many plans represent big risks to endangered species because of public input and because there is no explicit legal mandate that they be consistent with species recovery. In many cases, the on Noah's Ark with a blind captain and no way to repair the vessel when holes appear.

Overview of Findings

Our report shows that some HCPs and other ESA-related conservation agreements may yield significant gains for the conser species on nonfederal (i.e., private, state, local and tribal) land. First, they may prompt municipalities and counties to incorp typically overlooked) as an explicit factor in their local land-use plans. For example, if fully funded and implemented, the M Program for the city and county of San Diego should protect high-quality habitat for dozens of imperiled species in a preserv wildlife but also urban residents who want to experience nature first-hand. Second, HCPs and other plans may enable biolog species and habitat on private land and conduct long-term monitoring that they would not be able to do otherwise. The San B for example, was based on a two-year, peer-reviewed study of endangered butterfly populations and includes an annual mon information is critical to making sound wildlife management decisions. Finally, HCPs and other plans may encourage lando For example, under some safe-harbor agreements in North Carolina, participating landowners periodically burn the understo suitable habitat for endangered red-cockaded woodpeckers.

Unfortunately, our assessment also shows that most plans do not provide these benefits. Not only have conservation gains be actually have diminished species chances for recovery. For example, large-scale HCPs for the threatened northern spotted ow in which the birds nest. Old growth is replaced with much younger, sparser stands unsuitable for nesting, although providing disperse through them to establish new breeding territories. But replacing hundreds of acres of nesting habitat with dispersal it will not boost owl reproduction and assure species survival. Moreover, there is no guarantee that enough old growth to sus other HCPs in the region have been implemented. Even small-scale plans with minimal individual impact may lead to major assessed collectively. Although efforts are being made to prevent this from happening, it is a real problem for some species, checked warbler and Florida scrub jay, whose habitats are being nibbled away by housing developments. In far too many ca analyzed before small-scale plans are approved. For example, many HCPs of the threatened Utah prairie dog involve movin that their privately owned habitat can be destroyed. Relocation of prairie dog colonies frequently fails, yet this strategy cont major regional loss of prairie dog habitat.

Scientific shortcomings can be attributed partly to the fact that many HCPs are not reviewed by independent scientists befor 170,000-acre Plum Creek Timber Company HCP, which covers more than 250 species, was not reviewed by independent sc monitoring, essential to determine whether plans are working as intended, is commonly lacking. Most plans are also missing plan modifications based on new scientific information. These plans lock in preserve designs and management techniques th circumstances change.

Public involvement is given short shrift in the development of many plans, with the exception of those involving state or loc since plans may have enormous impacts on public resources such as wildlife, water quality and open space. For example, w they may significantly affect the quality of life enjoyed by local residents by providing or eliminating outdoor recreational o citizen steering committees were established, we found that representation was biased heavily toward developers and resour small-scale plans typically perceived no need to include any meaningful public input.

One major reason why many plans are weak is that they are not legally required to be consistent with species recovery, even The mitigation that landowners are required to provide is based on practicability, in other words, on what the landowner is w need. There is no requirement that the degree to which landowners are absolved of future liability be commensurate with the will work, and thus leave species at least no worse off than they were before.

To increase landowner participation, the Clinton administration has transferred the uncertainty associated with planning alm the species themselves. In fact, the term no surprises applies to the landowner and not the species, because conditions will c implementation of the plan will have unpredicted consequences. Some plans will last for decades, well beyond periods in w on species. For example, most HCPs and safe-harbor agreements for red-cockaded woodpeckers in the Southeast will apply species about which little is known are also common. The Washington Department of Natural Resources HCP applies to all planning area that are not now listed but may be listed during the plan s 70-year life. Yet landowners across the board are be continue to slide toward extinction, the landowners will not have to provide more money or land than was required in the ap

What Must Be Done

There will never be complete information and unlimited funding for designing and carrying out HCPs and other conservatio necessity of reducing the risks to imperiled species that these plans currently pose and of ensuring consistency with species

Improve the scientific quality of plans.

- Plans must be consistent with species recovery. This requires that plans set measurable, recovery-based biological habitat quantity and quality and that plans provide full mitigation for habitat loss and adverse impacts on species.
- Large-scale, multi-species plans need independent scientific review at every major stage of their development, from conservation strategies, reviewing implementation and biological monitoring. Each plan should document the exte review.
- Large-scale multispecies plans should have biological-monitoring programs emphasizing quantitative information. (1) a greater financial commitment on the part of both landowners and involved jurisdictions, (2) partnerships betw from universities, environmental consulting firms and private organizations and (3) independent scientific review o well as of subsequent monitoring.
- Plans should be subject to modification as new scientific information is obtained. In other words, they should prov

Bring more citizens to the table.

- Representation on committees that oversee plan development should equitably cover all stakeholders, including co concerned citizens.
- Landowners should provide greater opportunities for public participation in plan development.
- Monitoring information should be publicly available throughout the life of the plan. Assure funding.
- Landowners should provide performance bonds or other financial security before any loss of animals or habitat occ

- becomes necessary to address changes in circumstances or landowners become insolvent before mitigation is complete.
- A federal trust fund should be established to provide funds to cope with unanticipated problems.
 - Funding adequate for federal agencies to monitor compliance should be provided. Set strong legal standards.
 - Consistency with recovery should be the legal standard for conservation plan approval.
 - Assurances to landowners should be based on the extent to which risk is reduced for species on their lands. The future liability should be based on the plan's expected impacts, the likelihood that mitigation will be effective and management.
 - Enforcement of the ESA Section 9 prohibition against destroying listed species and habitat should be strengthened. Develop plans instead of illegally destroying habitat, and it would reduce habitat loss that could occur while plans are developed.
 - Landowners should be legally responsible for fully mitigating all incidental take, without relying upon the federal government.

Methodology

In this report Defenders of Wildlife has assessed the scientific content, funding, public participation and legal implementation of the country, gleaned what we believe are valuable lessons about the promise and peril they hold. It was beyond the scope of assessment of the several hundred plans that either have been approved or are likely to be approved in the coming months. Nationwide, we selected a representative sample and evaluated them using criteria that should be satisfied in order to produce private land (see Appendix A: Methodology). Our report summarizes the 24 plans (see Appendix C), highlights their most important provisions and describes major trends.

Organization of the Report

Our report begins with an introduction to the Endangered Species Act, HCPs and other types of conservation plans. In the following sections we discuss the elements of conservation planning on which we have focused: (1) science, (2) public participation, (3) funding and (4) legal implementation. We then discuss its significance, important plan examples and general trends. Finally, we state our conclusions and recommendations.

CONSERVATION PLAN	LOCATION	SPECIES	GEOGRAPHIC SCOPE	DURATION (in years)	YEAR OF COMPLETION	AGREEMENT TYPE
1. Washington Department of Natural Resources	Western WA	northern spotted owl, marbled murrelet, salmon*	1.6 million acres	70-100	1996	HCP, §10
2. Plum Creek Timber Company	Cascades, WA	northern spotted owl, marbled murrelet, salmon*	170,000 acres	100	1996	HCP, §10
3. Weyerhaeuser Company, Inc.	Willamette Timberlands, OR	northern spotted owl, marbled murrelet, salmon*	400,000 acres	40-80	autumn, 1997	HCP, §10
4. Teichert, Inc. Vernalis Project	San Joaquin, County CA	San Joaquin kit fox*	300 acres	50	1997	HCP, §10
5. PG&E - Blackhawk	Contra Costa County, CA	red-legged frog	5 acres	3	1996	HCP, §10
6. San Bruno Mountain	San Mateo County, CA	mission blue butterfly, callippe silverspot butterfly*	3,600 acres	30	1983	HCP, §10
7. Metropolitan Bakersfield	Kern County, CA	San Joaquin kit fox, blunt-nosed leopard lizard, 2 kangaroo rats*	408 square miles	20	1994	HCP, §10
8. Multiple-Species Conservation Program	San Diego, CA	coastal California gnatcatcher, 83 species	314,900 acres	50	1997	NCCP, 4(d) rule
9. Clark County	NV	Mojave Desert tortoise	525,000 acres	30	1994	HCP, §10
10. Coleman	Cedar City,	Utah prairie	3.7 acres	2	1995	HCP, §10

Company	UT	dog				
11. Swan Valley Agreement	MT	grizzly bear	600 square miles	5+	1995	§7 and 10 hybrid
12. Balcones Canyonlands	Travis County, TX	golden-cheeked warbler, black-capped vireo, cave invertebrates	633,000 acres	30	1996	HCP, §10
13. Louisiana Black Bear Plan	LA	Louisiana black bear	statewide	NA	1995 (Recovery Plan)	4(d) Rule
14. Fel-Kran Plumbing	Baldwin County, AL	Perdido Key beach mouse	27 acres	30	1994	HCP, §10
15. Sarah N. Bradley	Monroe County, AL	Red Hills salamander	80 acres	30	1994	HCP, §10
16. Fort Morgan Paradise Joint Venture	Baldwin County, AL	Alabama beach mouse	86.3 acres	30	1996	HCP, §10
17. Georgia Statewide HCP	GA	red-cockaded woodpecker	statewide	99	no complete draft	HCP/Safe Harbor §1
18. Brandon Capitol Corporation	Brevard County, FL	Florida scrub jay	3.8 acres	2	1994	HCP, §10
19. Gross/Snow Construction	Osceola County, FL	bald eagle	11.4 acres	99		HCP, §10
20. Volusia County Government	Volusia County, FL	5 sea turtle species	49 miles of coast, 50,000 acres	5	1996	HCP, §10
21. Ben Cone	Pender County, NC	red-cockaded woodpecker	8,000 acres	99	1996	HCP, §10
22. Sandhills Agreement	Sandhills region, NC	red-cockaded woodpecker	300,000 acres	99	1995	Safe Harb
23. Massachusetts Division of Fisheries and Wildlife	coastal counties of Massachusetts	pipin plover	200 miles of coast	2	1996	HCP, §10
24. Atlantic Salmon Conservation Plan	Maine	Atlantic salmon	1,422 square miles	NA	1996 - draft	Pre-listing agreement



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Endangered Species Act and Private Land

The Endangered Species Act of 1973 (ESA) is the only major federal law that specifically seeks both to save all United States wildlife from extinction and to preserve the ecosystems on which it depends. With a fiscal year 1997 budget of less than \$89 million designated for the ESA, the U.S. Fish and Wildlife Service (FWS) for terrestrial and freshwater species and the National Marine Fisheries Service (NMFS) for anadromous and marine species have the responsibility of implementing all aspects of the ESA making listing determinations, developing recovery plans and providing consultation to federal agencies. Given the paltry budget for ESA implementation and the general lack of economic incentives for endangered species conservation, it is not surprising that more than a third of listed species continue to decline compared to less than ten percent whose status is improving (FWS 1994).

For most species listed as endangered or threatened under the ESA, recovery depends largely on whether habitat is conserved and properly managed. For 88 percent of listed species, habitat destruction has been a significant factor in their decline (Wilcove et al. 1996). Half of all federally listed species do not occur on federal lands (Stein et al. 1995), and more than half, including nearly 200 animal species, have at least 81 percent of their habitat on nonfederal land (U.S. General Accounting Office 1994). Given these facts, recovery of many species is unlikely to occur unless private landowners conserve habitat.

Regulation of private land is probably the most controversial aspect of the ESA. Section 9 of the ESA makes it unlawful for any person to kill listed animals or destroy habitat essential to their survival. The legal term for this is take, and the prohibition against it covers activities that directly kill or harm listed species as well as activities that indirectly harm them through significant habitat modification or degradation (50 CFR §17.3). Enforcement of this prohibition can have major financial implications for landowners, and fear of land-use restrictions has prompted some landowners to destroy endangered species habitat deliberately. A National Association of Home Builders report declared,

Unfortunately, the highest level of assurance that a property owner will not face an ESA issue is to maintain the property in a condition such that protected species cannot occupy the property.... This is referred to as the scorched earth technique. This management practice is a perverse disincentive resulting from the ESA.... Developers should be aware of it as a means employed in several areas of the country to avoid ESA conflicts.

Some critics contend that the ESA is inflexible and unfairly penalizes private landowners who happen to own the last suitable habitat after others have developed their land, typically without regard to long-term ecological consequences. On the other hand, conservationists assert that the ESA is not adequately enforced, especially on private land, noting that habitat loss and species declines often continue after listing. Moreover, the ESA is designed to rescue only species on the brink of extinction, and conservationists ask whether it makes sense to focus some effort on conserving species before their numbers drop so low and their habitat shrinks so much that listing becomes necessary.

In 1994 and 1995, Defenders of Wildlife sponsored a series of roundtable discussions of the ESA among industrial and non-industrial private landowners, conservationists and government representatives. Although there were disagreements, participants agreed that some problems could be solved if the ESA was funded adequately and used to encourage more public-private conservation partnerships (Ferris 1996). Meanwhile, other experts were recommending that economic incentives be used to engage more private landowners in conservation. In this setting, conservation planning has emerged as an incentive-based approach that potentially can address both conservationist and private landowner concerns.

How the ESA Works: A Glossary

Take: As defined in the ESA, the term means to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, collect or attempt to engage in such conduct. Harm may include significant habitat modification that actually injures a species. There are no federal prohibitions under the ESA for the taking listed plants on nonfederal lands, unless taking of those plants is in violation of state law or would accompany a project that requires federal authorization, permits or funding.

Endangered Species: Any species in danger of extinction throughout all or a significant portion of its range and listed pursuant to the provisions of the Endangered Species Act.

Threatened Species: Any species which is likely to become endangered within the foreseeable future throughout all or a significant portion of its range.

Candidate Conservation Agreement: An agreement to encourage the removal of threats to specific target species so as to avert listing them as threatened or endangered under the act. Voluntary protection measures are included in the agreement which specifies management activities necessary to prevent the species from declining to the point that full ESA protection is warranted. Agreements cover species which are most likely to be listed in the near future.

Jeopardy: As defined by ESA regulations, for a species to be placed in jeopardy is to reduce appreciably the likelihood of both survival and recovery of the species.

Section 7: Section 7 of the ESA sets forth certain requirements for all federal agencies whose activities may impact endangered or threatened species or their critical habitats. After mandatory consultation between the Secretary of the Interior and the action agency, the secretary must issue a written biological opinion with a decision as to whether an action will likely jeopardize the continued existence of the listed species.

Section 9: This ESA section delineates prohibited acts, including the "take" of any listed species without specific authorization of FWS or NMFS for species under the jurisdiction of each agency. Also prohibited is the selling, importing, exporting or removal of listed species.

Incidental Take Permit: A permit that exempts a permittee from the take prohibition of Section 9 of the ESA which is issued by the FWS or NMFS pursuant to section 10(a)(1)(B) of the ESA. They authorize a take of protected species that may be incidental to, but not the purpose of, otherwise lawful activities.

Habitat Conservation Plan: Commonly referred to as an HCP, it is a planning document that is a mandatory component of an Incidental Take Permit application, under section 10(a)(2)(A) of the ESA. An HCP must accompany an application for an Incidental Take Permit, and must ensure that the effects of the authorized incidental take will be adequately minimized and mitigated to the maximum extent practicable.

4(d) Rule: This refers to the protective regulations the Secretary issues to provide for the conservation of threatened species under ESA section 4(d). Any act related to endangered species which is prohibited under ESA section 9, may also be included in regulations for threatened species protection.

Safe Harbor: Program whereby a landowner is exempted from certain aspects of the ESA in return for maintaining or improving habitat of specific listed species. The landowner receives the authority to take any additional endangered species individuals attracted to the land in the future.

Programmatic HCP: An HCP used to address a group of actions as a whole, rather than one at a time in separate HCPs. A programmatic HCP might address a single related action occurring in many different places. This type of HCP allows numerous entities to be involved in the HCP through "Certificates of Inclusion" or "Participation Certificates" which convey the take authorization of the official section 10(A)(1)(B) permit to the certificate as a whole, rather than one at a time in separate HCPs. Sufficient information availability is a central problem in preparation of programmatic HCPs. Therefore, they can only be successful when the activities being addressed are well-defined, similar in nature, and occur within a described geographical area or at similar points in time.

Habitat-Based HCP: This approach may address all species within habitat-types within the plan area, or habitat-types in conjunction with a specific list of species that will be covered by the permit. Species covered by the HCP may include proposed and candidate species. This requires the Services to analyze the effects of the proposed HCP on those species not listed to be reviewed under ESA Sections 7 and 10 as if they were listed. FWS and the applicant generally use indicator species to set management parameters for the covered habitat in the HCP. A further test must be completed to ensure that the needs of all endemic and sensitive

species associated with the covered habitat types are adequately addressed in the HCPs.

Advent of Conservation Planning

In 1982, Congress amended the ESA in a way that radically altered its application on nonfederal land. This was by authorizing habitat conservation plans. The impetus came from a decade-long battle between developers and environmentalists over the fate of San Bruno Mountain, several thousand acres of mostly undeveloped land five miles from San Francisco. Two endangered butterfly species occurred on the mountain. In a highly unusual move, developers and environmentalists, joined by local officials, developed a plan allowing some development to occur but protecting most of the butterflies habitat. But there was concern that the plan would violate the ESA because it allowed destruction of some occupied butterfly habitat. To remedy the problem, Congress changed the ESA to permit incidental taking of endangered species by private landowners provided they develop habitat conservation plans (HCPs) to offset the damage.

Few landowners developed HCPs until the early 1990s. Only 12 HCPs were approved between 1983 and 1992 (FWS and NMFS 1996). Since 1992, however, there has been an explosion of such approvals 200 by the end of 1996. By September, 1997, millions of acres nationwide were covered by more than 220 HCPs. Indeed, HCPs have become one of the most prominent mechanisms employed by FWS to address the problem of threatened and endangered species on private lands.

This rapid proliferation has led in turn to widespread concern among conservationists and independent scientists that plans are not being prepared with adequate scientific guidance and, in fact, may seriously undermine species recovery (Murphy et al. 1997 see Appendix B). ESA-related conservation planning for private landowners, however, now goes beyond HCPs. Increasingly, new legal tools are being developed to address multispecies and ecosystem planning, raising some of the same concerns that are being directed toward HCPs.

Types of ESA-Related Conservation Plans

Landowners can develop several different types of ESA-related conservation plans. The HCP is the most widely used. Because it is available only for landowners with listed species on their property, the Clinton administration has established safe harbor agreements that encourage landowners to maintain suitable habitat not occupied by endangered species. The administration also is promoting ecosystem plans for landowners in particular regions and pre-listing agreements for landowners with unlisted species of concern.

The "No Surprises" Policy

Much of the recent explosion in HCPs can be attributed to the Clinton administration's "No Surprises" policy, adopted in 1994. This policy provides that once a landowner enters into an HCP, FWS nor NMFS will thereafter impose additional land-use restrictions or require that additional land or money be set aside by the landowner to provide for the conservation of species covered under the HCP. This policy has changed the nature of conservation planning by giving landowners significant incentives to develop plans that insulate them from future listings and other protective measures, and by shifting all financial responsibility for necessary changes down the line onto the federal government.

As plans are implemented, it is likely that species' populations will fluctuate, large-scale disturbances like fire and storms will occur, and scientific information will change. The "No Surprises" policy is of great concern for conservationists because these surprises are sure to arise during plan implementation, and there probably will not be enough federal money or land to make up for detrimental impacts on species. This difficulty was brought to the Interior Secretary's attention in 1996 through a letter from conservation biologist Gary Meffe signed by 167 scientists. For example, many plans are 50 to 100 years in duration. It is hard to imagine that a plan designed in 1940 would be adequate today, given new information on preserve design and management techniques.

The "No Surprises" policy is highly favorable to landowners because it provides corporate landowners with more certainty for endangered species than any other business entity receives for its line of work. Businesses do not receive assurances that interest rates will not change or that timber prices will not vary, especially over the long time periods that apply to some HCPs. In addition, landowners are not required to bear any of the risk that changes may be needed in the future because of unforeseen factors. Businesses have insurance against fire and flood for their offices, but there is no requirement that they ensure for emergency measures if conservation plans are inadequate or environmental conditions change. Instead, the federal government, the American public and the species themselves bear the risk of future emergencies.

Nevertheless, assurances like the "No Surprises" policy are extremely important incentives for landowners to undertake the sometimes long and costly process of conservation planning. In this report, we explore the implications of "No Surprises" for various conservation agreements, techniques that have been used to allow future changes to plans within the context of "No Surprises" and methods of giving landowners reasonable regulatory assurances that are less risky to species.

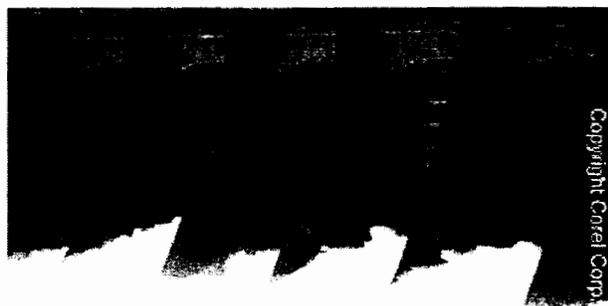
Habitat Conservation Plans (HCPs)

HCPs and the incidental-take permits that accompany them are authorized under Section 10(a) of the ESA (16 U.S.C. §1539(a)). The Habitat Conservation Planning Handbook (FWS and NMFS 1996) governs HCP development and implementation as well as the processing of Section 10(a) incidental-take permit applications. The handbook is intended to ensure that HCPs nationwide are developed and implemented in a consistent manner. To accomplish that, the handbook gives guidelines on issuance criteria, processing procedures, permit suspension and revocation and related issues.

In the HCP, the landowner must specify the impact that will result from the taking; what steps are being taken to monitor, minimize and mitigate the taking; what alternatives were considered; and why they were not implemented. FWS (NMFS for incidental take of listed salmon) is responsible for ultimately approving or rejecting the HCP. The landowner is responsible for developing the HCP, although FWS often works with the landowner from the beginning to develop a plan that will be acceptable. Typically, the landowner minimizes harm by limiting the geographic extent of harmful activities or limiting the seasons those activities are allowed (e.g., limiting timber harvest during the nesting season). Mitigation often involves setting aside (through purchase or conservation easements) habitat elsewhere to replace habitat lost through development. Any nonfederal landowner, whether a private citizen, corporation, county or state, can initiate an HCP.

FWS (or NMFS) approval of HCPs is based on whether (1) the taking will be incidental to an otherwise lawful activity, (2) the impacts of the taking will be minimized and mitigated to the maximum extent practicable, (3) there will be adequate funding to carry out the HCP and the landowner has established procedures for addressing unforeseen circumstances, (4) the taking will not appreciably reduce the likelihood of survival and recovery of the species in the wild and (5) the landowner agrees to include other measures that FWS (or NMFS) may require. Again, FWS typically works with the applicant and provides guidance as to what is or is not acceptable with respect to the above requirements.

The approval of incidental-take permits is subject to the National Environmental Policy Act (NEPA), requiring that an environmental assessment (EA) or environmental impact statement (EIS) be prepared. FWS and NMFS, however, categorically exclude from environmental analysis HCPs that they determine will have minor or negligible effects (low effect HCPs FWS and NMFS 1996). To date, nearly all HCPs have been accompanied by either an EA or an EIS (for large-scale or multiple-landowner HCPs) discussing how mitigation reduces the significant impacts of the landowner activity.



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SECTION ONE Part II

Introduction continued

Concerns About HCPs

Conservation advocates and scientists have identified a number of major problems with HCPs as currently implemented. First, the no surprises policy is problematic because it exempts landowners from paying for changes in approved plans that may be necessary to halt species declines, and the federal government is unlikely to be able to cover the shortfall. These assurances to landowners are particularly unacceptable when plans do not have adequate biological goals, monitoring and adaptive management (Murphy et al. 1997 see Appendix B). Second, the process of developing HCPs has been criticized. The problems lie mainly in inadequate public participation (Kostyack, 1997) and insufficient biological information or scientific review (Murphy et al. 1997, Hosack et al. 1997, Kaiser 1997). Third, nearly all conservationists agree that standards for HCP approval are too low, and because FWS and NMFS do not require HCPs to advance recovery, the plans may actually undermine it (Shilling 1997, National Audubon Society 1997). Finally, some conservationists believe that regional planning would be more effective than the piecemeal protection that results from having many small, single-landowner HCPs strewn across the landscape. This can lead to greater habitat fragmentation and insufficient protection of unoccupied habitat or unlisted species (O Connell and Johnson 1997). The Clinton administration is promoting large-scale HCPs, but most are small-scale. Because HCPs are landowner-initiated, the government has little control over their scope.

Examples in This Report

Washington Department of Natural Resources
 Plum Creek (Central Cascades)
 Weyerhaeuser Company - Willamette Timberlands
 San Bruno Mountain
 Metropolitan Bakersfield
 Teichert, Inc. Vernalis Project
 Black Hawk PG&E
 Clark County Government
 Balcones Canyonlands
 Fel-Kran Plumbing
 Sarah N. Bradley
 Georgia Statewide
 Brandon Capitol Corporation
 Gross/Snow Construction
 Volusia County Government
 Ben Cone
 Massachusetts Division of Fisheries and Wildlife
 Coleman Company
 Fort Morgan Paradise Joint Venture

Safe-Harbor Agreements

Unlike HCPs, safe-harbor agreements are for landowners who want to maintain or enhance habitat without fear of land-use restrictions if their actions subsequently attract endangered species to their property. Safe-harbor agreements provide a carrot for landowners by exempting them from future regulation if they manage their land in ways that benefit listed species.

When a landowner enters into a safe-harbor agreement, he/she agrees to maintain or improve endangered species habitat, thereby producing a net conservation benefit for the species. In exchange, the landowner is permitted to take endangered species attracted to the land in the future. Typically, a survey is conducted to determine the baseline number of animals for which habitat must be maintained. In addition to the baseline, which can be zero, the

landowner voluntarily agrees to improve additional habitat. FWS does the compliance monitoring. From a legal perspective, safe-harbor agreements function as modified HCP arrangements (under Section 10) in which mitigation occurs first and incidental take occurs sometime in the future.

Safe-harbor agreements seek to solve two major problems of ESA implementation. First, the Section 9 take prohibition generally mandates protection only for currently occupied habitat and does not apply to potentially suitable unoccupied habitat. As a consequence, landowners with such habitat may be so afraid of restrictions that a take prohibition would impose that they do not improve habitat. In fact, they have an incentive to destroy it in order to keep endangered species away (National Association of Home Builders 1996). Second, endangered species habitat often requires active management, such as periodic burning or removal of exotic species, to remain suitable. Because the ESA does not explicitly require landowners to maintain habitat, the habitat can undergo steady degradation over time.

The first three safe-harbor agreements for the Attwater's prairie chicken (*Tympanuchus cupido attwateri*) in Texas, for the restoration of the aplomado falcon (*Falco femoralis*) in Texas and for the red-cockaded woodpecker (*Picoides borealis*) in the Sandhills region of North Carolina have received considerable attention. They are the models for the Clinton administration's draft policy on safe harbor, announced in June, 1997. Through this policy, the administration seeks to involve more private landowners in safe-harbor agreements, covering more species and habitat types.

Concerns About Safe-Harbor Agreements

Conservation advocates have voiced several concerns about safe-harbor agreements. First and perhaps most important is concern about how the landowner's baseline responsibility is determined. This can be complicated and may involve land surveys, population estimates and quantification of occupied habitat. There is some uncertainty associated with all of these factors, and to the extent that the baseline is negotiable, there is a risk that it will be influenced more by the landowner's desire for an economic return on the property than by the biological needs of the species. Second, landowners may be tempted to degrade habitat deliberately prior to entering into a safe-harbor agreement in order to lower the baseline.

Third, safe-harbor may not always be appropriate. For example, depending on the species and habitat type, some animals may move from protected habitat to nearby habitat that has been enhanced under a safe-harbor agreement. Because the protected habitat could be destroyed after the animals abandon it and the enhanced habitat also could be destroyed, the species could be worse off than without an agreement. Nevertheless, many scientists believe that the benefits of maintaining and expanding habitat through safe-harbor agreements outweigh this concern. They contend, however, that sound monitoring programs must accompany the agreements. The Clinton administration's draft safe-harbor policy calls for rejecting safe-harbor agreements that could backfire. Safe harbors have not yet been widely tested. How well they will work remains to be seen.

Examples in This Report

Sandhills Agreement
Georgia Statewide Plan

Prelisting Agreements

In a typical prelisting agreement, any federal, state or private entity can negotiate an ESA-related conservation plan to arrest the decline of a species. Ideally, this occurs before the species warrants listing under the ESA. These agreements may satisfy both conservationists calling for more proactive conservation measures and landowners seeking to avert land-use restrictions. The Clinton administration has announced a draft candidate conservation agreement policy for proposed, candidate and other unlisted species. For candidate species, FWS or NMFS will assist landowners in developing programs or plans that, if undertaken on a broad scale, would remove the threat(s) to the species and thus preclude the need to list it. The landowner will receive an enhancement of survival permit at the time of entering into the agreement. It will assure the landowner of having no further obligations if the species is listed, regardless of new information or changed circumstances.

Concerns About Prelisting Agreements

Pre-listing agreements often are not legally enforceable, and many of them are developed to avert listing and subsequent regulations, even though scientific information indicates that the species should be listed. This has occurred with many species, including the Barton Springs salamander (*Eurycea sosorum*), the jaguar (*Felis onca*) and the coho salmon (*Oncorhynchus kisutch*). Moreover, biological goals and standards are absent or unacceptably vague for many pre-listing agreements. As for the draft policy for candidate conservation agreements, conservation advocates are most concerned about the level of assurances that are granted to participating landowners. First, the draft policy states that some agreements may remove the need to list the species. This is inconsistent with Section 4 of the ESA, which requires that listing determinations be based solely on science. Second, if the species is listed, then landowners who fulfill their obligations under the agreement have no additional responsibilities and will receive incidental-take permits, regardless of whether they intend to use their property in ways that may jeopardize species survival.

Examples in This Report

Maine's Atlantic Salmon Conservation Plan

Ecosystem Planning

We define ecosystem planning as any attempt at ecosystem-scale planning and management (including development and natural resources extraction and natural resources preservation) that includes all endangered species within the planning area.

Some conservationists have decried ecosystem planning because it allows incidental take on a broad scale. Some developers and property rights advocates, on the other hand, have criticized it because it restricts development over large areas. Large-scale ecosystem planning, however, has given landowners and governmental jurisdictions the flexibility to apply principles of preserve design to large areas and enabled them to avoid the piecemeal approach to conservation that can lead to habitat fragmentation. Such plans hold promise if they incorporate sufficient scientific information and if they provide safety nets for imperiled species.

The Natural Community Conservation Planning program (NCCP) in California seeks to address conservation and development needs across jurisdictional boundaries at an ecosystem level. This program has been touted as a model for future planning under the ESA. The NCCP was established by state law in 1991 in response to the extreme situation in California of high population growth, massive development pressure and high concentrations of rare, endemic and endangered species. The NCCP also was an attempt to prevent federal listing of the coastal California gnatcatcher for protection under the ESA. After the federal government listed the gnatcatcher as threatened, the NCCP became the basis of a 4(d) rule that regulates activities associated with its habitat (see The Importance of Listing box). Governor Pete Wilson declared: We will bring together developers, environmentalists and public officials to create a plan to protect the endangered wildlife and allow needed development.

Under the NCCP, FWS responsibility for enforcing the ESA is largely delegated to local and state government. That is, local governments, FWS and the California Department of Fish and Game (DFG) jointly develop regional conservation plans that the wildlife agencies (DFG and FWS) deem adequate for issuance of incidental-take permits. The NCCP is intended to take a multispecies, multi-habitat approach. Planning areas are delineated by ecosystem boundaries rather than landowner or county boundaries. This approach relieves FWS of having to help develop and approve HCPs project by project and species by species and seeks to give local governments and the state wildlife agency (DFG) an official role in ESA-related conservation planning.

Currently the NCCP is limited to a pilot program in southern California that embraces five counties: San Diego, Orange, Riverside, Los Angeles and San Bernardino. The program can be visualized as a giant jigsaw puzzle, in which the entire planning area encompasses the remaining coastal sage scrub habitat 6,000 square miles stretching from Los Angeles and San Bernardino Counties to the Mexican border. This puzzle is broken into 11 pieces labeled subregions, each with its own Natural Communities Conservation Plan. The Multiple Species Conservation Program (MSCP) for southwestern San Diego County, assessed in this report, is one of those 11 pieces. Each subregion (including the MSCP) is divided into smaller subareas to facilitate planning.

The NCCP is a habitat-based approach to conservation planning. The Habitat Conservation Planning Handbook (p 3-38) declares: The rationale for a habitat-based approach is that if certain habitat-types are scientifically selected and assessed, and adequately protected under the terms of the HCP, the HCP could protect a broader range of species than the few target species that might otherwise be addressed by a conventional HCP.

Other ESA-related programs also seek to use large-scale planning to address ecosystem-level concerns. For example, for the Louisiana black bear (*Ursus americanus luteolus*), landowners, wildlife biologists and conservationists have developed recovery strategies and priorities focused on identifying remaining bottomland hardwood forests and employing management techniques to enhance habitat and develop corridors for bear movement.

California Coastal Sage Scrub Ecosystem

The California coastal sage scrub ecosystem, a unique mix of drought-resistant shrubs that includes California sagebrush, buckwheat and several herbaceous sage species, once covered much of the lowlands of southern coastal California from Ventura County to San Diego County.

Widespread urban development, livestock grazing and intensive agriculture have reduced this ecosystem to approximately ten percent of its original extent (Murphy et al. 1992; McCaull 1994, Natural Resources Defense Council 1997). Species dependent on coastal sage scrub also have declined, and some have been listed as threatened or endangered under the Endangered Species Act, including the coastal California gnatcatcher, orange-throated whiptail lizard, Hermes copper butterfly, Pacific pocket mouse, Orange County mariposa lily and San Diego barrel cactus (Noss and Peters 1995, Dobson et al. 1997).

The decimation of the coastal sage scrub ecosystem and consequent increase in the number of listed species in rapidly growing parts of southern California has sparked considerable controversy. The region's population is expected to double in some areas by 2010. Nearly all of the remaining coastal sage scrub is on privately owned land worth billions of dollars. Even the pockets of coastal sage scrub not threatened by imminent development may be destroyed by irresponsible recreational use, spread of invasive exotic species or fragmentation. Establishing effective conservation programs to address these threats is essential to ensure quality of life for southern Californians and the survival of increasingly rare coastal sage scrub species.

Concerns About Ecosystem Planning

The ecosystem-based approach to conservation gives momentum to fulfilling the ESA's original purpose to protect ecosystems and recover imperiled species that depend on those ecosystems (Patlis 1996). The ecosystem approach addresses potential cumulative effects, habitat fragmentation and multiple species. Many hold the NCCP up as the model for endangered species management, but it has potential flaws. For the NCCP, funding may be insufficient for plan implementation and preserve acquisition, and some individual plans have been developed with insufficient independent scientific oversight (NRDC 1997). In addition, such plans are used frequently as an excuse not to list species that become imperiled despite NCCP implementation.

ESA-related conservation planning can either further species recovery or hasten ecosystem degradation and species extinctions. The no-surprises policy of freeing landowners from future liability makes development of high-quality, information-rich HCPs an absolute necessity. HCPs approved now may predetermine the fate of some endangered species. If we are not careful, conservation planning will result not in endangered species recovery but in accelerated erosion of landowner responsibilities toward imperiled species and biodiversity.

Examples in This Report

Multiple Species Conservation Program (MSCP)
Swan Valley Agreement
Louisiana Black Bear Plan



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SECTION TWO Part I

Elements of ESA-Related Conservation Planning

Conservation planning is an interdisciplinary process that can involve many stakeholders and goals. Here we identify four elements - scientific integrity, meaningful public input, adequate funding and legal enforcement - that are essential for effective conservation planning. Each of these elements is described in detail. Highlights from plans are noted and national trends are discussed.

SCIENCE

Biological information and scientific principles underlie the entire process of conservation planning. For each plan, there must be ecological information on the species concerned, survey information for the planning area and a monitoring program to track population and habitat changes. A variety of biologists need to be involved in plan development, including independent scientists with no financial stake in the outcome of the plan. Scientific principles must be applied to various aspects of the plan, from preserve design to habitat and species management. Here, we address how the plans that we reviewed have incorporated these basic scientific considerations.

Design of Conserved Areas

Geographic Scope of Planning

According to the FWS and NMFS HCP handbook, neither the ESA nor its implementing regulations limits the size of an HCP planning area.... HCP boundaries should encompass all areas within the applicant's project, land-use area, or jurisdiction within which any permit or planned activities likely to result in incidental take are expected to occur (pp. 3-11, FWS and NMFS 1996). Given this flexibility, there is one simple aspect of plans that can improve conservation planning from the very beginning: the ability to define the plan's geographic scope in a biologically relevant manner. This advantage is not possible in traditional HCPs under Section 10 of the ESA. Rather than defining the planning area according to biologically determined criteria (i.e., watershed, community type, ecosystem, etc.), traditional single-landowner HCPs are designed around an area where the landowner wishes to conduct activities that result in incidental take (O'Connell and Johnson 1997). Nevertheless, in two programs, for southern California and for the sandhills region of North Carolina, the federal government has overcome this apparent limitation.

First and most importantly, in the first pilot program for the NCCP in southern California, the geographic area is defined by the extent of coastal sage scrub remaining (rather than jurisdictional boundaries). At the beginning of the program, a scientific review panel of five prominent conservation biologists was assembled to develop very general guidelines for conservation of coastal sage scrub, based on ecological information. When the coastal California gnatcatcher was listed as threatened, this comprehensive view of coastal sage scrub (the bird's habitat) was essential in implementing immediate regulations on development and providing the basis for an ecosystem-wide planning effort.

On a much smaller scale, the safe-harbor program for red-cockaded woodpeckers in the sandhills region of North Carolina was also delineated by a physiographic region. The sandhills region supports one of the largest remaining red-cockaded woodpecker populations and is one of 15 designated recovery populations (FWS 1985). The region contains woodpeckers on state lands and on Fort Bragg Military Reservation, but those two areas are not adjacent to each other, and 30 percent of the known woodpecker groups in the region occur on private lands that lie in between or proximate to the two tracts of public land. Those private lands are targeted for agreements under the sandhills safe-harbor program.

Preserve Design

Preserve design is especially relevant to the large-scale plans that establish a system of preserves or special management areas, including plans for urban areas (e.g., Balcones Canyonlands Conservation Plan), large single-landowner plans (e.g., Plum Creek Timber Company) and plans for individual species (e.g., Louisiana Black Bear). In a general sense, these plans consist of designating certain areas where development or other activities that destroy habitat are permitted and certain areas where habitat will be conserved. The amount, quality and spatial configuration of the preserved habitat is central to the plan's success in sustaining endangered species. Consequently, the preserve design must be based on an adequate understanding of which habitats are occupied by endangered species, population estimates for those species and identification of appropriate unoccupied habitat. Some plans contain the implicit assumption that preserve areas will function to sustain viable populations of various species (e.g., the golden-cheeked warbler under the Balcones Canyonlands plan and the MSCP in San Diego). To succeed, these plans must provide: (1) preserve areas which can sustain breeding individuals, (2) ways for those individuals to move between the preserve areas and (3) protection for unoccupied habitat, so that such habitat remains suitable for future colonization.

The first requirement of preserve design is for the protected areas to sustain breeding individuals. In order to accomplish this, management actions must be based upon a summary and analysis of life history information, foraging ecology (including understanding the relationship between foraging habitat and reproductive success), nesting or breeding requirements, predation and disease (natural threats) and human-caused threats. Unfortunately, there is often not enough information about the requirements of species to determine whether a given plan will address these factors. Moreover, because habitats vary geographically, cookbook habitat prescriptions for particular species are inappropriate, and planners must often gather specific information for particular conservation plans.

This difficulty in establishing preserves based on scientific information is obvious in planning for two comparatively well-studied bird species: the northern spotted owl and the red-cockaded woodpecker. For the spotted owl, controversy has persisted for years about how much area is required to sustain a typical breeding pair of owls. In the early 1970s, the Oregon Endangered Species Task Force asked leading spotted owl biologist Eric Forsman what minimum area would be required for owl pairs. He said:

Well, all we know is we have yet to find a pair of them in an area where there is less than about 300 acres of old growth. That's how scientific it was.... It was the biggest mistake we could have made, because it turned out in the late seventies, after we started looking at some telemetry data, it was obvious that 300 acres wasn't even close to being enough in most areas. (from Yaffee 1994)

Since then, numerous studies using radio telemetry were performed to determine what acreage the owls use, and what acreage defines a core area that owls use most intensively (e.g., Carey et al. 1990, Zabel et al. 1995). Today, landowners (without HCPs) avoid taking owls by maintaining proper late successional habitat for owls in a circle with a radius of 1.8 to 2.7 miles from an owl nest. Unfortunately, even this information is insufficient in determining what minimal area owls require in order to breed successfully, given that habitat requirements vary dramatically according to geographic regions (Bingham and Noon 1997).

A similar heated debate over habitat requirements for red-cockaded woodpecker groups has occurred as well. Jerome Jackson, a professor at Mississippi State University who has been studying red-cockaded woodpeckers for 30 years, has observed that woodpeckers utilize 100 to 1,000 acres of forest. Nevertheless, there is little biological information on the minimum foraging requirements of breeding woodpeckers (necessary to avoid take), and a peer-reviewed study found no association between woodpecker nesting success and the availability of pine trees or degree of fragmentation (Beyer et al. 1996). Amidst this controversy, in 1985 the U.S. Forest Service adopted the recommendations of the 1985 Red-Cockaded Woodpecker Recovery Plan for 125 acres of habitat for each group, combined with other requirements (USFS 1985). In 1992, in response to a demand from private landowners for information on what would be required for them to avoid take, FWS produced a manual for private lands (FWS 1992a). Without scientific justification, this manual only requires half as much foraging habitat as required on federal land. Moreover, these requirements apply to landowners throughout the woodpecker's range, even though habitat requirements are dramatically variable among geographic regions. Clearly, private landowners have benefited from this geographic variability and uncertainty concerning woodpecker habitat.

Although this issue of minimal foraging requirements is unresolved, the private lands manual contains a clearly risky strategy in allowing private landowners to have substantially reduced requirements for woodpecker habitat. Not only has the manual for private lands governed take prohibitions since 1992, but it is the basis for the baseline requirements of landowners in safe-harbor agreements like the sandhills program and various statewide HCPs for red-cockaded woodpeckers. Landowners who participate in the safe-harbor program must maintain only 60 acres of habitat per woodpecker group that lives on the property today. The agreements extend for 99 years. Therefore, if new scientific information indicates that current regulations are insufficient, the baseline cannot increase.

In addition to the difficulty of defining necessary amounts of habitat for species, still less is known about what actually constitutes landscape connectivity or corridors between preserved areas. There is, in fact, no clear scientific consensus on whether corridors facilitate movement for target species (Cox 1992) and whether the potential benefits of wildlife corridors, such as demographic support and prevention of genetic inbreeding (Noss 1987), outweigh the potential problems, such as facilitation of the spread of disease or exotic species between preserves, and the economic cost of setting aside corridors (Hess 1994; Simberloff and Cox 1987; Simberloff et al. 1992). In addition, corridors designed for particular target species may not function effectively for other taxa (e.g., a large mammal corridor under a highway may not help some invertebrates). Moreover, focusing on corridors may overlook other important aspects of landscape connectivity, such as the habitat quality of all elements of a planning area and their spatial configuration (Taylor et al. 1993). Nevertheless, conservation planning must allow for movement of individuals between preserves of high quality habitat, especially when (1) areas not set aside for habitat will certainly be converted or degraded and (2) habitat patches by themselves do not sustain viable populations.

The third essential component is the protection of areas that are not currently occupied by endangered species to prevent

the species from becoming limited to current locations without the ability to move to new areas if necessary. This is one respect in which conservation plans can go beyond the prohibition of take in the ESA, in which landowners must not harm occupied habitat. This protection must be tied to monitoring that can determine whether unoccupied areas become colonized. Unfortunately, it will be extremely difficult to understand how animals colonize unoccupied, protected habitats when some monitoring programs keep track only of occupied habitats to determine when they are abandoned, as occurs with many HCPs in the Pacific Northwest for the northern spotted owl (e.g., Weyerhaeuser Willamette draft HCP).

In our critiques of preserve designs established in particular plans, it is important to keep in mind that some plans reviewed here did not establish preserves to mitigate for take occurring under the plan, or failed to be consistent with recovery in other ways. The Ben Cone HCP, for example, authorized take of 12 red-cockaded woodpecker groups without the requirement of setting aside preserves for woodpeckers elsewhere. Such unmitigated habitat loss is clearly worse than insufficient preserve design, and such examples are discussed elsewhere in this report (see Incidental Take, Minimization and Mitigation).

Positive Examples

Of the HCPs reviewed here, plans developed for timber harvest management in the Pacific Northwest (including the Washington DNR HCP, the Weyerhaeuser Willamette Timberlands HCP and the Plum Creek Timber Company HCP) include substantial reductions in timber harvest in riparian buffers. These companies are undertaking these conservation measures in order to improve habitat conditions for salmon species, and these measures are considerably more protective than state regulations for riparian buffers. For example, salmon spawning areas must have large woody debris and reduced sedimentation, which translates to reduced timber harvesting along streams and management practices to reduce erosion. With a high likelihood that some salmon species will be listed during the timeframe of these HCPs, it has become very important to have conservation strategies for salmon in these HCPs, even though no salmon conservation is required under the ESA before the species are proposed to be listed.

It is unknown what forest practices will be required for riparian areas when salmon species are listed, but it may be substantially more protective than current state regulations. Currently in Washington, state forest practice rules allow some harvest within 25 feet of streams, and non-fish-bearing streams have no minimum width of riparian management zones, which allows intensive harvest next to the stream. This contrasts sharply with federal lands. The scientific assessment team that developed recommendations for the Northwest Forest Plan established much larger buffers of 300 feet on fish-bearing streams (FEMAT 1993).

The HCPs reviewed here are substantially better for salmon than are current state regulations, although it is unclear how they would measure up to obligations under Section 9 of the ESA once the salmon are listed. In short, these measures are better than practices of other private landowners, but they do fall short of the scientific assessment team's recommendations. The Washington DNR HCP establishes, for all permanent streams, an average riparian buffer width of 150 feet, with a minimum of 100 feet. Within that, no harvest will occur in the first 25 feet, and minimal harvest will occur in the rest of the buffer. For the Plum Creek Timber Company HCP, fish-bearing streams will have 200-foot buffers, with a 30-foot no harvest zone, and non-fish-bearing streams will have a 100-foot managed buffer. For the Weyerhaeuser Willamette HCP, riparian buffers of 50 to 100 feet will be established for fish-bearing streams, to improve the contribution of large woody debris. In addition, these plans include other measures to improve stream conditions, such as a commitment to conduct watershed analysis and road management plans.

All of these measures, from watershed analysis to reducing harvest along streams, are quite costly compared to state regulations in the absence of HCPs. Harvest along hundreds to thousands of miles of streams within planning areas are affected. It will be important, however, to ensure that adaptive management of riparian areas is implemented throughout these HCPs, as more information becomes available about what is required to recover these decimated salmon runs.

In terms of preserve design and setting aside habitat, one of the best examples among our reviewed plans is the San Bruno Mountain HCP in San Mateo County, California. The planning area for San Bruno Mountain is 3,500 acres, nearly 2,000 acres of which was in county ownership. Under the plan, private landowners are allowed to develop on 368 acres of open space land while agreeing to convey 800 acres of land to the county government for conservation and to fund management of butterfly habitat. This results in 81 percent of the mountain being in public ownership, protecting 87 percent of mission blue butterfly habitat and 93 percent of callippe silverspot butterfly habitat through public ownership or Section 9 prohibitions for private landowners not part of the HCP.

The San Bruno Mountain plan, however, did not explicitly incorporate preserve design principles per se or elaborately justified preserve areas. Minimization of development in outlying areas was largely because of topographic constraints - that is, developers wished to build only on areas at the base of the mountain, leaving a large tract of public land in the middle of the planning area. The final plan resulted in the augmentation of a large area of protected land, some of which was suitable butterfly habitat, some of which was invaded by exotic vegetation. The plan does result in incidental take of butterflies. In fact, some habitat developed under the plan was part of designated essential habitat under a draft butterfly recovery plan (Bean et al. 1991). Nevertheless, in addition to increased protection for acreage conveyed from private to county ownership, the plan generates funds for habitat management, without which habitat would not remain suitable for butterflies. Implementation of this management continues to be challenging (see box on San Bruno Implementation).

Of the plans reviewed here that include establishment of preserves according to principles of preserve design, the most disappointing example was the Balcones Canyonlands Conservation Plan. The Balcones plan went through a long and contentious planning process, spanning eight years. The plan began with the establishment of a biological advisory team to make biological recommendations about what would be required to preserve viable populations of the endangered species in the area, including the golden-cheeked warbler, black-capped vireo and cave invertebrates. The most contentious part of the plan was the biological advisory team's recommendations for preserves for the two endangered bird species. According to the team's 1990 report, in order for the plan to result in viable populations of both bird species within the planning area, there must be enough habitat to support 500 to 1,000 breeding pairs in the preserves (the team recommended two such populations for the golden-cheeked warbler). According to their calculations, this would require an HCP with 130,000 acres of preserves (Travis County is 648,000 acres), after taking into account decline in habitat

quality due to edge effects, urbanization and habitat fragmentation.

These recommendations were deliberately developed with no reference to the political and economic contexts. In order to follow the recommendations completely, the plan would have required hundreds of millions of dollars and extensive restoration of areas that were significantly degraded (130,000 acres of intact habitat no longer existed, for example). Instead of trying to achieve the goals recommended in the biological advisory team's report (i.e., viable populations), planners decided to implement the recommendations to the extent possible. Unfortunately, the team's recommendations became a science-based high-water mark that simply was not practical to achieve and served to illustrate the precarious condition of the warbler and vireo.

The plan allows take of 55 percent of the black-capped vireo population and up to 71 percent of the identified golden-cheeked warbler habitat in the planning area. In the final preserve design, the total preserve acreage will be at least 30,428 acres distributed in seven preserve units, if all anticipated funding is realized. In addition, the plan was instrumental in the establishment of Balcones Canyonlands National Wildlife Refuge, where management for significant numbers of the endangered birds will enhance populations. While the acreage of the preserve and the wildlife refuge captures much of the large, relatively unfragmented habitat patches for the birds, and while habitat management will slow habitat degradation due to public use, the preserve design falls far short of original, biologically based expectations. Indeed, the current consensus of the wildlife agencies appears to be that... the proposed action could threaten the population viability of the golden-cheeked warbler in the permit area (Final HCP, pp. 4-19). Obviously, the 35,000-acre preserve system is much smaller than the 130,000 acres recommended by the biological advisory team. In implementing the plan, however, the city of Austin and wildlife agencies may be able to ameliorate this inadequate acreage by managing habitat so that it sustains higher numbers of warblers and vireos. The team's 1990 report, however, specifically addressed habitat management versus acquisition and preservation: It is thus impossible even to identify all the threats caused by habitat destruction, much less to address these threats by intensive management. Because of this, without preservation of adequate habitat even the most intensive management will eventually fail (p. 2). The relationship between management and acquisition, however, was not examined in detail by the team, and the ultimate success of some of the management techniques is not guaranteed.

Aside from inadequate land acquisition for protection, edge effects and the effects of urbanization may have a large impact on the warblers. Twenty percent of the plan's preserves are within 330 feet of the preserve boundary or other type of edge. The biological advisory team recommends that less than five percent of any preserve be within that distance from an edge, and research subsequent to the team's recommendations indicated that these warblers will not occupy otherwise suitable habitat that has 1-10 homes within 1,650 feet or has 11-30 percent urbanization within one kilometer (Engels 1995). In addition, utility corridors currently cut through some of the preserves, increasing edge (although there are steps to reduce this under the plan). Moreover, urbanization itself has other effects such as increased numbers of nest predators such as blue jays (*Cyanocitta cristata*), which will add to edge effects in decreasing the carrying capacity of reserves (Engels and Sexton 1994). Given these indications from biological research, the plan's preserve design may support a much smaller warbler population than anticipated.

According to the recovery plan for the golden-cheeked warbler (FWS 1992b), recovery will not be sufficient until each of eight regions has at least one viable population on its own or through connections to other regions. One of the eight regions encompasses the Balcones planning area. In addition, the warblers in Travis County are particularly important because the county has 40 percent more warbler habitat than any other county. Despite the importance of this area, it is possible that the planning area will not sustain viable populations of the two bird species because of the insufficient preserve acreage, edge effects and lack of intensive habitat management.



HABITAT CONSERVATION PLANS:

Safeguards are needed to ensure that the Endangered Species Act's recovery goal is not undermined

Although Habitat Conservation Plans (HCPs) may provide benefits for the conservation of species and for landowners, the record on HCPs developed to date raises serious questions regarding the potential, harmful impacts these plans have on species recovery, and the closed-door processes in which the plans are developed. **The National Wildlife Federation urges the Administration to adopt the following five safeguards within its 5-point policy initiative to strengthen HCPs:**

1. **Clarify that HCPs must be consistent with an overall recovery strategy before approving them:** The U.S. Fish and Wildlife Service (USFWS) frequently authorizes activities that destroy significant amounts of habitat without evaluating the species' overall recovery needs or assessing the habitat destruction that is occurring elsewhere in the species' range. Because most imperiled species are heading toward extinction due to habitat loss, USFWS's current approach could undermine any chance of recovery for many species. The Administration should clarify that an HCP may only be approved if USFWS evaluates the overall recovery needs of the species and the cumulative effects of habitat-disturbing activities across the species' range and based on this evaluation, determines that the proposed plan would not undermine species recovery.
2. **Allow greater participation by concerned citizens and independent scientists:** Many HCPs are developed in behind-the-scenes negotiations between USFWS and the regulated industry applying for an incidental take permit. Concerned citizens and independent scientists merely are allowed to submit written comments on a draft plan, and such comments usually accomplish little because the plan is essentially locked in prior to the comment period. To bring greater fairness to the HCP process and to ensure that USFWS receives all pertinent information prior to making major decisions concerning public wildlife resources, the Administration's policy initiative should provide opportunities for citizens to participate in the development and implementation of large-scale HCPs and establish mechanisms for independent scientists to peer-review such plans and offer input on data gaps and research needs. Small landowners with low-effect HCPs should receive expedited treatment and not be subject to extensive participation requirements.
3. **Encourage conservation strategies that prevent the need to list species:** Conservation of species before they become seriously imperiled is essential to prevent the need to list and to minimize the costs and difficulty of protection. A key prevention strategy is the Endangered Species Act's Section 6 program, in which grants are provided to states for proactive conservation measures -- such funding should be expanded and made available to tribes as well as states. Multi-species HCPs can also serve as potential vehicles for the conservation of unlisted species, but unlisted species should only be deemed "covered" by an HCP if the plan contributes to the well-being of the species. The Administration's five-point policy initiative should reject the current approach, in which some large-scale HCPs purport to protect dozens of unlisted species despite offering virtually no scientific data to prove that the unlisted species would benefit from the plan.
4. **Provide regulatory assurances only when a credible adaptive management strategy is in place:** The Clinton Administration has sought to entice landowners into entering HCPs by promoting a "no surprises" policy, which gives landowners assurances for up to 100 years that no additional conservation efforts will be required beyond those specifically agreed to in the HCP. Unfortunately, this generous enticement leaves imperiled species highly vulnerable to threats of extinction because it virtually forecloses "adaptive management" -- management changes that are necessary in any long-term plan to incorporate new scientific data or address changed circumstances. (The Administration has vaguely suggested that adaptive management can be carried out at public expense, but it has never established any procedures or a funding mechanism to accomplish this.) To restore scientific credibility to the HCP process, Congress should require the following as a prerequisite of any regulatory assurances that USFWS awards to landowners:
 - o A reliable funding mechanism, such as a trust fund or escrow account, should be established to pay for adaptive management not addressed in the HCP;
 - o Biological goals, or performance standards, should be set forth in the HCP;
 - o The HCP should be monitored to ensure achievement of its goals, with the landowner generating biological data and USFWS issuing regular progress reports;
 - o If the HCP fails to achieve its goals, USFWS should have the discretionary ability to take adaptive management measures using the established funding mechanism; and
 - o If the HCP will most likely jeopardize the existence of a species, USFWS should be required (through citizen enforcement, if necessary) to take adaptive management measures using the established funding mechanism.

5. **Ensure that HCPs are adequately funded to ensure that they are an effective strategy for conserving this nation's imperiled species and ecosystems on nonfederal lands:** Congress will need to provide funding for all of the HCP improvements described above and to reaffirm that an HCP can be approved only if it is shown that there is funding necessary to carry out the plan.

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