

CALIFORNIA COASTAL COMMISSION

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October 24, 1996

W7a

To: All Commissioners

From: Susan Hansch, Deputy Director
Zach Hymanson, Marine Biologist
Melanie Hale, Coastal Program Analyst

Subject: **Wednesday November 13 Item 7a—Permit No. 6-81-330-A
(formerly 183-73) SONGS, Southern California Edison
Permit Amendment and Condition Compliance/Continued
Open Public Hearing**

STAFF REPORT AND RECOMMENDATION

At the October hearing staff asked Commissioners to keep the staff report dated September 24, 1996, that was mailed to the Commission for the October meeting. To conserve resources we will not be mailing another copy of the staff report unless specifically requested to do so. Please give us a call if you need another copy.

SUPPLEMENT OR ADDENDUM TO STAFF REPORT

Numerous questions and issues were raised by the Commission and by speakers at the public hearing. Staff is currently preparing responses and will provide as much information as possible in our staff presentation at the public hearing on November 13, 1996. We do not have adequate time to send a written addendum prior to the Commission meeting.

FIELD TRIP

There was a request by some Commissioners to have a field trip during the November meeting to visit the San Dieguito River Valley and the white sea bass hatchery in Carlsbad. Because of the number of items on the November agenda, the Executive Director determined that there isn't time for a field trip. Commission staff is willing to set up individual trips for Commissioners on Monday, November 11, 1996. Just give us a call as soon as possible if you are interested.

COPIES OF OVERHEADS

During the SONGS permit amendment hearing on October 8, 1996, Commissioner Wear requested copies of the staff's overheads and the permittee's overheads and a report on estuarine and wetland dependent fish. This information is attached. A written copy of the staff's presentation related to the overheads is also attached.

CORRESPONDENCE PACKAGE

You will receive a separate package (Correspondence Package #2) of all correspondence received after the first correspondence package (Correspondence Package #1) that was handed out at the October meeting. If you need additional copies of the first package give us a call.

FURTHER INFORMATION

Please do not hesitate to contact Susan at (415) 904-5244, or Zach at (415) 904-5250, or Melanie at (415) 904-5247 if you have any questions or need further information about the SONGS permit amendment request. We are also available to meet with any Commissioner upon request.

**Commission Staff
Presentation Overheads
October 8, 1996**

CONDITION A: WETLAND MITIGATION

overhead 1: Purpose of Condition A

The overall goal of the wetland mitigation program required by Condition A is to compensate for losses of nearshore fish in Southern California due to the SONGS seawater cooling system. Significant fish losses continue to occur, and in fact, more recent data suggest these losses may be even greater than originally predicted by the MRC.

Condition A requires the creation or substantial restoration of 150 acres of coastal wetland that includes continuous tidal flushing. The Condition sets forth a process for site selection, mitigation plan development, plan implementation, and project monitoring, management and remediation. This comprehensive process was required to ensure the wetland mitigation program would compensate for fish losses over the long-term.

In its amendment request the permittee proposes numerous modification to Condition A to address site specific constraints at San Dieguito Lagoon, the mitigation site chosen and approved in 1992, as well as proposing to provide funds for a second mitigation project at Ormond Beach wetlands. In addition, the permittee submitted a preliminary wetland mitigation plan for each site for Commission approval. Due to the nature and relationship of the proposed changes and the two proposed plans, I have combined my discussion of the permit condition and the proposed plans into this single presentation.

Much of the recent efforts by the permittee and staff have focused on what activities count towards the 150 acre mitigation requirement. As mentioned, the 1991 condition requires creation or substantial restoration of coastal wetland habitat that is subject to continuous tidal flushing. The permittee, however, is proposing to conduct or fund activities at both mitigation sites which staff concludes to be enhancement of existing, functioning wetland habitat.

The staff recognizes that enhancement of existing wetland habitat is a benefit, but not to the same extent as creation or substantial restoration. The staff recommends revision of the permit condition to allow mitigation credit for enhancement activities commensurate with the degree of enhancement, in addition to full credit for substantial restoration and creation of new wetlands. As evidenced in the permittee's information and the staff report, the permittee and the staff disagree on the distinction between enhancement and substantial

restoration and on the amount of credit appropriate for enhancement activities. This is a primary issue before you today.

As Mr. Douglas mentioned, enhancement of existing wetland habitat is proposed at both sites. For example, the permittee is proposing to maintain the inlet to San Dieguito Lagoon in an open condition, and by doing so will enhance the value of the existing wetlands at San Dieguito Lagoon.

overhead 2: Picture of existing inlet at San Dieguito Lagoon

This picture shows the inlet to San Dieguito Lagoon in an open condition.

overhead 3: Picture of existing wetland habitat at San Dieguito Lagoon

There are approximately 146 acres potentially subject to tidal influence at San Dieguito Lagoon. Many of these acres are tidal channels and salt marsh habitat as shown in this picture. Maintaining the inlet to the lagoon will ensure these areas remain under tidal influence, but it will not add new acres of wetland habitat at the lagoon.

Earlier this year the staff and the permittee jointly agreed to use the Interagency Wetland Advisory Panel (IWAP) to help resolve the disagreement over the appropriate amount of credit for maintaining the inlet to San Dieguito Lagoon. Scientific arguments were presented to the IWAP by both the permittee and the staff. The IWAP determined that the existing wetlands had substantial value and would be enhanced by a relatively small amount through inlet maintenance. That is, the enhancement of the lagoon through inlet maintenance was not substantial restoration and therefore did not qualify for full credit. The staff has used the IWAP's recommendation in calculating the overall credit for the proposed project at San Dieguito Lagoon.

overhead 4: Summary of inlet Maintenance Credit

The staff has estimated that enhancement of the lagoon through inlet maintenance provides 35 acres of mitigation credit. This is in contrast to the permittee's claim that inlet maintenance provides 146 acres of substantial restoration.

overhead 5: Picture of existing wetland at San Dieguito Lagoon

Essentially, the permittee is claiming that the habitat you see in this photograph is so degraded that the value added through inlet maintenance qualifies as substantial restoration, and therefore full credit is appropriate. The staff believes this is clearly not the case.

overhead 6: Acres of Credit

When the staff's estimated increment of credit for enhancement is added to the creation and substantial restoration that the permittee is proposing at San Dieguito Lagoon, staff calculates the entire project would yield approximately 92 acres of mitigation credit.

Because this is significantly less than the 150 acres required by Condition A, the staff has urged the permittee to either complete more mitigation work at San Dieguito Lagoon or to look elsewhere to meet the 150 acre requirement. This is the reason the staff supports the permittee's proposal to fund a mitigation project at Ormond Beach wetlands. Staff's preliminary evaluation of the Ormond Beach plan submitted by the permittee, suggests the remaining 58 acres of credit can be achieved at Ormond Beach wetlands so long as there is tidal restoration.

Overall then, based on the information submitted by the permittee, the staff believes the permittee can satisfy its wetland mitigation obligation through completion of a project at both San Dieguito Lagoon and Ormond Beach wetlands.

overhead 7: Condition A Summary

In relation to other revisions to Condition A the staff recommends revision of the Condition to support the permittee's proposal for 10 years of post-construction monitoring to determine compliance with established performance standards.

However, staff is not recommending approval of several of the permittee's other proposed changes to the 1991 Wetland mitigation permit condition. In particular, the staff does not support many of the permittee's proposed changes to the performance standards. The permittee's performance standards do not provide the best way to determine whether the mitigation site has provided adequate compensation for the lost resources.

For example, instead of comparing the biological communities at the mitigation wetland to those at relatively undisturbed, natural tidal wetlands as required by the 1991 permit, the permittee is proposing to compare the mitigation wetland to data previously collected at "20–25 wetland sites in Southern California." Because most of these 20–25 sites are degraded, frequently non-tidal wetlands, the standards the permittee would develop would be substantially lower than those obtained from comparison to relatively undisturbed, natural tidal wetlands. The mitigation wetlands need to be fully functional tidal wetlands in order to fully mitigate for the damages caused by the SONGS and to do that the performance of the mitigation site must be evaluated against undisturbed, natural tidal wetlands.

With regard to maintenance and remediation and by that we mean the process of remedying a problem at the mitigation site after construction is completed, the permittee is proposing to reduce the period of remediation from the full operating life of the SONGS to just 10 years.

Staff firmly believes that the permittee has an obligation to correct deficiencies in the mitigation project for the full operating life of the SONGS Units 2 & 3, which is estimated to be 30 years. That is, maintenance and remediation should be required for the full life over which the significant impacts occur. Therefore staff recommends a revised condition that reduces the length of regular monitoring to 10 years, but allows for annual site inspections, over the full operating life of SONGS, to check on the mitigation sites and determine if remediation is needed.

The Commission is required to establish a clear nexus between mitigation and adverse impacts. In this case we know the impacts will continue over the operating life of the SONGS, so the mitigation must compensate for those impacts over the life of the SONGS.

The 1991 permit allows the permittee to satisfy the mitigation requirement at up to two sites located in the Southern California Bight. San Dieguito Lagoon was the first wetland mitigation site chosen by the permittee and approved by the Commission in 1992. And, in the amendment before you today, staff is recommending the Commission approve a second wetland mitigation site — Ormond Beach Wetlands — selected by the permittee.

San Dieguito Lagoon is near Del Mar in San Diego County and Ormond Beach Wetland is near City of Oxnard in Ventura County. Both sites were identified as potential mitigation sites in the 1991 permit.

overhead 8: Map of plan (San Dieguito Lagoon)

The permittee has conducted extensive studies at San Dieguito Lagoon, and the permittee's amendment request included a preliminary wetland mitigation plan for this site, which staff recommends the Commission approve if revised. This plan calls for approximately 57 acres of creation and substantial restoration at the Horsecworld and Airfield properties and for additional enhancement of existing wetland habitat through inlet maintenance and other activities.

One of staff's recommended revisions is that the Commission approve the preliminary plan for San Dieguito Lagoon if it's revised to reflect the habitat mix proposed in the 1995 plan submitted by the permittee. Although these plans are very similar, the 1995 plan provides more acres of low intertidal and subtidal habitats, which are the primary fish habitats. Providing adequate fish habitat is a major concern because the wetland mitigation was established to compensate for nearshore fish losses caused by SONGS. Significant fish losses continue to occur, and in fact, more recent data suggest these losses may have actually increased.

overhead 9: Map of site (Ormond Beach)

The permittee has not conducted extensive studies at Ormond Beach wetlands, which historically was part of the Mugu Lagoon system. Instead, the permittee has submitted a conceptual restoration plan for Ormond Beach wetlands. The plan suggests a tidal connection can be established with Mugu Lagoon in order to restore a large part of the currently degraded Ormond Beach wetlands.

Staff's preliminary analysis suggests this plan could yield up to 58 acres of wetland restoration credit. The staff believes the Ormond Beach site meets the minimum standards of the 1991 permit for a mitigation site and it appears that restoration there can mitigate, to some extent, the adverse impacts of SONGS. However, the plan, as presented does not meet the condition requirements for a preliminary plan. For example, the plan does not include the information necessary to determine if the proposed tidal connection with Mugu Lagoon is feasible. Therefore, the staff is not recommending acceptance of the preliminary plan at this time — only approval of the site.

overhead 10: Staff Recommended revisions to Condition A

In summary, the recommended revised wetland condition include provisions for a second mitigation site, changes to the length of monitoring, and the ability for the permittee to obtain partial credit for enhancement activities.

The recommended revised condition also includes an option to fund planning and implementation of the mitigation projects.

overhead 11: Permittee's proposed changes not recommended by staff

The staff does not recommend inclusion other changes proposed by the permittee, including addition of an uncontrollable forces clause, changes to the performance standards, and changes to the maintenance and remediation requirements. These changes have not been incorporated into the recommended revised condition.

overhead 12: Staff's recommendations for condition compliance

With regards to the wetland sites, the staff believes that there is the potential for the two sites to meet the 150 acre requirement, and staff recommends approval of the Ormond Beach wetland site.

With regards to the wetland plans, the staff recommends acceptance of the preliminary plan for San Dieguito Lagoon, if revised, but staff does not recommend acceptance of the Ormond Beach restoration plan at this time.

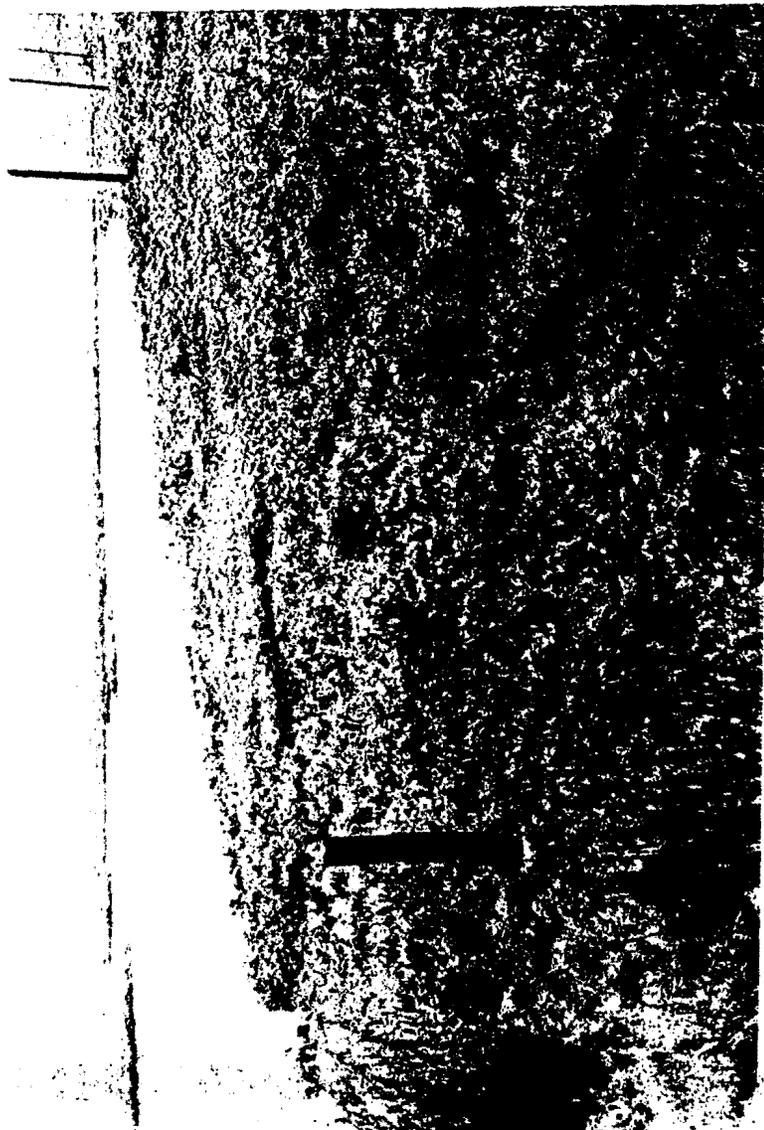
The revised Condition A maintain the mitigation obligations agreed to by the permittee in 1991. The recommended changes reflect the permittee's request to increase its mitigation alternatives both in terms of the types of activities that qualify for mitigation credit and the sites available to accomplish the required mitigation. The revised condition includes an option to fund planning and implementation of the mitigation projects to provide the permittee with additional flexibility in achieving compliance with this condition.

NEARSHORE
FISH LOSSES
AT SONGS



150 ACRES OF
WETLAND
MITIGATION





INLET MAINTENANCE

STAFF RECOMMENDATION

enhancement

partial credit

35 acres of credit

PERMITTEE

substantial restoration.

full credit

146 acres of credit

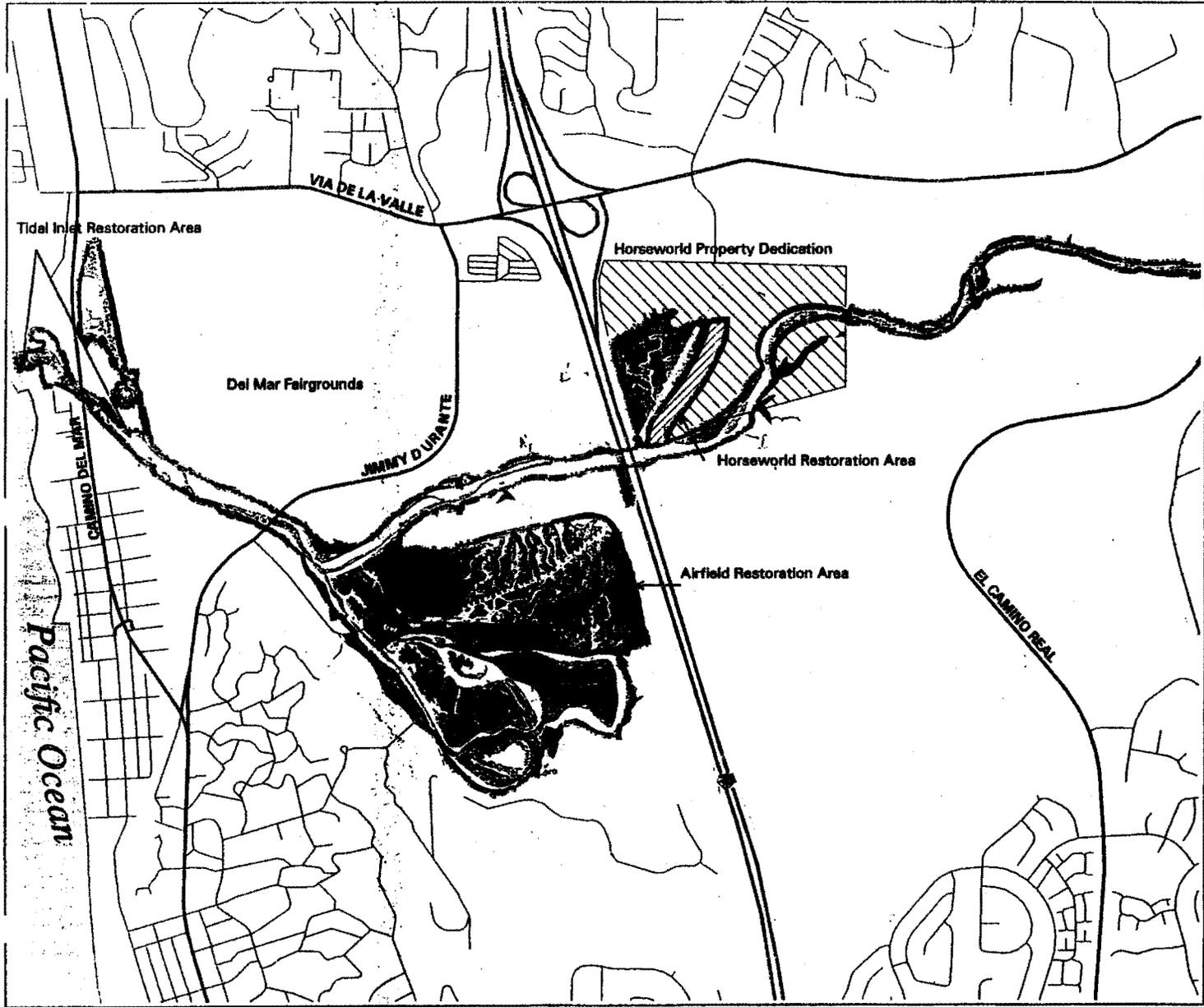


	ACRES CREDIT
SAN DIEGUITO LAGOON PLAN	
Inlet maintenance (enhancement)	35
Other Restoration/Creation/Enhancement.....	57
	<hr/>
Total.....	92

ORMOND BEACH	
Restoration/Creation/Enhancement.....	58
	<hr/>
TOTAL	150
	<hr/>

CONDITION A — SUMMARY

ATTRIBUTE	1991 PERMIT	REVISIONS SUGGESTED BY PERMITTEE	REVISIONS SUGGESTED BY STAFF
MONITORING	~ 30 YEARS	10 YEARS	10 YEARS
PERFORMANCE STANDARDS	LINKED TO NATURAL TIDAL WETLANDS IN S. CALIFORNIA	LINKED TO ANY WETLAND IN S. CALIFORNIA	KEEP 1991 VERSION
MAINTENANCE & REMEDIATION	30 YEARS	10 YEARS	30 YEARS

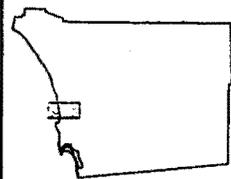


**SONGS Preliminary
Wetland Restoration Plan**

LEGEND

- Open Water / Sub-tidal
- Cord Grass Marsh
- Mid Tidal Salt Marsh
- High Tidal Salt Marsh
- Tidal Brackish Marsh
- Mud Flats / Intertidal
- Shorebird Nesting Habitat
- Grassland / Barn
- Project Components
- Dendritic Channel
- Effective Flow Area Boundary
- Project Vicinity Bnd.

INDEX MAP OF SAN DIEGO COUNTY



The project has three main components:
 (1) Tidal inlet maintenance/restoration
 146 acres of degraded wetlands.
 (2) Excavation of WS and grading/restoration
 63 acres of degraded wetlands on the airfield property.
 (3) Excavation of historic uplands
 creates 18 acres of tidal wetlands on the Horseworld property.
 Additionally, the remaining Horseworld property will be dedicated to public ownership.

FIGURE 2
 Plan View of SONGS Restoration Plan
 SEPT '95

The information contained in this report was prepared, either directly or indirectly, for the work done on or for the following project organizations:
 Aerial Information Systems
 Coastal Resources Systems
 Jacobs Consulting
 MWD Analytical Systems
 Northrup Grumman
 Pacific Wetlands Associates
 Southern California Edison
 Southern California Edison



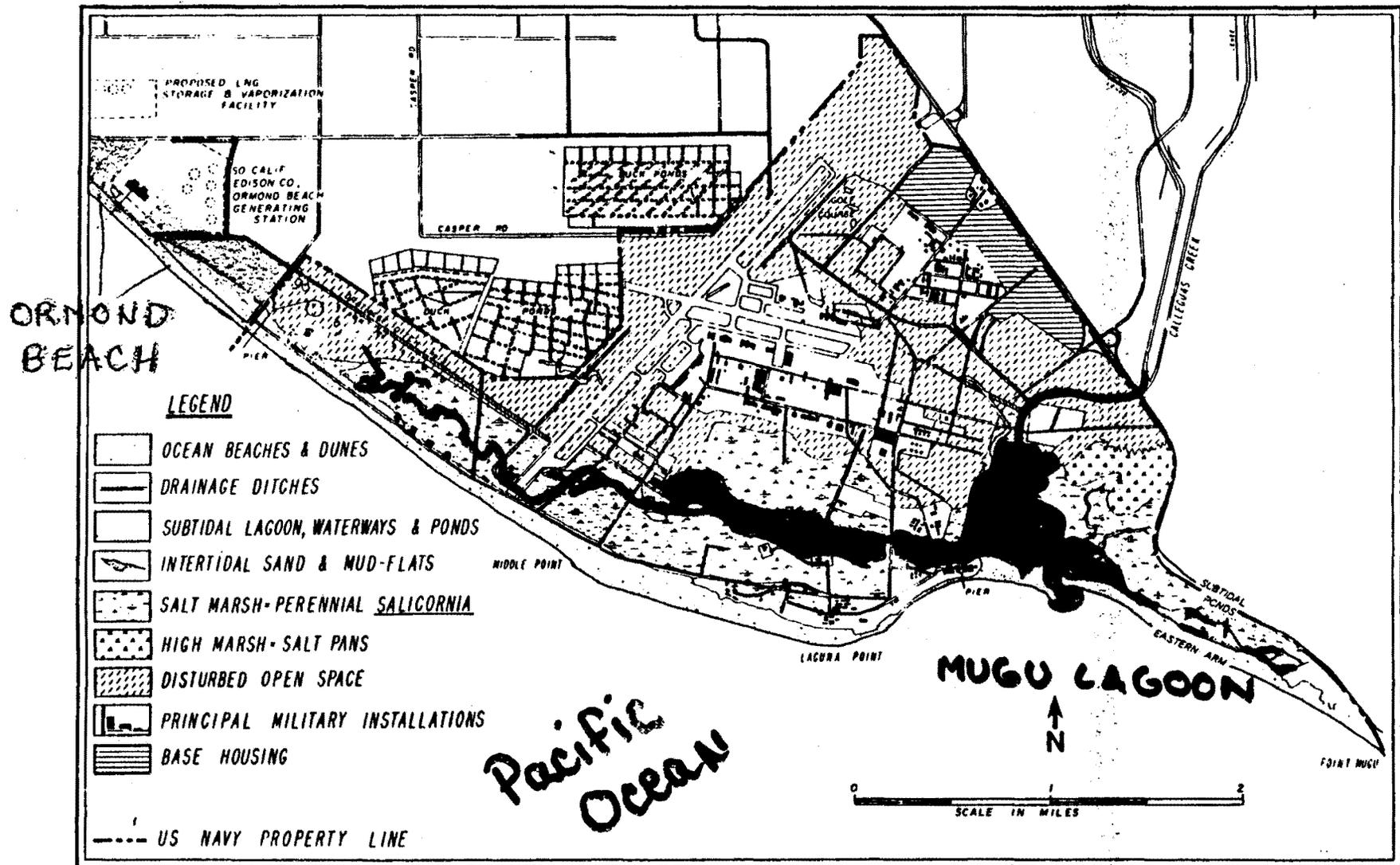


Figure 10. The main physiographic and land-use features of Mugu Lagoon (adapted from Macdonald 1976b).

STAFF'S RECOMMENDED REVISIONS TO CONDITION A

- PROVISION FOR SECOND MITIGATION SITE (ORMOND BEACH)
- CHANGES TO LENGTH OF MONITORING (TO 10 YEARS)
- PARTIAL CREDIT FOR ENHANCEMENT
- FUNDING OPTION FOR PROJECTS

PERMITTEE'S PROPOSED CHANGES NOT RECOMMENDED BY STAFF

- ADDITION OF UNCONTROLLABLE FORCES CLAUSE
- CHANGES TO PERFORMANCE STANDARDS
- CHANGES TO REMEDIATION REQUIREMENTS

STAFF'S RECOMMENDATIONS FOR CONDITION COMPLIANCE

- APPROVAL OF ORMOND BEACH SITE
- APPROVAL OF SAN DIEGUITO LAGOON PRELIMINARY PLAN

CONDITION C: KELP REEF MITIGATION

overhead 1: Purpose of Kelp Mitigation

The overall goal of the kelp reef mitigation required by Condition C is to provide in-kind compensation for the adverse affects of the SONGS cooling water discharge on the San Onofre Kelp Bed Community.

In the Staff's recommended revised Condition, the permittee is required to construct a 16.8 acre experimental reef, as proposed in the preliminary plan submitted by the permittee, and fund construction of a 105.2 acre artificial reef as compensatory mitigation for the loss of San Onofre kelp bed habitat and resources. In contrast, the permittee has proposed to construct a 16.8 acre artificial experimental reef to mitigate any possible impacts of the SONGS on the San Onofre Kelp Bed. Thus, the central point of disagreement between the staff and the permittee is the size of the artificial reef necessary to compensate for adverse impacts to the San Onofre kelp bed community. Much of this presentation will focus on the process necessary to make this determination.

It is important to remember that although the combined size of the artificial reefs is based on the reduction in area of kelp, specifically the reduction in area of medium to high density giant kelp, the artificial reefs are intended to compensate for losses to the entire kelp bed community including losses to kelp bed fish and invertebrates, which the MRC found to be significant.

In its amendment submittal, the permittee implies that because the San Onofre kelp bed is at least as large as it was prior to the commencement of the SONGS operations there is little or no adverse impact. This is not a scientifically valid approach to impact assessment, which is the central question before you today: has the San Onofre Kelp bed been adversely impacted by the SONGS operation, and if so, how big is the impact.

The goal of impact assessment is to use an objective, science based approach to predict how big a resource or habitat would be in the absence of an impact. This is the approach used to assess all of the impacts to marine resources attributable to the SONGS, because unlike most projects approved by the Commission, the project was completed well in advance of determining the level of impacts or the amount of any necessary mitigation. This is a primary reason why the SONGS project is unique.

In the case of giant kelp, the organism used to quantify impacts to the San Onofre Kelp bed community, the impact is that part of the kelp population that is missing as a result of the SONGS operation. So the issue here is determining that part of the kelp population that you don't see and won't see as long as the SONGS continues to operate.

It is not possible to accurately determine the portion of the kelp bed that is missing by simply looking at photographs or snap-shots of the kelp taken at certain points in time. An accurate analysis of impact requires that changes at the site of interest be determined relative to changes at a control site. This is because kelp beds like all other habitats naturally fluctuate in size over time, and it is not possible to distinguish between changes in kelp bed size caused by natural fluctuations and changes caused by human-induced impacts simply by looking at the site of interest in isolation.

The MRC recognized this fact, and this is why the MRC evaluated the impacts of the SONGS using a study design that compared the changes in the size of the San Onofre kelp bed before and after the SONGS began operation to change in the size of the San Mateo kelp bed, a control site similar to San Onofre kelp bed, but removed from SONGS' influence. This method of impact assessment is called the Before After - Control Impact paired design, or BACI.

overhead 2: Simple Before After design

The scientific merit of the BACI design is best understood through conceptual illustration. This hypothetical example shows the average area of kelp measured only at the project site before and after the impact occurred. The horizontal line shows the area of kelp at the project site did not change after the impact began. If we based the assessment of impact only on changes that occurred at the project site, then the conclusion in this example would be that no impact occurred, consequently no mitigation would be required.

overhead 3: BACI

The BACI method of impact assessment takes into account changes that occur at a control site. That is, impacts to the project site are evaluated relative to a control site. The control is a site that is representative of the project site, but is not itself influenced by changes made at the project site. A change in average kelp area at the control site then, reflects changes due to natural variability.

Given the change at the control site shown here what would you expect would happen at the project site if the project never occurred? You would expect that just as the control site doubled in size from 80 to 160 acres so too should the project site increase from 100 to 200 acres. Thus, the BACI method requires that the two sites track each other before the impact occurs, and assumes that, in the absence of an impact, changes in the area of kelp at the control site and project site should continue to track one another.

If however, the area of kelp at the control site doubles in size, but there is no change observed in kelp area at the project site, then the conclusion based on the BACI design is that an adverse impact has occurred resulting in a loss of kelp. The amount of kelp area lost as a result of the impact is the difference between the observed area of kelp and the expected area of kelp at the project site after the impact has occurred. This difference is illustrated by the black area in this figure.

Whereas a simple before after comparison of the project site shows no effect of the impact, the BACI method shows that the project site is only half as large as it would have been had the impact never occurred.

The BACI approach to impact assessment is widely accepted in the scientific community. As mentioned, this was the approach used by the MRC. This approach was also used by the permittee's contractors in the re-evaluation of SONGS' impacts on the San Onofre kelp bed. The BACI approach was also supported by the Independent Review Panel as an appropriate approach for determining SONGS impacts on the San Onofre Kelp bed.

overhead 4: Range of Kelp Area Lost

This overhead depicts the range of values of kelp area lost as estimated by the permittee, the permittee's contractor, and the MRC. In its amendment request the permittee states that any estimate of significant impact to the San Onofre kelp bed is uncertain, but implies that the range is probably between zero, no impact, and 16.8 acres. In September, 1995, however, the permittee submitted its contractor's report to Commission staff which analyzed data on kelp abundance collected after the MRC studies to extend the MRC data set on kelp. A revised version of this report was submitted in April, 1996. The contractor's report concluded that operation of the SONGS caused an average reduction in kelp area at San Onofre kelp bed of between 48 and 110 acres. The average area of kelp lost due to SONGS operations using the smaller MRC data set was estimated by the MRC to be between 100 to 250 acres.

Coastal Commission staff and the permittee jointly agreed to have the permittee's contractor report on kelp impact reviewed by an independent three-member panel chosen jointly by the permittee and the Commission staff. The independent panel agreed with the qualitative conclusion of the permittee's report that the effects of SONGS' discharges on giant kelp were substantially less than those estimated by the MRC. However, the panel did not provide a quantitative estimate of kelp loss. Such an estimate is needed to provide the nexus between adverse impacts and required compensatory mitigation.

In the absence of a quantitative estimate of kelp loss, the panel did include recommended steps for future analyses aimed at quantifying the area of kelp lost at San Onofre Kelp bed as a result of the SONGS turbid discharge plume.

overhead 5: panel recommendations

- 1) The panel recommended use of the MRC's BACI design, which I just summarized for you.
- 2) The panel recommended analyzing for impacts directly through measurements of kelp abundance in preference to adjusting measures of kelp abundance to changes in hard substrate.
- 3) The panel recommended use side-scanning sonar data to estimate kelp abundance instead of down-looking sonar data. Primarily because there is a longer side-scanning sonar data record.
- 4) And finally, the panel recommended estimating the level of impacts by evaluating trends through time.

Staff's re-analysis of the permittee's data following these recommended steps shows that on average 122 acres of kelp is lost from San Onofre kelp bed. That is, on average, you won't see 122 acres of San Onofre kelp bed as long as the SONGS continues to operate. In a recent letter to the Commission one of the members of the independent review panel stated that staff's re-analysis is thorough, defensible and far.¹

¹ October 2, 1996 letter from Dr. Osenberg to the Executive Director and Members of the Commission.

overhead 6: current kelp area, expected kelp area, maximum kelp area

This diagram places the 122 acre loss of kelp bed area in perspective.

As of January 1996 the area of medium to high density kelp in the San Onofre kelp bed as estimated by side-scanning sonar was 175 acres. Re-analysis of the permittee's new data shows that if the SONGS was not operating, there would be 297 acres of kelp (175 + 122). It is important to note that this amount of kelp is not only possible at San Onofre, but it has been observed in the past. In 1981, before the SONGS began operation, San Onofre supported 347 acres of medium to high density kelp.

overhead 7: Estimate of kelp loss over time

Plotted here is how the estimate of kelp loss has changed over time with the addition of more data. The area of kelp loss has declined over time, as the permittee states. However, the area of kelp loss is not decreasing to a level of zero impact, which the permittee contends. Since 1993 the average area of kelp loss has remained relatively constant at about 122 acres. There is no indication that the adverse effect of the SONGS on the San Onofre kelp bed is continuing to decline much less approach zero impact. If the impact was zero the line shown here would be at the bottom of the graph.

overhead 8: similarities to 1991 permit

As in the original condition agreed to by the permittee in 1991, the recommended revised condition for kelp bed mitigation requires that:

1. the mitigation be completed in two phases. The permittee's proposed experimental reef would meet the obligations of the first phase, and the staff recommends approval of the experimental reef plan if revised. A larger mitigation reef would be required under the second phase.
2. staff's recommended condition also requires that the same performance standards be used to determine mitigation success as those required in the 1991 permit.
3. staff's recommended condition also requires that maintenance and remediation be completed if the performance standards are not met.

4. And finally, like the 1991 permit, the recommended condition requires that the performance standards be met for the full operating life of SONGS units 2 and 3. The permittee has argued that the benefits of this mitigation will long out last the adverse impacts of the SONGS. However, there is no guarantee of this and the permittee's obligation to ensure complete mitigation ends when the SONGS ceases to operate.

It is important to note that the permittee has provided no new information to substantiate a need to change any of these elements of the condition.

The recommended revised condition also includes two changes shown in red to address concerns the permittee has raised regarding the 1991 condition. These recommended changes require:

1. Monitoring to evaluate performance of any reef built in compliance with this condition for a period of ten years instead of the full operating life of the SONGS Units 2 and 3; and
2. the recommended condition requires the permittee to pay into a trust fund which will be used for planning and implementation of the second phase mitigation reef.

Both of these changes were added to address the permittee's concerns over cost containment, and in an attempt to provide a mechanism to get this mitigation project back on track.

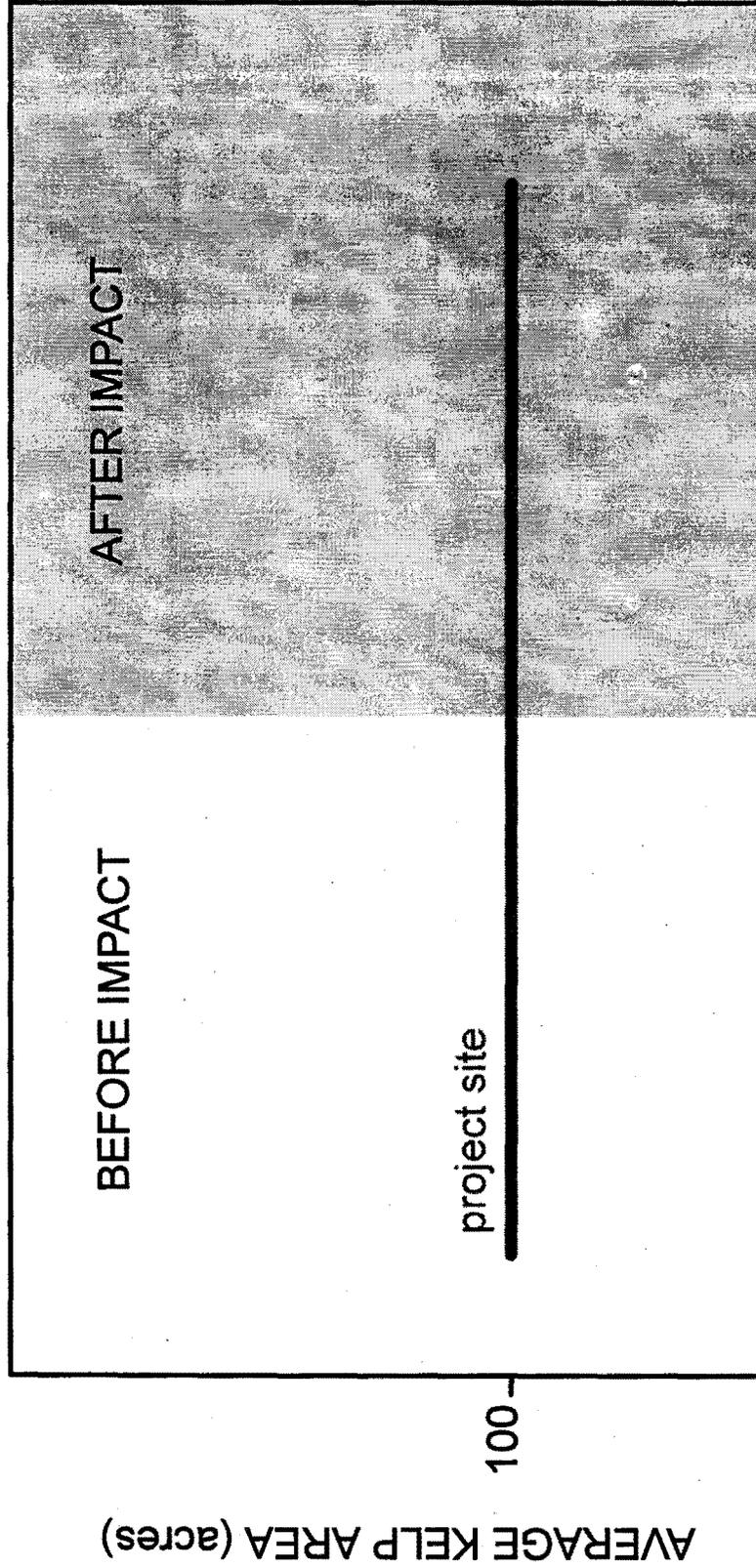
The recommended revised condition for kelp reef mitigation is consistent with the Coastal Act and maintains the spirit and intent of the 1991 permit which is to fully mitigate for the loss of all kelp bed resources. The recommended revised condition calls for a substantial reduction in the size of the mitigation artificial reef, which reflects new information on kelp gathered since 1991 and insures a "nexus" between the impact of the SONGS project and the mitigation imposed.

PURPOSE OF KELP MITIGATION

- COMPENSATE FOR LOSSES TO THE KELP BED COMMUNITY CAUSED BY SONGS COOLING WATER DISCHARGE

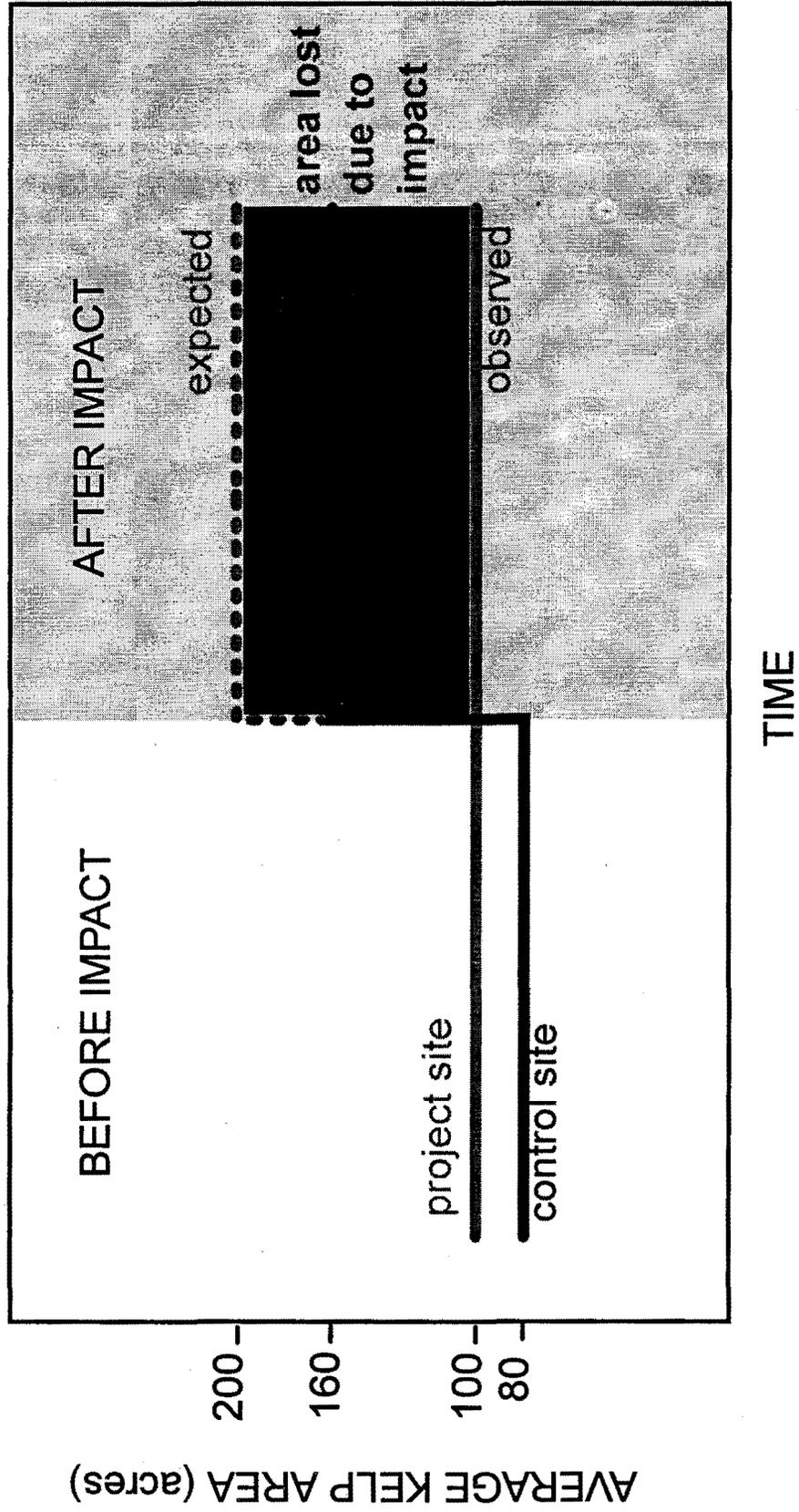
HYPOTHETICAL EXAMPLE

IMPACT ASSESSMENT WITHOUT BACI



HYPOTHETICAL EXAMPLE

IMPACT ASSESSMENT WITH BACI



ESTIMATED AREA OF KELP LOST

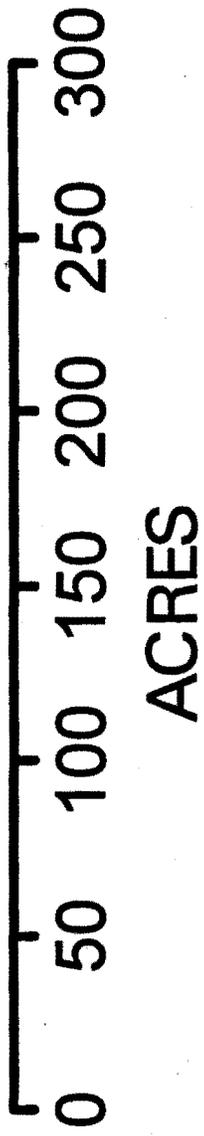
SCE



SCE contractors



MRC

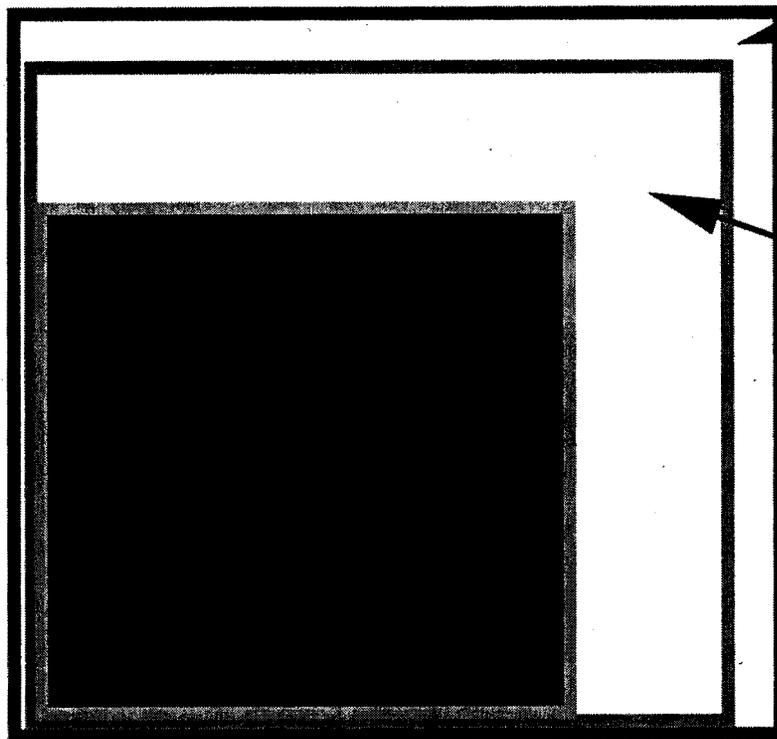


Recommendations of the Independent Review Panel

- 1) Use MRC BACI design
- 2) Focus analysis directly on kelp abundance
- 3) Use sidescanning sonar estimates of kelp abundance
- 4) Estimate impacts by evaluating trends

Staff's estimate = **122 acres**

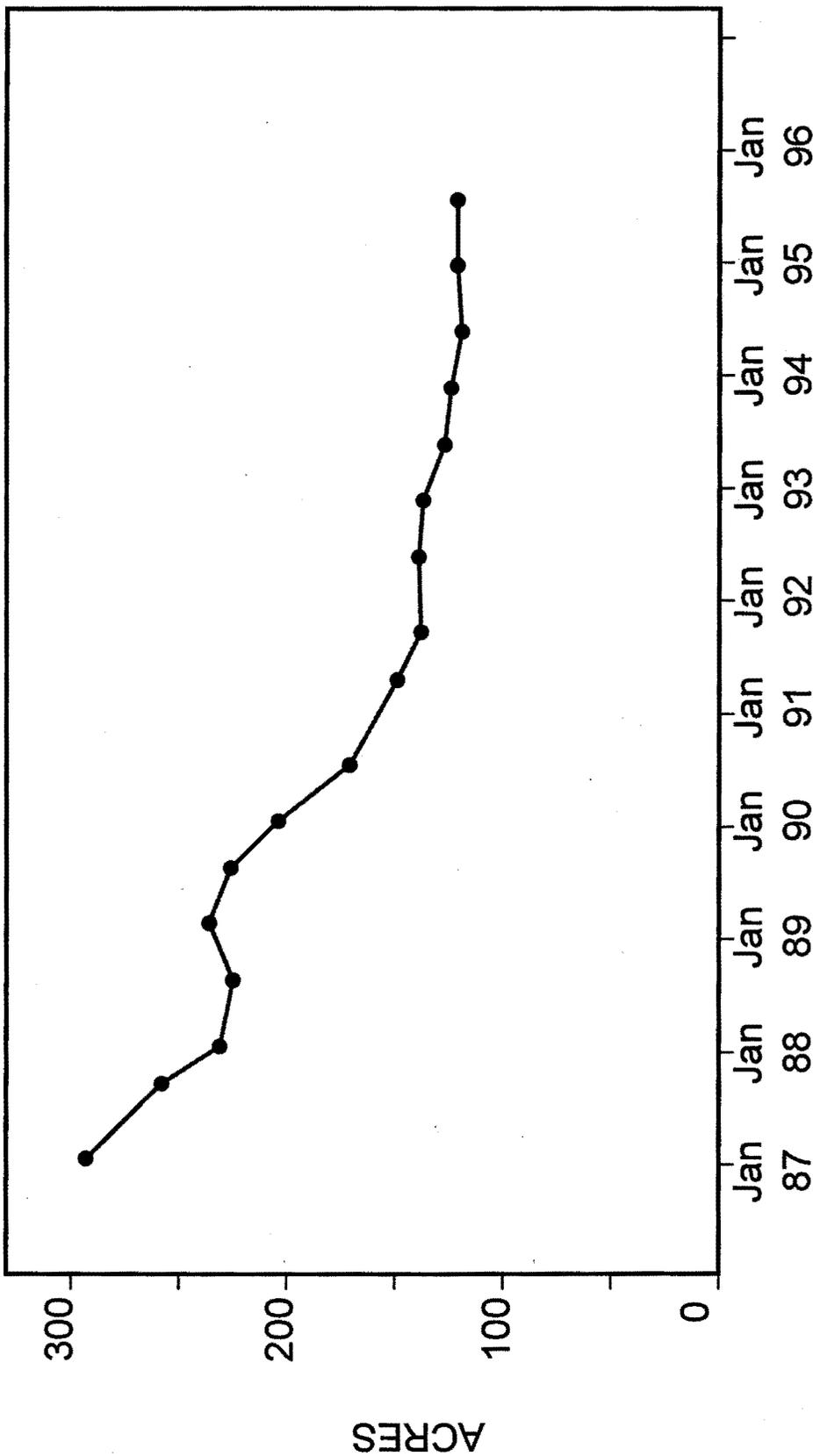
Area of moderate to high density kelp at San Onofre



Largest Observed Area
During SONGS Studies
= 347 acres in 1981

Expected Area Without
SONGS = 175 + 122
= 297 acres

AVERAGE AREA OF KELP LOST



SURVEY DATE

Staff recommended revised condition requires:

- mitigation in two phases
- same performance standards as 1991
- maintenance and remediation for the operating life of SONGS
- monitoring for 10 years
- trust fund for the planning and construction of the second phase artificial reef

Condition D: ADMINISTRATIVE STRUCTURE

overhead 1: Purpose of Condition D

The purpose of Condition D is to establish the administrative structure to provide

independent monitoring

management and technical oversight and

remediation for the compensatory mitigation projects required by Conditions A and C.

Staff's recommended revised Condition D includes no changes to the administrative structure approved by the Commission in 1991. However, the recommended revised condition does include provisions for establishment of a trust fund that would cap the costs of monitoring, technical oversight, and remediation, and once funded, would fulfill the permittee's monitoring and remediation obligations.

overhead 2: Independent Monitoring

Under Condition D the permittee is required to fund independent monitoring. Independent monitoring has been a key component of the entire SONGS project, since its initial approval in 1974 and commencing with establishment of the MRC, the independent body established to evaluate the impacts of the SONGS on the marine environment.

The MRC recognized the value of independent monitoring and recommended its continuation as part of the compensatory mitigation program described in its final report.

The Commission incorporated the MRC's recommendation for independent monitoring into the 1991 permit and this action was strongly supported by the permittee.

Since approval of the 1991 permit, the permittee has not presented any new information that warrants a change to this element of Condition D.

overhead 3: Management and Technical Oversight

The activities required under management and technical oversight are listed in this overhead. As you can see a lot of different activities come under this heading including the analysis of data collected in the monitoring program, preparation of the resulting

reports and project oversight. These are necessary tasks of any large scale mitigation project no matter who is responsible for monitoring and remediation.

overhead 4: Remediation

As in the 1991 permit, staff's recommended revised Condition D requires remediation for the life of the SONGS Units 2 and 3. Remediation would include the regular maintenance of physical features, such as maintenance of the erodible berms proposed as part of the San Dieguito Lagoon mitigation project, or maintaining the hard substrate area at the mitigation reef. Remediation also includes the correction of deficiencies in physical features, such as regrading the restored wetland habitat to correct errors in elevation contours. And remediation includes the correction of deficiencies in biological features, such as replacement of failed plantings or controlling the invasion of exotic plants.

overhead 5: Monitoring and Remediation Costs

This overhead provides a breakdown of the total estimated cost of monitoring and remediation provided for in the recommended revision of Condition D.

These costs cover four mitigation projects, with 10 years of monitoring and approximately 30 years of remediation.

Independent monitoring would provide for the collection of all necessary data at an estimated cost of 9 million dollars. Technical oversight and project management including monitoring data analysis and report writing is estimated to cost 7 million dollars over the life of the project. Thus, the total monitoring costs for all projects is estimated to be 16 million dollars. Because there are four different projects that will be monitored for ten years each this works out to about 400,000/year.

Remediation, which includes all normal maintenance except inlet maintenance at San Dieguito Lagoon is estimated to cost about 12 million dollars over the operating life of the SONGS Unit 2 and 3. The permittee is proposing to undertake inlet maintenance at San Dieguito Lagoon is perpetuity and funds for this are included under project implementation.

Thus, the total costs of monitoring, technical oversight, project management, and remediation for all four projects is estimated to be 28 million dollars over the life of the project.

overhead 6: Staff's Recommendation

In summary, staff's recommended Condition D preserves the structure of the permit condition approved in 1991, by maintaining independent monitoring, by maintaining provisions for management and technical oversight, and by maintaining provisions for full remediation.

In addition, the staff's recommended Condition D caps the cost of monitoring, technical oversight, and remediation for both the wetland and kelp reef mitigation projects through establishment of a trust fund.

Staff believes the recommended Condition D addresses the permittee's major concern over cost containment, while ensuring that effective compensatory mitigation is fully accomplished.

PURPOSE OF CONDITION D

ADMINISTRATIVE STRUCTURE

- independent monitoring
- management and oversight
- remediation

INDEPENDENT MONITORING

- key element of all Commission approvals for the SONGS permit since 1974
- MRC recommended independent monitoring
- endorsed by permittee in 1991
- nothing has changed since 1991 permit action

Management and Technical Oversight

- data analyses
- report writing
- monitoring plan preparation
- consultation with data collection contractors
- public workshop organization
- develop and review requests for contractor proposals
- contracts
- travel and other operating expenses
- consulting fees
- overall project management
- fund administration

REMEDIATION

- regular maintenance of physical features
- correct deficiencies in physical features
- correct deficiencies in biological features

MONITORING AND REMEDIATION COSTS

FOUR PROJECTS - 10 YEARS MONITORING PER PROJECT

- San Dieguito Lagoon
- Ormond Beach
- Experimental Kelp Reef
- Mitigation Kelp Reef

millions \$

Data collection	9.03
Technical oversight and project management	7.12
Total Monitoring	16.15

Remediation (includes all maintenance except inlet maintenance)	11.85
---	-------

Total Monitoring and Remediation	28.00
----------------------------------	-------

STAFF'S RECOMMENDATION

- maintains independent monitoring
- maintains management and technical oversight
- maintains remediation
- caps monitoring and remediation costs

October 23, 1996

RECEIVED
OCT 24 1996
CALIFORNIA
COASTAL COMMISSION

Susan Hansch
Deputy Director for Energy, Ocean
Resources and Technical Services
California Coastal Commission
45 Fremont Street, Suite 200
San Francisco, CA 94105

Re: SONGS Mitigation Public Hearing Exhibits

Dear Ms. Hansch:

Per our conversation with Zack Hymanson, I am forwarding copies of our presentation at the October 8th hearing.

We are looking forward to receiving your presentation of that same hearing by return mail.

Sincerely,


Samir Tanious
Environmental Affairs

Enclosures

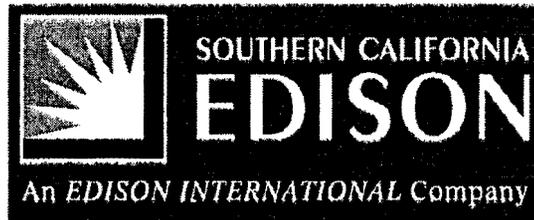
**Request to Amend and Fulfill Conditions of Coastal
Development Permit No. 6-81-330
San Onofre Nuclear Generating Station (SONGS)**

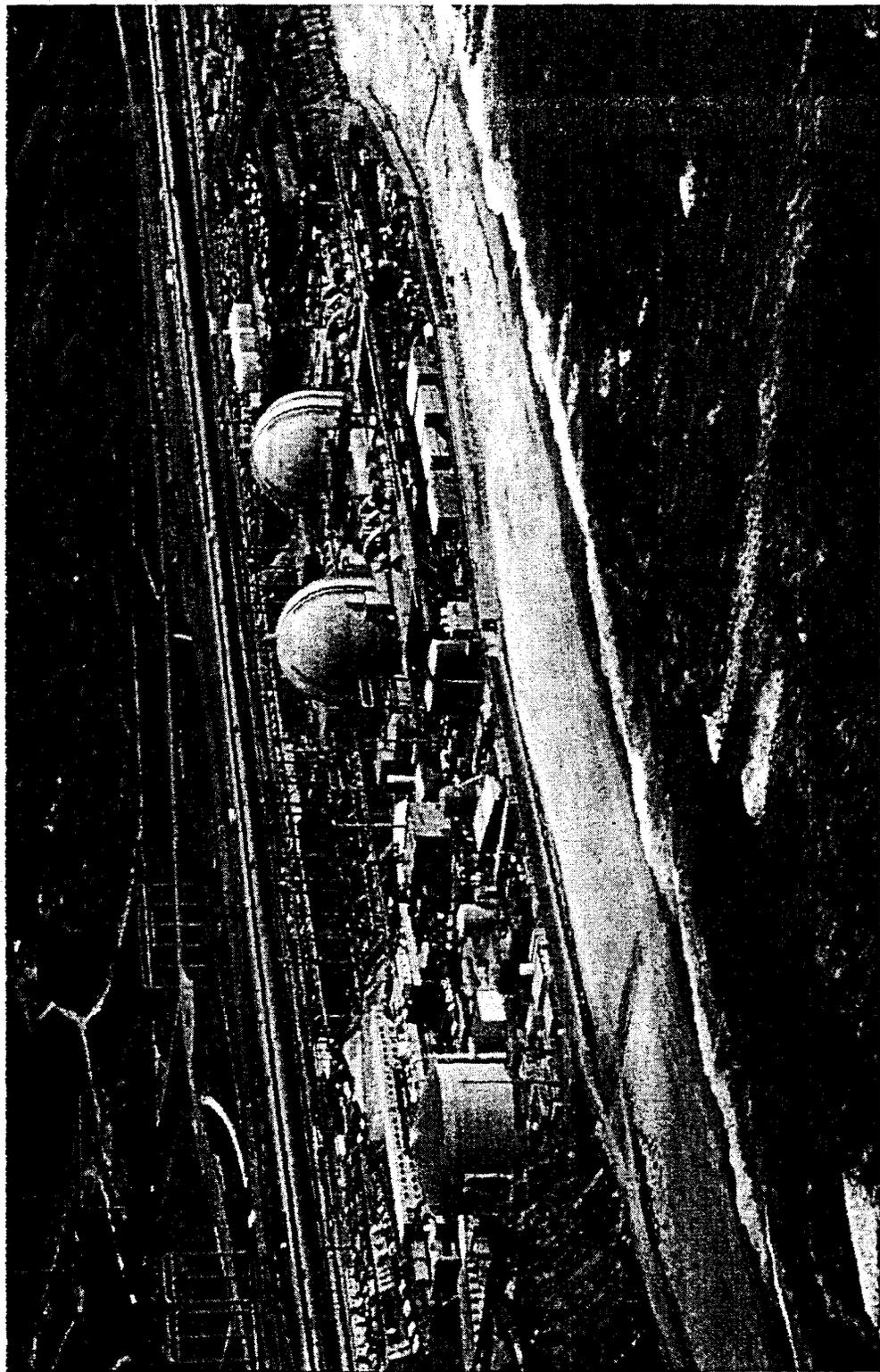
RECEIVED

OCT 24 1996

CALIFORNIA
COASTAL COMMISSION

**Summary of Edison's Position
and
Response to Staff Recommendation**

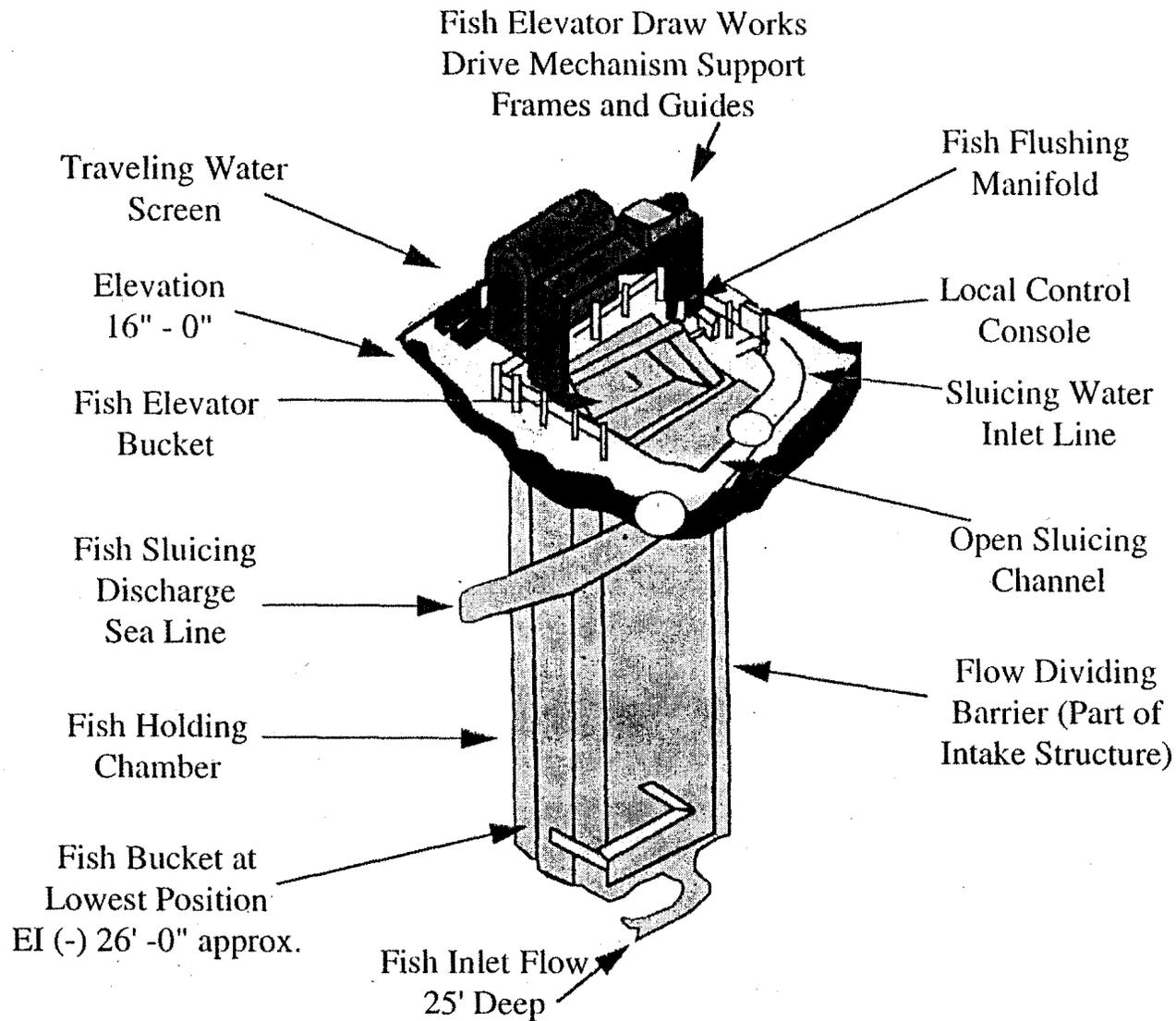


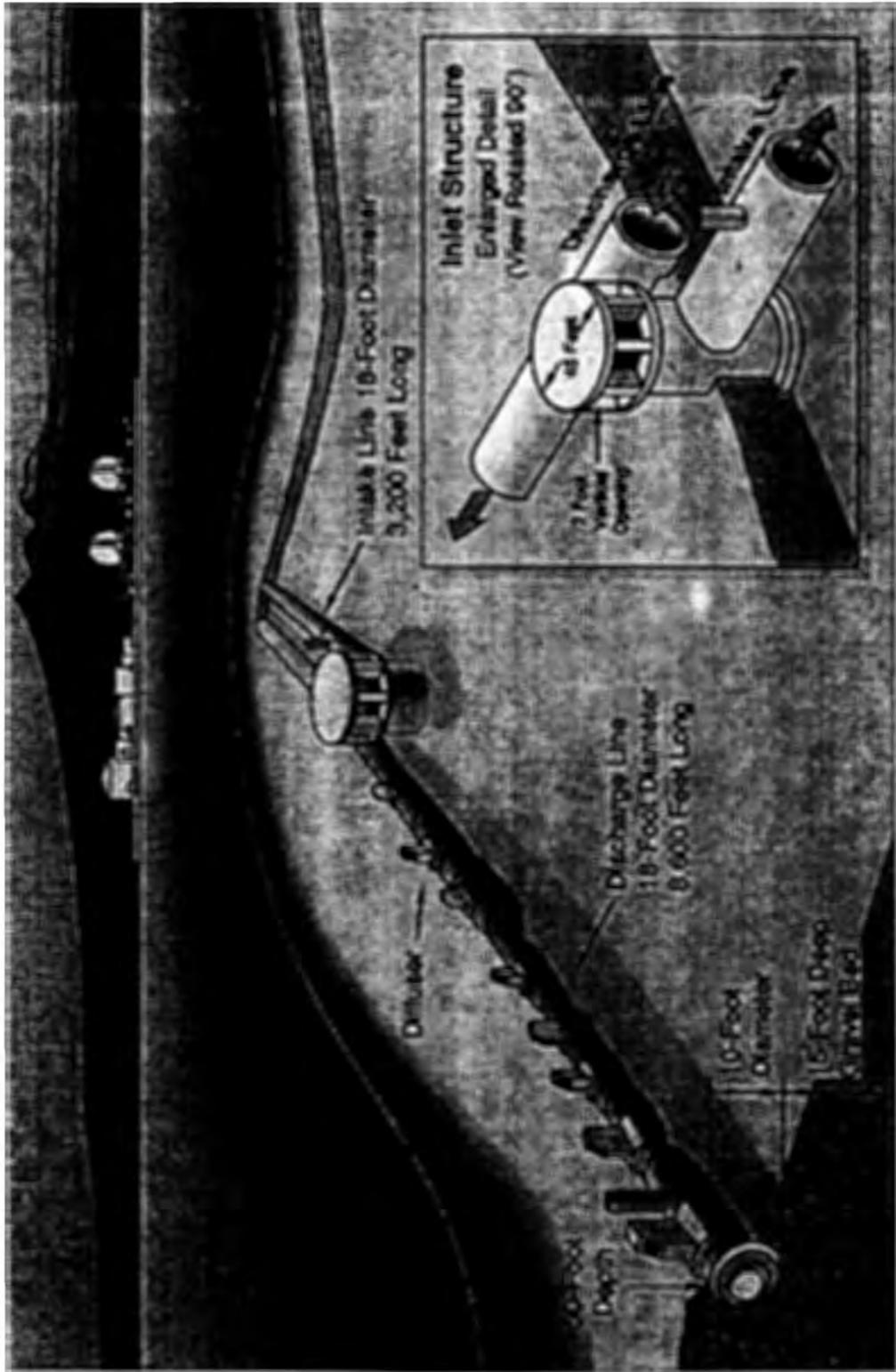


Quick Facts About SONGS

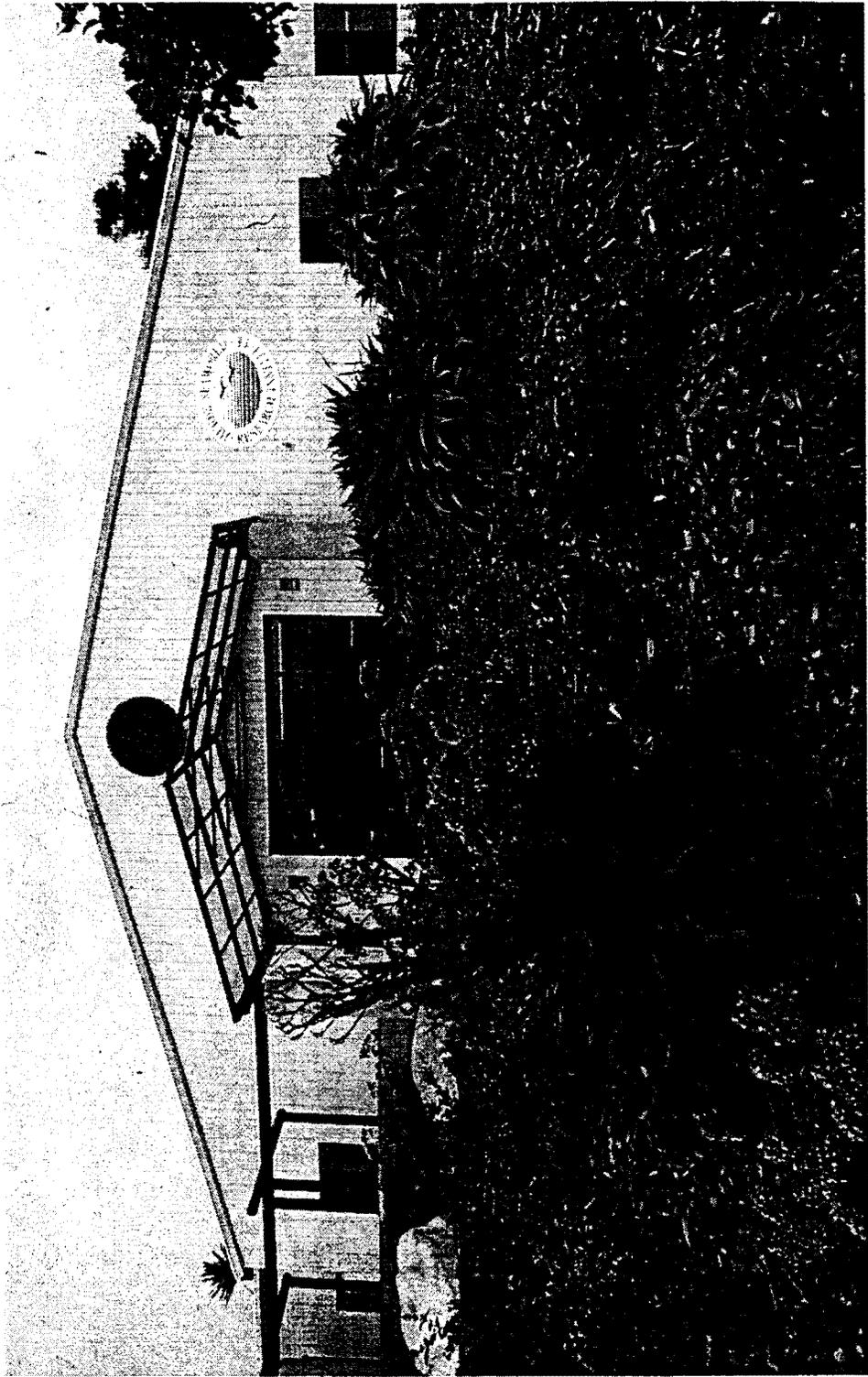
- Produces electricity to serve 3 million homes
- Power is produced without air pollutants
- Emissions savings = 300,000 cars off the road
- Employs about 2,000 people
- Pays over \$35 million in property taxes each year

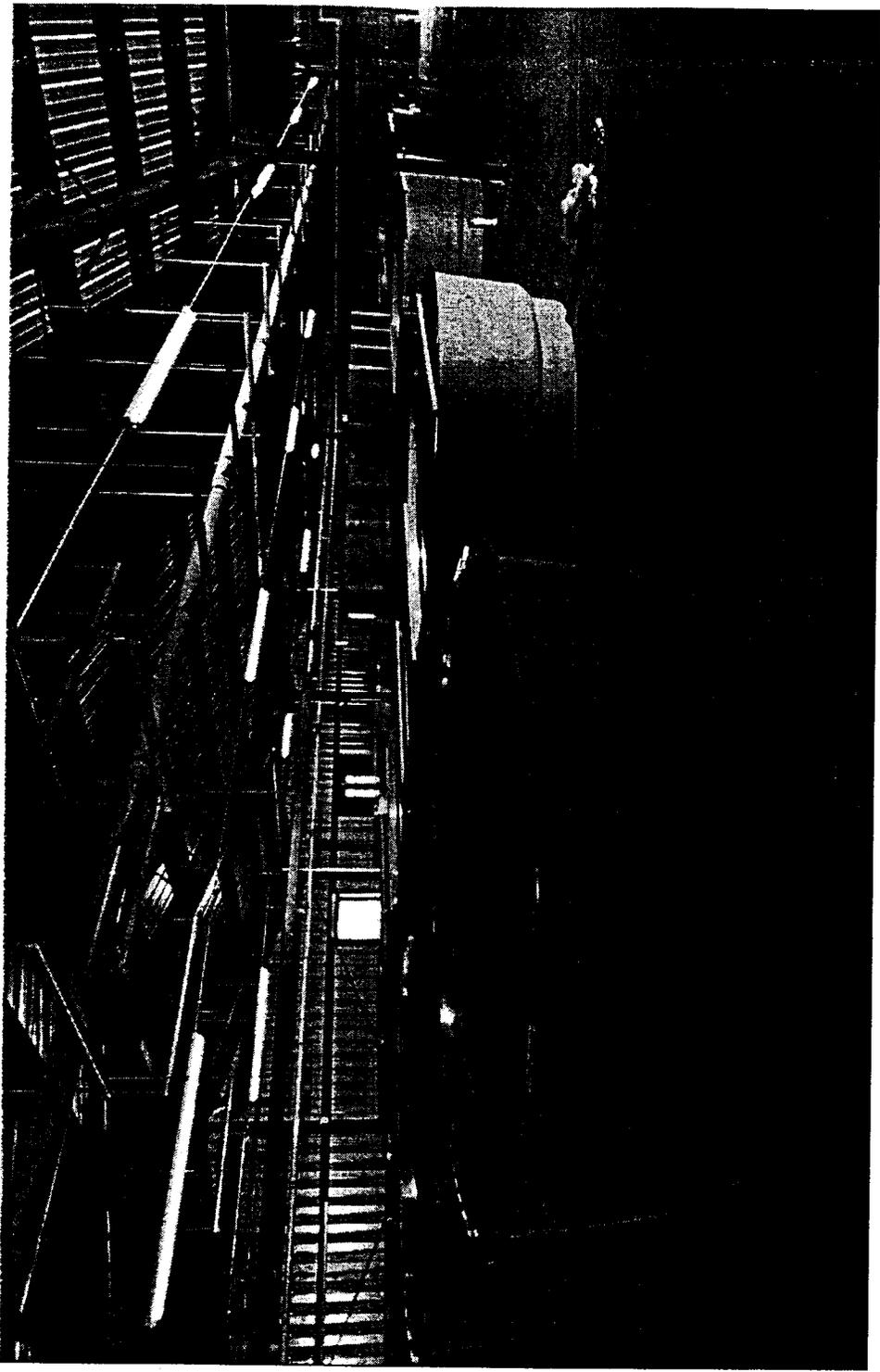
Fish Removal Elevator and Sluicing Channel



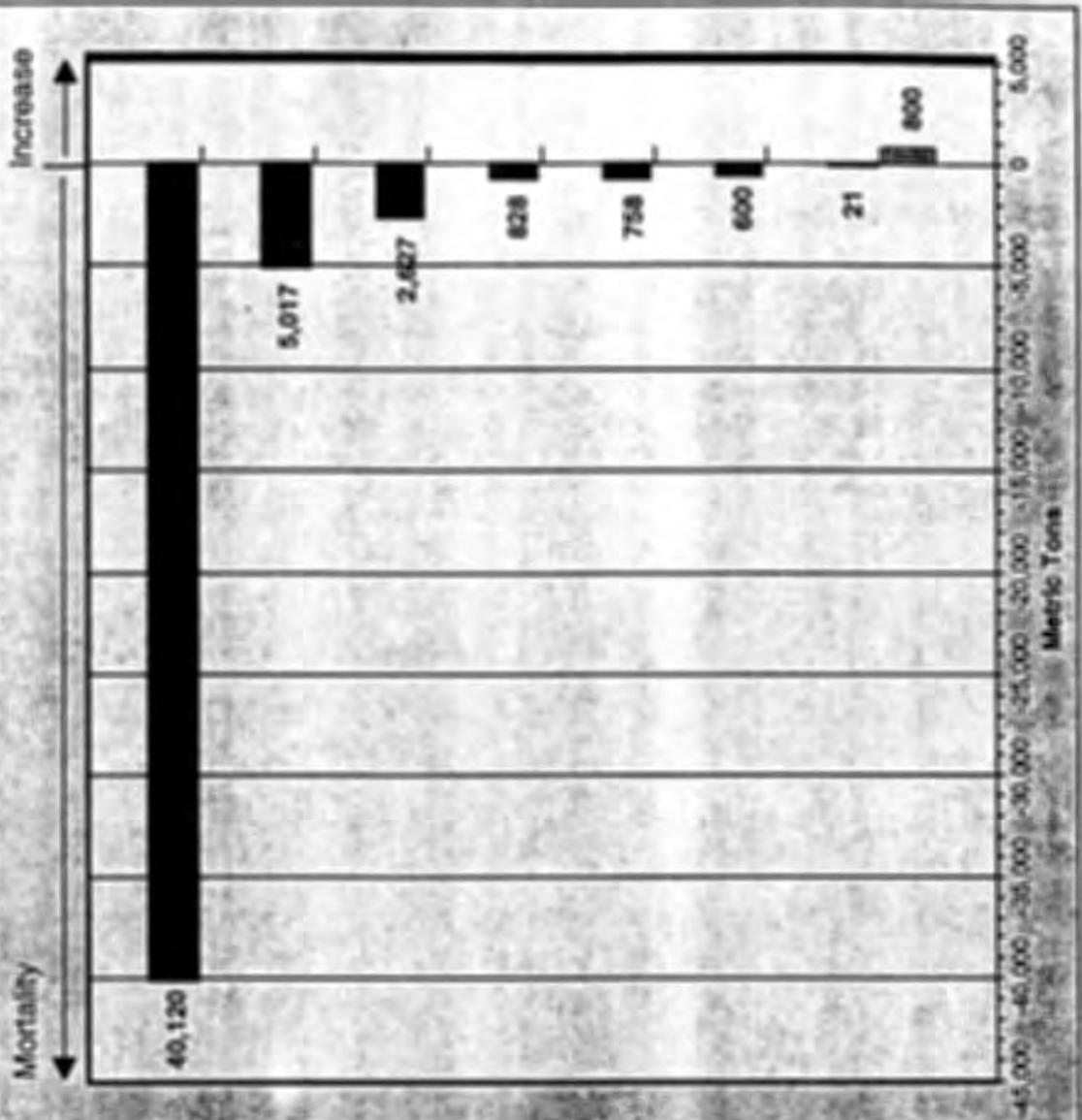








Comparison of Sources of Annual Fish Mortality



San Pedro Commercial Catch
Source: Ca. F&G 1993 San Pedro Landings

So. Ca. Sport Catch (1994)
Source: US Dept. of Commerce, Statistics 1994

Live Bait (San Diego - Newport)
Source: Letter from Ca. F&G 1995

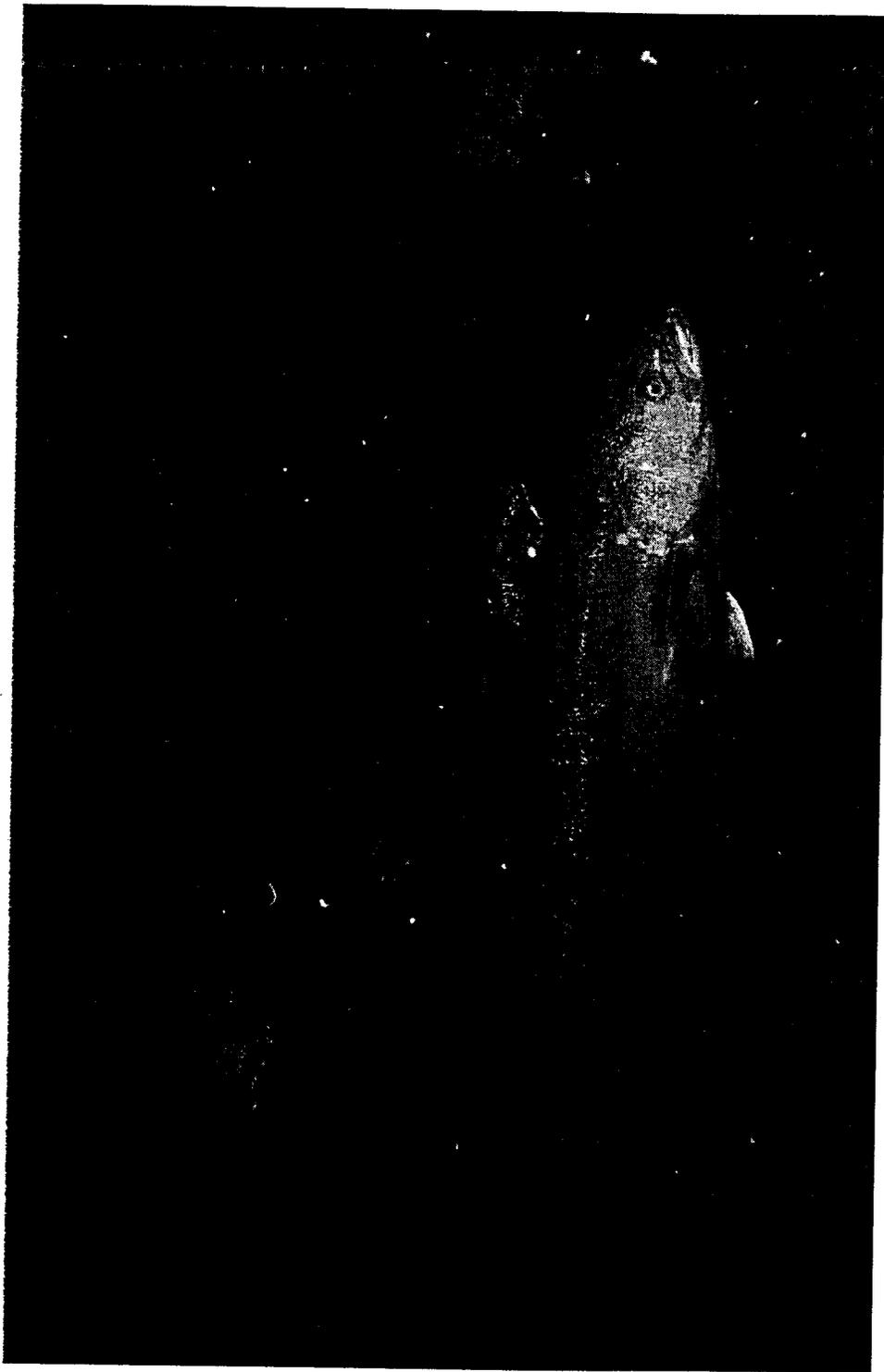
Sea World Fish Food
Source: San Diego Union, 5/27/86

Two Bait Boats
Source: Letter from Ca. F&G 1995

SONGS Adult Equiv. Fish Loss
Source: MHC Final Report, "Best Estimate"

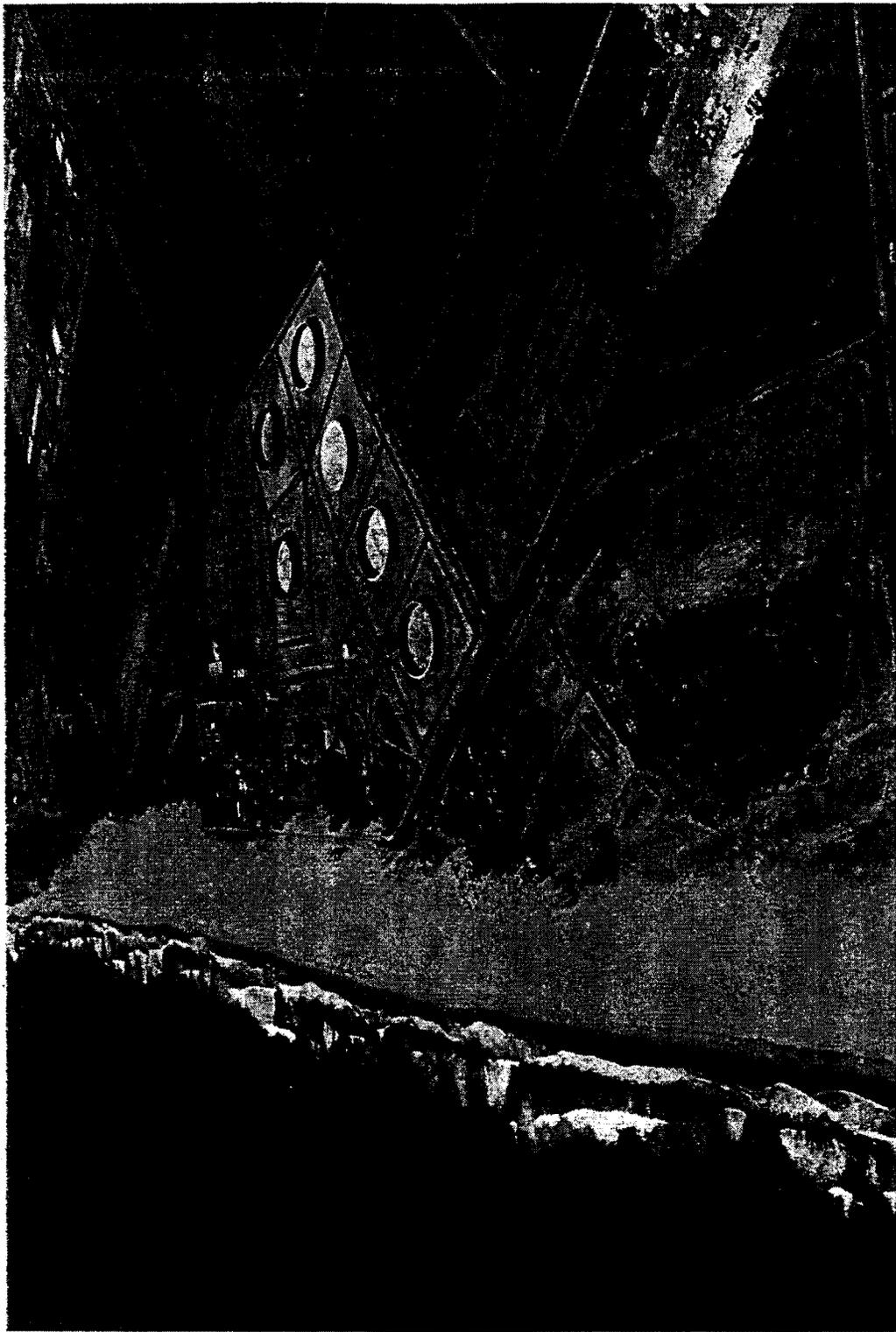
SONGS Adult Fish Loss
Source: NPDES Monitoring Reports, 1983-95

White Seabass Hatchery
Source: Don Karl, Hubs-Sea World, 1995











Coastal Commission Permitted Monitoring Programs

All Programs

Project Permit Number	Type of Project	Who Performs Monitoring?	Reference Wetland Required?	Length of Monitoring Period? (Yrs)	Number of Factors Monitored?	Payment for Staff	Consistency With Other Permits
Sweetwater Marsh/Cal Trans 6-84-50	Mitigation for freeway expansion	Permittee	On-site	2-3	6	No	Yes
San Joaquin Marsh 5-87-644	Removal of cattail/tamarisk	Permittee			NS	No	Yes
Anaheim Bay 5-88-119	116 acres of wetland and avian habitat	Permittee	On-site	5	6	No	Yes
Agua Hedionda Lagoon 6-89-195	4.6 acre brackish, riparian.	Permittee		5	1	No	Yes
Cottonwood Creek 6-90-015	Freshwater marsh clean-up	Permittee		5	1	No	Yes
Sea World Dolphin Lagoon 6-90-140	Eelgrass beds	Permittee		5	1	No	Yes
Batiquitos Lagoon 6-90-219	562 acre salt/brack/fresh marsh	Permittee			9	No	Yes
Hoag Memorial Hospital G5-90-775	Replant ~1,000 sq. ft. of cattails	Permittee			NS	No	Yes
Venice Canals 5-91-584	0.23 acre salt marsh	Permittee		NS	1	No	Yes
SONGS 6-73-183A(91)	Mitigation for fish habitat lost	Commission	4 off-site	30+	12	Yes	No
Ballona Wetland 5-91-463A(92)	51.1 acres freshwater marsh +190 acres salt marsh	Permittee	1) On-site 2) Existing data	5	5	No	Yes
San Diego Creek 5-92-232	1.53 acre brackish marsh	Permittee		10	1	Yes	Yes
Penasquitos Lagoon 6-92-240	5.4 acre salt marsh, riparian	Permittee		5		No	Yes
Venice Canals 5-92-377	0.24 acre salt marsh	Permittee			NA	No	Yes
Prima Deshecha Stream 5-93-006	1640 lin. ft. of stream channel	Permittee		5	1	No	Yes
Laguna Grande Wetland 3-93-22	0.7 acre riparian	Permittee			NA	No	Yes
Mission Bay Shoreline 6-93-165	Eelgrass beds; intertidal	Permittee		NS	NA	No	Yes
Sandy Embayment 5-93-182	0.65 acre sandy embayment	Permittee		NS	4	No	Yes
City of San Diego 6-93-208	~1 acre filled for revetment	Permittee		5	3	No	Yes
Encinitas Creek Channel 6-94-60	2 acre riparian; freshwater	Permittee		5	1	No	Yes
Louisiana Pacific Corp. 1-94-70	6 acres intertidal	Permittee	On-site (mudflat only)	5	6	No	Yes
Desiltation Basin Construction 6-94-79	Juncus acutus individuals	Permittee			1	No	Yes
Southbnd Lane Exp. Cal Trans 6-92-16A(95)	1.58 acre salt marsh, open water	Permittee		5	2	No	Yes
Bolsa Chica (LCP Approval)*	770 acre wetland creation/restoration	Permittee	No	5 and 10	NA	No	Yes

* The LCP was approved through a Master Development Permit.
 NA = Not available, NA = Not Specified

Coastal Commission Permitted Monitoring Programs Major Projects

Project Permit Number	Approval Date	Type of Project	Who Performs Monitoring?	Reference Wetland Required?	Length of Monitoring Period? (Yrs)	Number of Factors Monitored?	Payment for Staff	Estimated Costs	Consistency With Other Permits
Anaheim Bay (5-88-119)	3/89	116 acres of wetland and avian habitat	Permittee	On-site control	5	6	No	\$564,000	Yes
Batiquitos (6-90-219)	3/91*	650 acre wetland restoration	Permittee	No	10	9	No	\$2 million	Yes
SONGS (6-73-18A(91))	6/91*	Wetlands Restoration	Commission	4 or more	30+	12	Yes	\$28 million**	No
Ballona Wetlands (5-91-463A(92))	8/92	51.1 acres f.w. marsh 190 acres salt marsh	Permittee	1)Pre-construction conditions 2)Existing data on off-site f.w. marsh	5	6	No		Yes
Bolsa Chica*** (LCP Approval)	1/96	770 acre wetland creation/restoration	Permittee	No	5- to 10	7	No	\$1.34 million	Yes
Bolsa Chica Agency Port Acquisition	Expected 10/96	384 acre wetland restoration	Resource Agencies	No	10	7	No	\$150,000/yr2	Yes

* Concurrent projects as the Batiquitos Lagoon monitoring plan was approved in September 1991.

** Includes all costs for monitoring, remediation and maintenance.

*** The LCP was approved through a Master Development Permit.

1 Monitoring program prepared through MOU with resource agencies, including consultant specifications and selection.

2 Monitoring costs to be derived from \$5 million trust fund. Agencies may use only annual interest generated by trust fund above and beyond annual inflation, (e.g., 6% interest with 3% inflation = \$150,000)

What We Know about SONGS' Impact On Kelp

- San Onofre Kelp Bed is as large today as it was before SONGS began operating 12 years ago
- Independent Panel: Trend data show kelp bed “is approaching pre-operational levels”
- Maximum impact using MRC methods with Independent Panel suggestions: 56.3 acres
- Staff proposal for finding 122 acre impact:
 - Contrary to Independent Panel conclusions
 - Uses Independent Panel suggestions selectively
- Independent Panel: “Impact assessment is a messy business”

BACI P

(Before-After, Control-Impact Pairs) Comparison

Substrate Adjustment	Urchin Adjustment	DLS	SSS	Average
Yes	No	-42.5**	-25.0*	-33.8
Yes	Yes	-67.5	-45.0*	-56.3
No	No	-142.5	-87.5	-115.0
No	Yes	-177.5	-120.0	-148.8

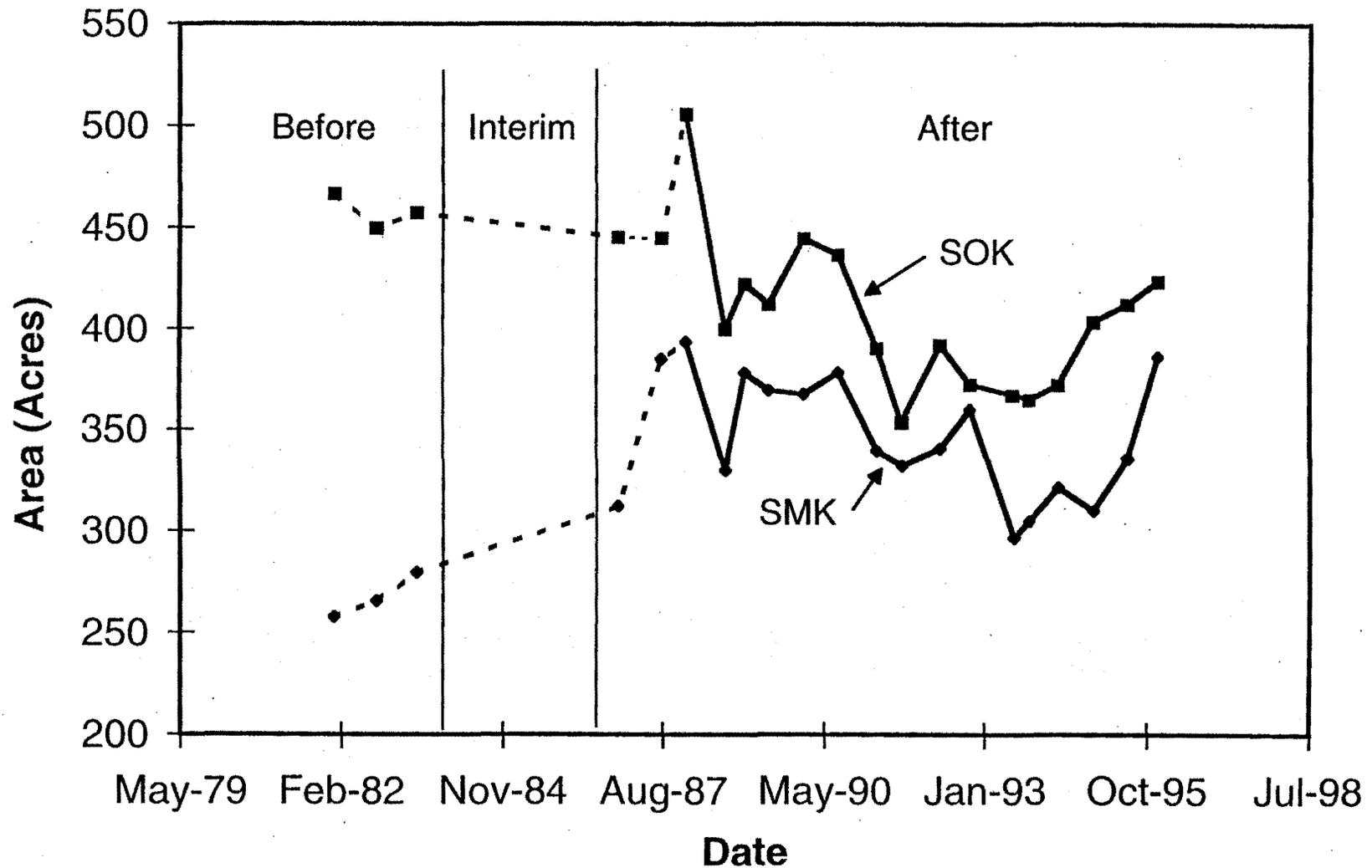
* Adjustment for substrate based on the ratio of DLS to SSS for estimates without substrate adjustment

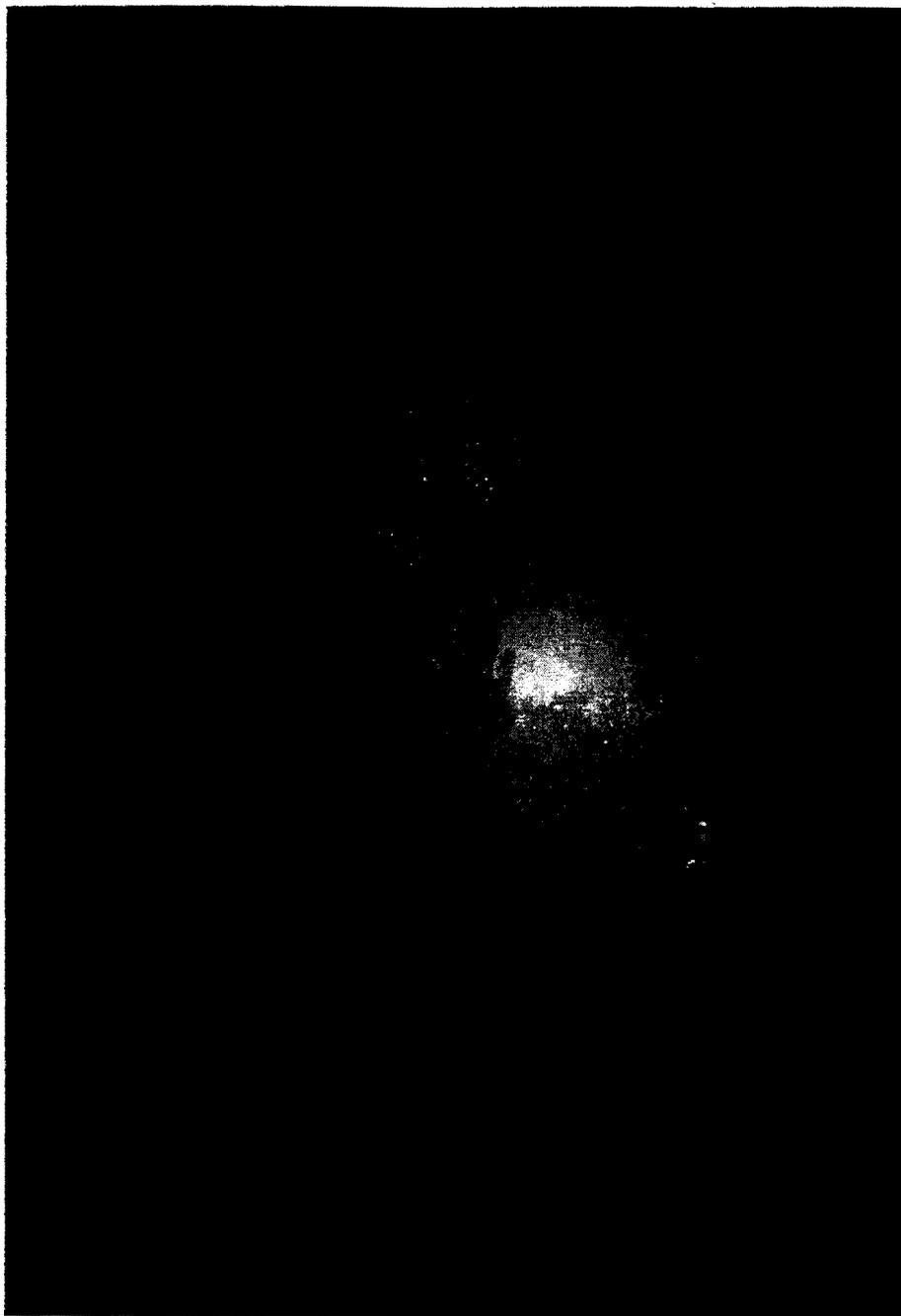
** Original MRC method of estimation

Before-After Comparison

Start of After Period	DLS	SSS	Average
1990	+17.5	+5.0	+13.3
1986	0	-20.0	-10.0

Changes in Available Hard Substrate at SOK and SMK









ESTUARINE AND WETLAND DEPENDENT FISH OF THE PACIFIC NORTHWEST

Received at Commission
Meeting

OCT - 8 1996

Prepared by:

From: _____

Pacific States Marine Fisheries Commission

F.I.S.H. Habitat Education Program

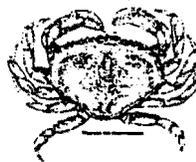
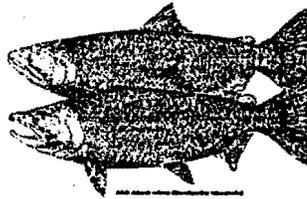


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F.I.S.H. Habitat Education Program

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INTRODUCTION

FISH NEED WETLANDS TOO!

Estuary and Wetland Dependent Fish of the Pacific Northwest

The fish reviewed in this document are all Pacific Northwest species which depend on estuaries*, wetlands, or shallow near-shore waters (which have wetland and estuary influence) for survival during at least a portion of their lives. Most often, these areas are the nursery grounds for young fish. The young benefit from the naturally high food concentrations in these areas and the shelter the vegetation and shallows provide. Some salmon for example, use stream-side wetlands for food and protection when very young, move to the estuaries with their fringing marshes for weeks or months as they grow and adapt to the salt water environment before migrating out to sea. When they return from sea as adults, the salmon will once again pause in the estuaries for a period to feed before heading upstream to spawn. Other fish species utilize wetlands and estuaries for years at a time, while still others depend on these areas or the associated near-shore ocean areas for their whole life.

It is estimated that at least half of the original wetlands in Oregon and Washington and about 90% of California's wetlands have already been lost to diking, filling, and development. Pollution, development, dredging, and the diversion of fresh water before it can reach the estuaries (for municipal, agricultural, and industrial use) can further degrade or destroy some of the remaining wetland and estuarine habitat.

The Pacific States Marine Fisheries Commission believes that public education about the value of wetlands and estuaries is critical if we are to stop the destruction of these habitats and encourage their restoration. While many people are aware that wetlands are important to herons, ducks, and frogs, few realize their importance to the fish they know or the seafood they eat. The following summaries of the habitat needs of familiar fish species, many of which are fished commercially or recreationally, have been prepared to increase that awareness.

As you look around your home and community, we encourage you to be aware of actions harmful to the wetlands, estuaries, streams, and other habitats important to fish and to become involved in education, protection, and restoration efforts. We all can play an invaluable role by helping to increase awareness about these habitats and we urge you to pass this information on to others or your library when done with it.

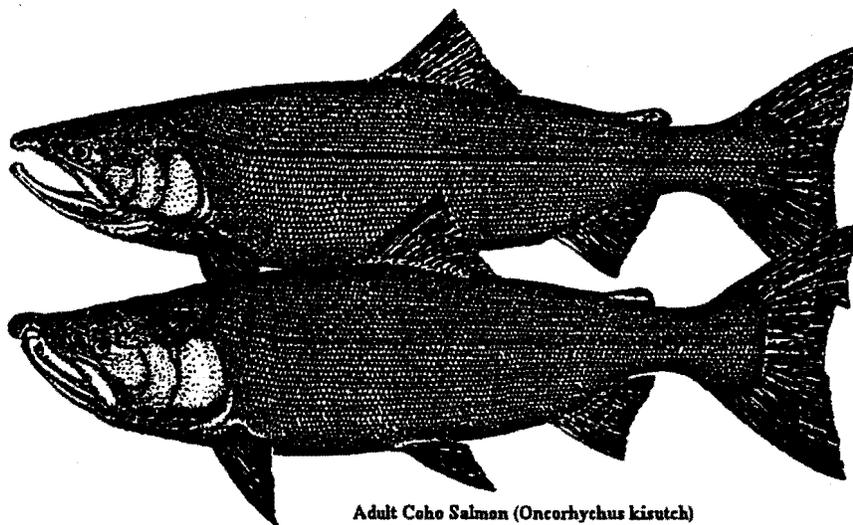
For further information please see the reference section.

* "Estuary" is the term given to the area at the end of a river where its fresh water mingles with the salt water of the sea. Also called harbors and bays, these areas nurture a rich and diverse array of plants and animals, including the fish in this review.

ANADROMOUS SALMON SPECIES

This section identifies the seven species of anadromous fishes that inhabit the Pacific Northwest. Anadromous fishes are those that spend their adult life in salt water and return to freshwater streams and rivers to spawn. The seven salmon species are all from the genus *Oncorhynchus*, from the Greek roots *onkos* meaning "hook", and *rynchos* meaning "nose". Estuaries and wetlands are critical habitats for these fish.

COHO SALMON



Adult Coho Salmon (*Oncorhynchus kisutch*)

DID YOU KNOW? The coho salmon was introduced from Pacific waters into the Great Lakes and is now common there.

SCIENTIFIC NAME: *Oncorhynchus kisutch*, from the Greek roots *onkos* (hook), *rynchos* (nose), and *kisutch*, the common name in Kamchatka.

COMMON NAMES: Silver salmon, coho, blue back, silversides, and jack salmon.

DESCRIPTION: In the ocean the coho is metallic blue on its back with silvery sides and white bellies. The coho salmon is recognizable by the large black spots on its upper back and top half of its tail. Unlike chinook salmon, coho do not have black gums along the bases of their teeth. In freshwater, mature coho have red sides with a green back and head. An average coho weighs 6 to 12 pounds and is about 24 inches in length.

LIFECYCLE: Adult coho salmon can be found migrating to their natal (birth) streams from June through February and spawning from September through March. Coho generally spawn in the tributaries and headwater streams of large rivers, preferably in areas with low water velocity and small-sized gravel. The female digs from one to four redds (nests) and generally spawns with different males in each redd, producing a total of 1,000 to 5,000 eggs. Coho die soon after spawning. The eggs hatch in about one month, and the juvenile coho emerge from the gravel in about 2-5 weeks. The young coho usually remain in freshwater for one year, moving in and out of side-channels, sloughs, beaver ponds, and tributary streams, seeking food and shelter from the high winter currents. Though they may begin their migration down-stream from April through August, most will migrate downstream approximately one year from emerging from the gravel. The juvenile coho will generally spend 2 days to one month in the estuary, feeding and adapting to salt water before entering the open ocean. Coho generally spend two years in the ocean, returning to their birth streams to spawn in their third year of life. A small percentage of the coho, usually less than 5% of the population, will return early after only one year in the ocean and are known as "jack salmon".

HABITAT AND ECOLOGY: The coho salmon is a carnivorous and opportunistic feeder throughout its life, feeding primarily on insects, invertebrates, and crustacea when young, and feeding on other fish and squid when

in the open ocean. During their time in fresh water streams, young coho need the habitat and protection created by downed trees and other vegetation. Large trees and brush in the stream provides the young fish hiding places where they can avoid predators. Behind these trees and obstructions, pool areas are created by the scouring of the water, areas which also provide important coho habitat. To survive during the winter, juvenile coho need to find shelter to avoid being swept downstream in the high currents. Coho escape to slow flowing backwater areas, side-channels, beaver ponds, and wetlands. But man-made habitat alterations, like road building, logging too close to streams, and channelization, have cut back these critically important areas that coho need to survive. Scientists think that one of the most important factors limiting the survival of coho is the lack of suitable winter habitat.

The summer months in fresh water can also be critical to juvenile coho. When water is diverted from streams for other uses, flows decrease, causing the remaining water to warm up and lose its normally high oxygen content--factors often fatal to the young fish. The lack of trees along streams can also cause water temperature to warm up to unsuitable levels.

Ocean conditions also play an important role in the survival of coho salmon. When conditions are normal, winds blow from the north during the summer, causing "upwelling" along the coast. Upwelling is a current which forces cold nutrient rich water from the depths to the ocean surface. Because of the nutrients, microscopic plants called phytoplankton start multiplying. These plants are eaten by the zooplankton (tiny animals) which in turn feed larger animals, which in turn are eaten by the salmon. During climate conditions known as "El Nino", wind conditions are changed and upwelling is depressed. This affects ocean temperatures and the amount of food available for salmon and other organisms, reducing coho survival.

RANGE: Baja, South central California, to the Bering Sea, and southeast Alaska.

ECONOMIC VALUE: The coho is a good tasting fish and a good fighter, making it a favorite target of recreational ocean salmon fishermen in the Pacific Northwest. It has also been an important fish for commercial fishermen. The U.S. commercial landings of coho have averaged 48.9 million pounds annually from 1989-93.

However, the coho populations have fallen drastically in recent times due to multiple factors. The main concerns being habitat loss, hatchery fish competition, overharvesting, and poor ocean conditions. Numbers are so low that the species was petitioned for listing under the Endangered Species Act in 1990. Historically large commercial and recreational fisheries have been severely cut back or eliminated to help increase the number of adults returning to spawn. In Oregon, Washington, and California the restrictions have had severe economic consequences for coastal communities.

COASTAL CUTTHROAT TROUT

DID YOU KNOW? Coastal cutthroat trout can return to spawn more than once.

SCIENTIFIC NAME: *Oncorhynchus clarki clarki*, from the Greek roots *onkos* (hook), *rynchos* (nose), and *clarki* from Captain W. Clark of the Lewis and Clark expedition.

COMMON NAMES: Sea trout, sea-run cutthroat, red-throat trout, or harvest trout.

DESCRIPTION: The coastal cutthroat trout is greenish blue on its back and silvery on the sides. They are distinguished from other trout and salmon species by bright red streaks located on the lower jaw, and the dense patterns of spots across the body and completely covering the tail. Adult cutthroat average 1 to 4 pounds, and can reach 20 inches in length.

LIFE CYCLE: The coastal cutthroat trout is unlike most of the other salmon species, because it may spawn more than once. Adults commonly enter streams during the fall and feed on the eggs from other salmon's spawn. Like other salmon, the female cutthroat digs a nest or redd and the male fertilizes the eggs. Spawning can occur from December through May, dependent upon the water conditions. The female cutthroat can lay from 200 to 4,000 eggs, which hatch in about 1 month. The young spend 1 to 2 weeks in the gravel before emerging. Young cutthroat usually spend 1 to 3 years in fresh water before they migrate to the estuaries and ocean in the spring. Coastal cutthroat trout generally spend less than 1 year in salt water before returning to fresh water. First time spawners are usually 3 or 4 years old. After spawning, the 'spent' or spawned adults, now called 'kelts', often return to salt water in late March or early April. These adults return to spawn in subsequent years, with some spawners being up to 10 years in age. Both juveniles and adults are carnivorous, feeding mostly on insects, crustaceans, and other fish throughout their lives.

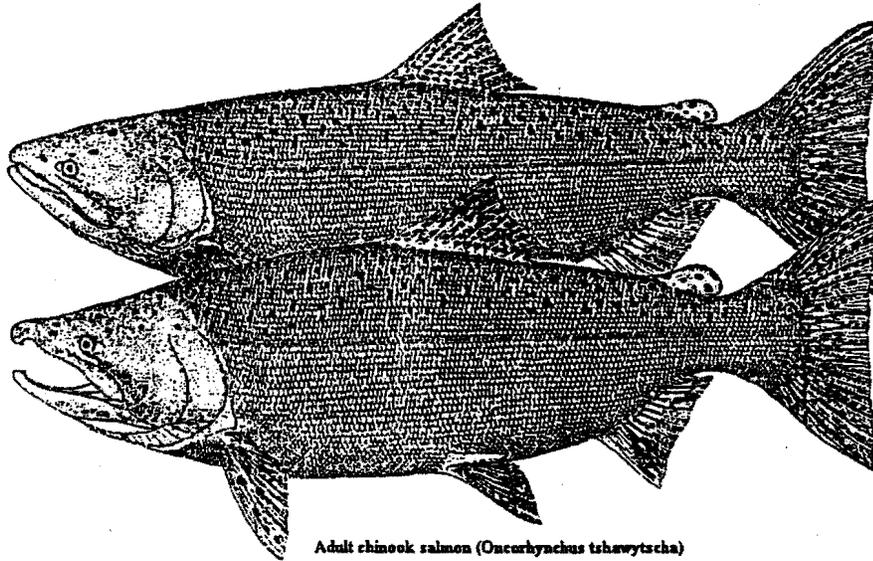
HABITAT AND ECOLOGY: In freshwater, adult cutthroat typically reside in large pools while the young reside in riffles, most commonly in upper tributaries of small rivers. Coastal cutthroat trout utilize a wide variety of habitat types during their complex life cycle. They spawn in small tributary streams, and utilize slow flowing backwater areas, low velocity pools, and side channels for rearing of young. Large woody debris and in-stream structures play an important role in providing valuable habitat for coastal cutthroat trout. Large logs in the stream provide valuable habitat and assure abundant supplies of insects for the young cutthroat.

During the estuarine or ocean phase of life, the cutthroat trout utilizes tidal sloughs, marshes, and swamps as holding areas and feeding grounds. These tidal areas are also very important for the survival of the prey fishes that the cutthroat depends on for food. Healthy estuaries with abundant supplies of small schooling fishes and young crustaceans are necessary for the cutthroat's survival.

RANGE: Northern California to Prince Williams Sound in Alaska.

ECONOMIC VALUE: Good recreational fisheries exist for cutthroat throughout the Pacific Northwest. Unfortunately, relatively little population data exist for the Coastal cutthroat trout. In Oregon, it is believed that coastal cutthroat trout populations are undergoing widespread decline. Several populations in western Oregon are thought to be at moderate risk of extinction, with poor ocean conditions and habitat-related problems thought to be significant contributing factors. The National Marine Fisheries Service listed all cutthroat trout populations in the Umpqua River Basin as endangered in August of 1996.

● CHINOOK SALMON



Adult chinook salmon (*Oncorhynchus tshawytscha*)

DID YOU KNOW? Chinook salmon can weigh over 100 pounds.

SCIENTIFIC NAME: *Oncorhynchus tshawytscha*, from the Greek roots *onkos* (hook), *rynchos* (nose), and *tshawytscha* the common name for chinook in Kamchatka.

COMMON NAMES: King salmon, tye salmon, Columbia River salmon, black salmon, chub salmon, winter salmon, and blackmouth.

DESCRIPTION: Chinook are anadromous fish (they are born in freshwater streams, migrate out to the ocean and return to fresh water as mature adults to spawn). In the ocean, they are greenish blue to black on their backs, with white bellies. Chinook have irregular black spots on their backs, dorsal fin, and tail fins, and black coloration in their mouths, hence the name “blackmouth” salmon. In freshwater, maturing fish are very dark, almost black in coloration. Chinook salmon can weigh over 100 pounds and achieve 58 inches in length. An average chinook salmon weighs about 20-25 pounds.

LIFECYCLE: Populations of chinook, called “runs”, are grouped by the time they return to the rivers to begin their final spawning journey: spring, summer, fall, and winter. Though chinook salmon can be found entering spawning rivers throughout the year, the majority return from April to December. Spawning and rearing times are dependent on timing of the individual runs. Because of their large body size, chinook tend to use deeper water and larger gravel size to spawn than other salmon (up to cantaloupe size rocks). The female digs the nest or redd in areas with moderate to high velocity water about a foot deep. Most spawning and rearing activity takes place in the main stream channels immediately above the saltwater limit or hundreds of miles upstream. The eggs of the chinook salmon are larger than any other salmon species. Depending on her size a female can produce 2,000 to 14,000 eggs, averaging about 5,000. Adults die soon after spawning. The young chinook salmon typically emerge from their gravel nests in three to five months. Research shows that low dissolved oxygen and/or low water temperature increase the length of time the eggs take to develop. The juvenile salmon grow and feed as they migrate downstream towards the sea, stopping to rear in coastal estuaries for periods up to 5 months, and then migrating to the open ocean. Most juvenile chinook salmon from the southern parts of

the Pacific Northwest enter the ocean during their first year of life. While, most juvenile chinook salmon from the northern parts of the Pacific Northwest (Alaska) enter the ocean during their second year of life. Chinook salmon can mature and return to spawn in as little as one year or as long as nine. The chinook salmon is an opportunistic and carnivorous feeder throughout its life, primarily feeding on insects, crustaceans, invertebrates, and other fish.

RANGE: As far south as Japan and southern California, and as far north as Arctic Canada.

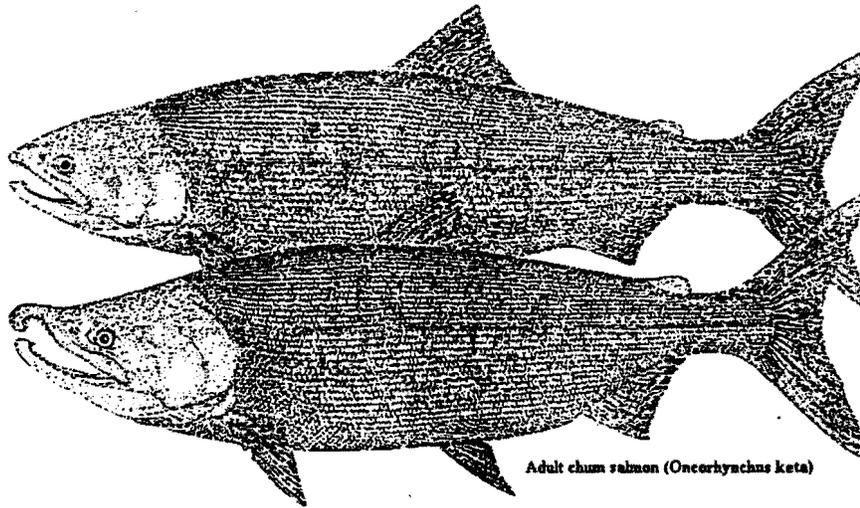
HABITAT AND ECOLOGY: From April through November of every year juvenile chinook salmon inhabit the estuaries and inter-tidal areas of the Pacific Coast. These estuarine areas with fresh and salt water wetlands and vegetation provide habitats that are crucial to survival. Not only do they provide habitat for the young salmon, they provide the food in which the chinook prey on: crustaceans; insects; and other fish. Healthy estuaries with adequate food are essential to the juvenile salmon's transition from fresh water to salt water.

Large logs in the stream are important habitat for juvenile chinook salmon. Large wood helps form deep, slow flowing pools and off-channel alcoves. These different types of habitat provide cover from predators, protection from the sun, and feeding areas for the young chinook on their journey. Stream-bank vegetation play a key role in providing the needed habitat for juvenile chinook salmon to survive.

Good water quality is also important to the young salmon. Siltation from improper land use practices, excessive high or low water temperature, and loss of stream cover or canopy all have negative impacts on chinook survival. Pollution and logging practices can alter stream flow and lower oxygen levels, making the water inhospitable or unfavorable to juvenile salmon. Man-made dams with large reservoirs flood the much needed shallow main-stream channel areas utilized by both the juvenile and adult chinook salmon for spawning and rearing. Healthy watersheds and fish-friendly forest practices are very important to the chinook salmon's survival.

ECONOMIC VALUE: U.S. commercial landings of chinook salmon have averaged 22,756,000 pounds from 1989-1993. The chinook salmon is also an important subsistence fish to Native Americans. It is also a highly prized recreational fish in the Pacific Northwest. People often travel thousands of miles to catch a big chinook salmon.

CHUM SALMON



Adult chum salmon (*Oncorhynchus keta*)

DID YOU KNOW? Native Americans in the far north use the chum salmon as sled dog food.

SCIENTIFIC NAME: *Oncorhynchus keta*, from the Greek roots *onkos* (hook), *rynchos* (nose), and *keta* the common name in Kamchatka.

COMMON NAMES: Keta salmon, chum, dog salmon, calico salmon.

DESCRIPTION: In the ocean, adult chum salmon have a metallic blue back, silvery sides and a white belly. It has no distinct spotting on its body or tail. Adult males returning to spawn develop a prominently hooked nose and both mature males and females develop irregular reddish to dark streaks or bars along the body, hence the name "calico" salmon. An average chum is 25 inches in length and about 8-9 pounds, although some adults can weigh 40-50 pounds and reach over 40 inches in length.

LIFECYCLE: Mature chum salmon adults return to spawn in the fall, to the coastal streams of their birth. Males usually enter streams first, followed within a few days by the females. Chum usually migrate short distances upstream, just above the tidewater limit. Unlike other salmon, the chum are not strong jumpers and cannot overcome significant barriers, so they are often found distributed below such barriers in spawning streams. Once in their natal stream, spawning takes place from November to December. Chum salmon commonly spawn at 3 to 5 years of age. Females seek out a nest site in gravel that is smaller than six inches in diameter and where the water is about a foot deep and flowing at a moderate to high velocity. The female digs her redd and lays about 2,000 to 4,000 eggs, depending on her size. After the male fertilizes the eggs, the female will guard her nest until her death a short time later, about 11 to 15 days after entering fresh water. All chum salmon die after spawning. The eggs will hatch between December and February and the juvenile chum salmon will emerge from the gravel in one to two months, depending on stream temperature. Then they quickly migrate downstream to the estuary, feeding on insect larvae in the stream during their journey. Chum salmon juveniles are common in Pacific Northwest estuaries from January through July. Like other salmon in the genus they move in and out of tidal marshes with the tide, feeding on crustaceans, insects, and other fishes. As they grow, they move towards the ocean and eventually migrate to the open sea.

RANGE: Southern California to Arctic Alaska.

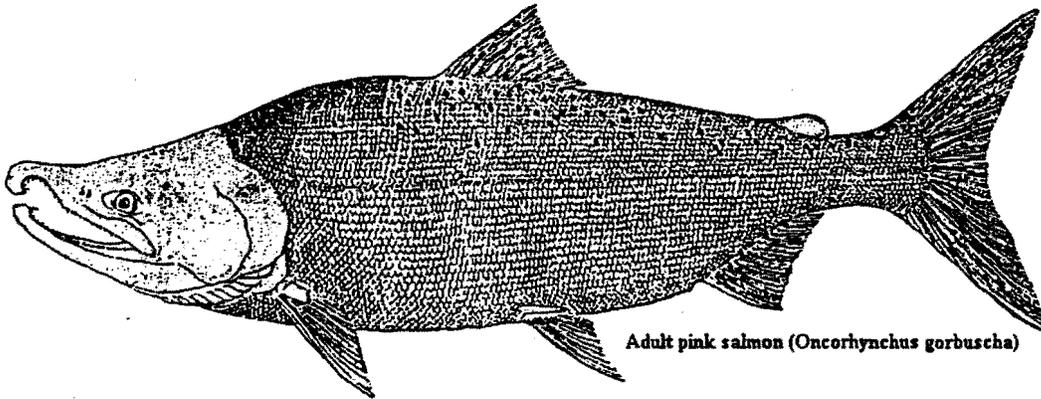
HABITAT AND ECOLOGY: Spawning in the lower reaches of stream makes the chum salmon very susceptible to environmental degradation. Young chum salmon still in the redd are subjected to siltation from upstream sources such as natural slides and human-aggravated erosion due to logging, road building, farming, and home building. Siltation can completely cover the gravel that chum utilize to spawn. This forces the chum salmon to spawn in areas that do not have ideal conditions and decreases the chances of survival. Silt can also settle on or around the redd, cutting off water circulation and oxygen flow to the redd, suffocating the developing eggs or the young salmon themselves.

Pollutants from industry or sewage treatment plants, run-off of chemicals used on farms, forests, or lawns, and run-off from roads can be toxic to chum salmon eggs and the young salmon. High nutrient levels from sewage effluent or fertilizer can cause the dissolved oxygen levels in the stream to fall below the levels needed for survival. In the Northern part of its range, inadequate stream canopy cover (trees over the stream) can cause very cold or even freezing water temperatures in the fall and early spring. This can disrupt egg development and reduce the number of eggs that hatch.

Chum salmon juveniles tend to be smaller than other salmon of similar age. This means they often fall prey to other larger salmon until they grow large enough to avoid being eaten. A healthy estuarine environment is especially critical to juvenile chum salmon, because it provides the food they depend on to grow and survive to spawn as adults.

ECONOMIC VALUE: Today, sport or recreational fisheries are uncommon for chum salmon as its oil content is low and it is deemed less tasty than other salmon. However, as restrictions have limited coho, chinook, and steelhead fisheries, some recreational chum fisheries have developed in Washington state. Most commercially caught chum salmon are from Alaska, with U.S. commercial landings of chum salmon averaging 79 million pounds annually from 1989-1993. Historically the chum salmon was a very abundant species in the Columbia River. Millions of pounds were caught and sold each year. But since the mid-1950's chum salmon commercial landings in the Columbia River have been minimal, less than 50,000 pounds a year.

PINK SALMON



Adult pink salmon (*Oncorhynchus gorbuscha*)

DID YOU KNOW? Upstream migration may be disrupted if adults encounter hydrocarbon concentrations exceeding 1-10 parts per billion.

SCIENTIFIC NAME: *Oncorhynchus gorbuscha*, from the Greek roots *onkos* (hook), *rynchos* (nose), and *gorbuscha* the Russian name in Alaska.

COMMON NAMES: Humpy salmon, pink, humpie, and humpback salmon.

DESCRIPTION: The pink salmon is the smallest and most abundant of the seven Pacific salmon species in the Pacific Northwest. In the ocean, the pink salmon has a metallic blue back, silvery sides, and a white belly. It is distinguished from other salmon by the large oval spots it has on its back and throughout its tail. In freshwater, mature males have bright red sides and a prominent hump on their backs, while the mature females are olive green on the sides with dark bars. An average size pink salmon is about 20 inches in length and weights from 3 to 5 pounds.

LIFECYCLE: The pink salmon has a two-year life span. Adults return from the ocean as two year olds between June and September and migrate only short distances to the lower reaches of streams or inter-tidal areas where they were born. Pink salmon can not leap significant obstacles and therefore are found distributed below these barriers in streams. Females often build a number of redds and spawn with various males; all pink die within weeks after spawning. About 1,000 to 2,000 eggs are laid per female. Eggs commonly hatch between December and January. The young stay hidden in the gravel for 4 to 5 months. After their emergence from the gravel in April or May, the young quickly migrate downstream. They spend little time in the estuaries, moving quickly out into near-shore shallow marine waters. As they feed and grow, they move out into the open ocean waters. Mature pink return from the ocean to spawn as two years olds after only eighteen months at sea.

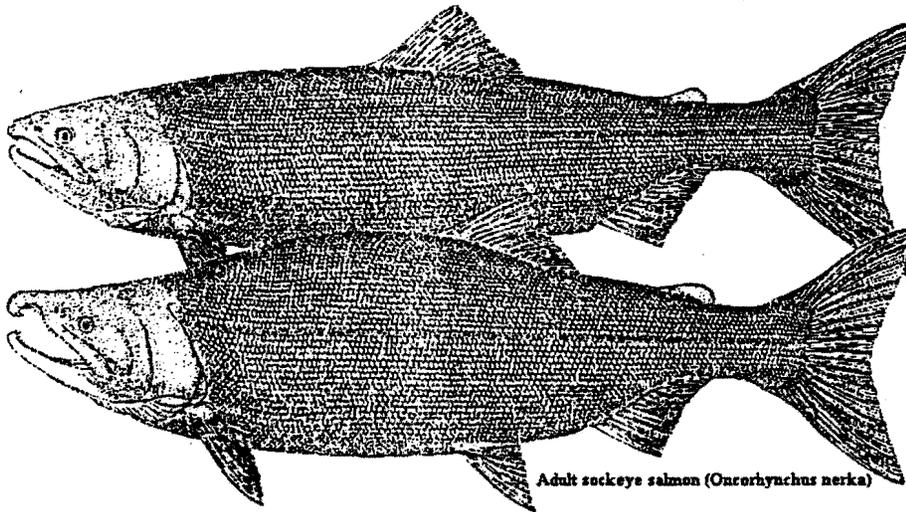
RANGE: Pink salmon range from Northern California to the Bering Sea. The most significant spawning populations of pink salmon occur north of Oregon.

HABITAT AND ECOLOGY: The pink salmon is a carnivorous and opportunistic feeder throughout its life, feeding on insects, crustaceans, invertebrates, and other fish. In turn it is eaten by other fish, marine mammals, and man. Though pinks spend the least time in freshwater environments as compared to the other salmon species, they remain susceptible to human impacts. Since spawning and egg development take place in the lower reaches of streams and inter-tidal areas, poor land management practices upstream resulting in pollution

or siltation can have negative impacts on juvenile pink survival. Habitat alterations like logging, dams, irrigation diversions, and pollution can also detrimentally alter the shallow marine environments, estuaries, and lower reaches of streams that the pink salmon require to survive. Excessive siltation can cover the spawning gravel in the lower reaches of streams and estuaries, limiting spawning areas or lowering overall egg survival. Dredging of shallow estuaries can also cause significant damage to pink salmon spawning grounds. Low dissolved oxygen levels and high stream temperatures can also adversely effect the survival of these salmon.

ECONOMIC VALUE: U.S. commercial landings of pink salmon averaged 309.9 million pounds annually from 1989-93, second only to sockeye salmon; over 90% of the catch is from Alaskan waters. Recreational fisheries do exist for pink salmon in Washington and Alaska, virtually none exist in Oregon and California.

● SOCKEYE SALMON



Adult sockeye salmon (*Oncorhynchus nerka*)

DID YOU KNOW? Young sockeye salmon prefer to live in lakes.

SCIENTIFIC NAME: *Oncorhynchus nerka*, from the Greek roots *onkos* (hook), *rynchos* (nose), and *nerka* the Russian name for sockeye.

COMMON NAMES: Red salmon, redfish, blueback, kokanee (landlocked), and sockeye.

DESCRIPTION: In the ocean the sockeye salmon has a greenish-blue back with fine black spots, silvery sides, and a white belly. In freshwater, mature sockeye which are ready to spawn are distinguished by their dark green heads and bright red bodies. Mature males develop a prominently hooked snout, and a very large hump on their back. Adults average about 25 inches in length and weigh 8 to 11 pounds.

LIFE CYCLE: The sockeye is an anadromous fish that spawns and grows in freshwater lakes and streams, and migrates to the ocean to feed and grow to an adult. The life history of sockeye is variable throughout the Pacific Northwest, depending largely on the region of origin and local stream conditions. Spawning migrations into fresh water commonly occur from June to August, with the actual spawning taking place August through December. Most sockeye migrate great distances up freshwater streams through lakes and into tributary streams, although some do spawn in the shores of freshwater lakes. The females select and dig the nest or redd site before depositing 2,200 to 4,300 eggs, depending on her size. Both males and females can spawn with multiple mates, and the female guards her nests until she dies; all sockeye will die a few days after spawning. Egg incubation in the gravel and fry emergence from the gravel are very temperature dependent. Incubation can be 50 days to 5 months while emergence can take between 2 to 10 weeks, depending on local stream conditions. Young sockeye will usually migrate towards a lake immediately upon emerging from the gravel. Most young sockeye will live in freshwater lakes for 1 year, although some will stay as long as 2 or 3 years before starting the migration to the ocean. Migration from the lake to the ocean usually occurs March through July, with very little time being spent in the estuaries. Sockeye will spend 1 to 4 years at sea depending on the region of the Pacific coast in which they originated from. Sockeye usually return to spawn as 3, 4, or 5 year old adults, depending on the different lengths of time they spend in freshwater and saltwater.

HABITAT AND ECOLOGY: Sockeye salmon are carnivorous and opportunistic feeders like other salmon, but prefer to feed on plankton, crustacea, and insects throughout their life. The sockeye salmon is a highly migratory species that often migrates hundreds of miles up freshwater streams to spawn above lakes. Obstacles such as dams, large reservoirs, and irrigation diversions can seriously affect upstream and downstream migrations. Dams on the Snake and Columbia Rivers have decimated the wild populations of sockeye that once flourished and historically supported large commercial and tribal fisheries. An estimated 96% of the Columbia Basin's nursery lakes for sockeye salmon have been completely cut-off by dams. The Snake River sockeye salmon was listed as endangered under the Endangered Species Act in December of 1991.

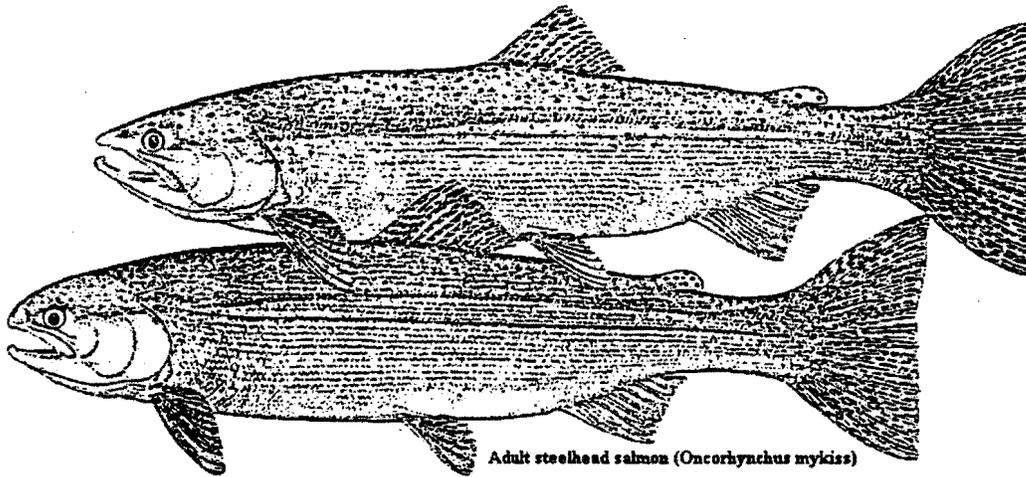
Under natural conditions, egg to sub-adult mortality is high in sockeye salmon. Man-made changes to the environment can further increase the high mortality rates. Abnormally high or low water temperatures, siltation, and pollution can greatly affect the egg development, incubation time, and fry emergence from the gravel. The sockeye salmon's long residency time in freshwater lake environments makes it even more susceptible to environmental changes than other salmon which spend less time in freshwater and do not migrate as far inland.

RANGE: Significant spawning populations are now only found north of the Columbia river to the Bering Sea in Alaska.

ECONOMIC VALUE: Alaska sockeye salmon support the largest commercial fishery of the seven Pacific salmon species. U.S. commercial landings of sockeye salmon have averaged over 320 millions pounds a year from 1989-93. Its bright red flesh, good size, and excellent taste make the sockeye salmon very valuable.

Historically, commercial landings of sockeye salmon in the Columbia River in the late 1800's exceeded 4.5 million pounds. Today, due primarily to the impacts of dams, the wild Snake River sockeye salmon is an endangered species.

STEELHEAD



DID YOU KNOW? Steelhead can return to spawn up to nine times before they die.

SCIENTIFIC NAME: *Oncorhynchus mykiss*, from the Greek roots *onkos* (hook), *rynchos* (nose), and *mykiss* is an indigenous Kamchatka name for rainbow trout.

COMMON NAMES: Rainbow trout, steelhead, coastal rainbow trout, metalhead, or half-pounder.

DESCRIPTION: The steelhead is a sea-run or anadromous fish that is closely related to the resident rainbow trout. In the ocean, it has a metallic blue back, silver sides, and white belly. Its distinguishing characteristics include a short head and small irregular black spotting on the back and throughout the dorsal and tail fins. In freshwater, spawning males have a pinkish or red stripe on both side of their bodies, hence the name "rainbow". An average steelhead is about 23 inches in length and weighs about 4-10 pounds. Some steelhead may be as long as 40 inches and weigh over 40 pounds.

LIFECYCLE: The steelhead is an anadromous fish, with two distinct winter and summer runs. The winter run migration begins in the fall, with spawning occurring from December through June. The summer run migration is in the spring and early fall, with spawning taking place the following spring from January through June. Steelhead enter the Columbia and other larger rivers in the Pacific Northwest year-round. Steelhead commonly enter the smaller streams and rivers during periods of high water called 'freshets'. The females dig the nest or redd and deposit about 1,500 to 6,000 eggs in medium to small gravel, while the male defends the female and the redd before fertilizing the eggs. Unlike other members of the salmon family, a small percentage of steelhead that have spawned called "kelts" will live to migrate back out to the ocean, and commonly return one year later to spawn in their natal stream again. Some steelhead have reportedly returned to their natal streams to spawn 9 times before they die. The eggs of steelhead usually hatch in about 30 to 50 days after fertilization. The small steelhead will stay hidden in the gravel of the nest for 2 to 3 weeks, although it could be longer or shorter depending on water conditions. Once they emerge from the gravel, steelhead will stay in their freshwater streams from 1 to 4 years (most commonly 2 to 3 years). Steelhead begin their downstream migration to the ocean during the spring and summer months, usually May through June. Very little time is spent in the estuaries before heading out into the ocean. They commonly spend 2 to 3 years in the ocean (though some may spend as little as one or as long as five years at sea) before returning to spawn in their natal streams. Some streams and rivers in southern Oregon and northern California have a 'half-pounder' run of

steelhead. These immature steelhead only spend a few months at sea before returning to freshwater, where they reside for about 8 months and return to the ocean to complete their rearing.

HABITAT AND ECOLOGY: Like other salmon, steelhead are carnivorous and opportunistic throughout their life and primarily feed on insects, crustaceans, squid, and other fishes. Once in the ocean steelhead can fall prey to killer whales, seal, and sea lions.

During their long (1-4 years) juvenile rearing phase in freshwater, young steelhead need the habitat and protection created by downed trees and other vegetation. Large trees and brush in the stream provide the young fish hiding places where they can avoid predators. Behind these trees and obstructions, pool areas created by the scouring of the water also provide important steelhead habitat. Juvenile steelhead utilize slow flowing backwater areas, side-channels, beaver ponds, and wetlands to escape high flows during the winter months.

Man-made habitat alterations, like road building, logging too close to streams, and channelization, have cut back these critically important areas that steelhead need to survive. Scientists think that one of the most important factors limiting the survival of steelhead is the lack of suitable winter habitat. The summer months in fresh water are also dangerous times for juvenile steelhead. When water is diverted from streams for other uses stream flow decreases, causing the remaining water to warm up and lose its high oxygen content, factors often fatal to the young fish. The loss of stream-side vegetation along streams can increase water temperatures to harmful levels.

Adult steelhead when returning to spawn require cool, deep holding pools during the summer and fall to hold and rest in prior to spawning. Good stream conditions and adequate woody debris in streams is necessary for juvenile and adult steelhead to survive.

RANGE: Steelhead range from Southern California to Northern Alaska.

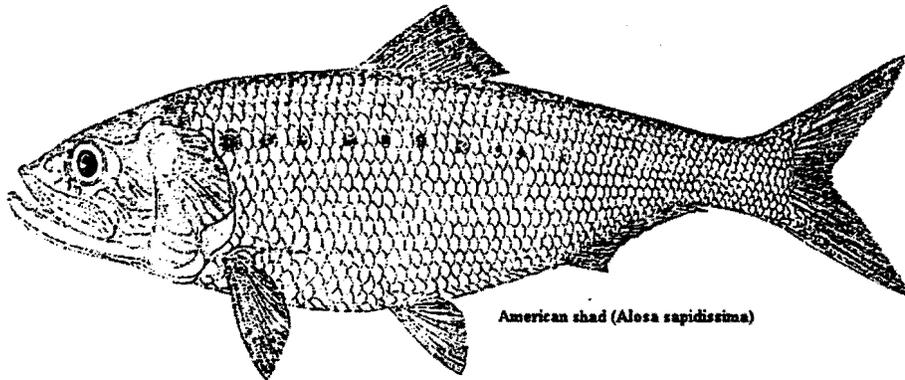
ECONOMIC VALUE: The steelhead is a highly prized sport or recreational fish because of its great fighting ability and excellent taste. Virtually all sport caught steelhead are taken from streams and rivers, not the ocean.

Historically large commercial harvests of wild steelhead existed in the Columbia River, but runs have declined precipitously today due in part to the building of dams and destruction of natural habitat. There has been no commercial steelhead fishery on the Columbia River since 1975. Because of this severe decline in wild steelhead populations in Washington, Oregon, and California the steelhead was petitioned for listing under the endangered species act in February, 1994. In most streams and rivers in Oregon, Washington, and California, all wild steelhead must be released; only hatchery steelhead may be kept.

OTHER ANADROMOUS SPECIES

This section identifies the species of fish that are anadromous but are not from the genus *Oncorhynchus*. Anadromous fishes are those that spend their adult life in salt water and return to freshwater streams and rivers to spawn. Estuaries and wetlands are critical habitats for these fish.

AMERICAN SHAD



DID YOU KNOW? American shad was introduced in the Pacific Northwest in the late 1800's, and in 1990 the population of shad entering the Columbia River was over 4 million fish.

SCIENTIFIC NAME: *Alosa sapidissima*, *alosa* is an old name for European shad and *sapidissima* meaning most delicious.

COMMON NAMES: Atlantic shad, Potomac shad, white shad, common shad, North river shad, and Connecticut river shad.

DESCRIPTION: A compressed silvery fish with a row of dark spots (3-23) along its side. It can be easily distinguished by its sharp saw-like scales or "scutes" along its belly. Average sized shad are 12-25 inches in length and 2.5 to 5 pounds.

LIFECYCLE: The American shad is a highly migratory anadromous species that returns to its freshwater natal (birth) areas to spawn. Shad spawn in estuaries, streams, and rivers in the spring and early summer months. Spawning usually takes place over gently sloping areas with fine gravels or sandy bottoms. In small groups; males and females disperse eggs and sperm together and fertilization takes place in the water column. Males and females may return to spawn more than once, and female shad can produce 30,000 to 600,000 eggs. The fertilized eggs float downstream and hatch in 3 to 10 days. Juvenile shad tend to survive best in the slow waters of reservoirs. They migrate downstream towards the ocean during late summer and fall, with most migrating to the open ocean before winter. Some shad will reside in rivers and estuaries up to one year before entering the ocean. Shad normally spend 3-4 years at sea before returning to spawn.

RANGE: Along the Pacific coast from California to Alaska.

HABITAT AND ECOLOGY: The construction of dams on the Columbia river basin has contributed to the decline of almost all species of anadromous fish except the shad. Since the completion of the lower Columbia river dams, shad populations have been on the rise. The slow moving waters of reservoirs apparently provide ideal conditions for juvenile shad.

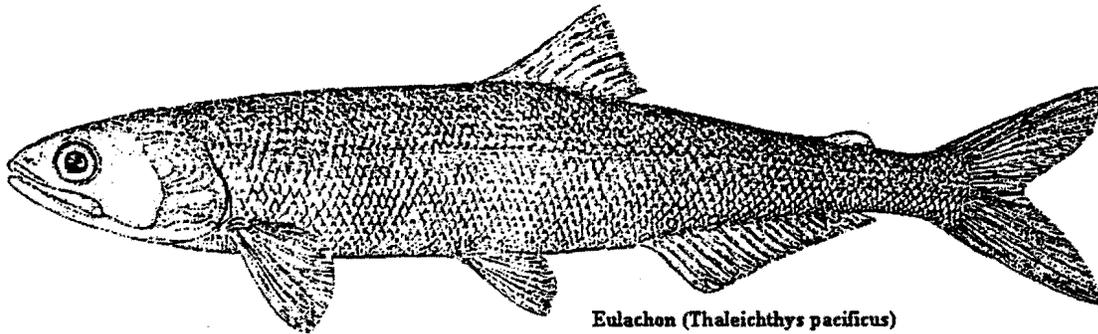
The shad is a plankton feeder who's diet varies depending upon the geographical region. Throughout its life a shad consume copepods, amphipods, shrimp, zooplankton, and other small fishes. In freshwater the shad itself

falls prey to white sturgeon, juvenile salmonids, harbor seals, and other predators, while in the ocean phase of life a shad is preyed upon by sharks, tuna, sea lions, and others.

The American shad is very temperature sensitive and any changes in the temperature of its habitat may result in negative impacts. Reservoirs often act as ideal rearing habitat for juveniles; however, fish ladders, and dam bypass systems are necessary to assist in migration past dams. Water irrigation projects may also negatively impact shad populations.

ECONOMIC VALUE: Sport fisheries for shad have been building for years in the Pacific Northwest. Shad are used as bait for other fisheries and it is considered a good fighting sportfish that is rich in flavor and is known for its excellent roe. Commercial fisheries have existed in the Columbia River since the 1930's. Due to poor market demand and incidental catches of protected salmon runs, significant commercial fisheries do not exist in the Pacific Northwest.

EULACHON (SMELT)



Eulachon (*Thaleichthys pacificus*)

DID YOU KNOW: When dried and fitted with a wick a eulachon can be burned like a candle.

SCIENTIFIC NAME: *Thaleichthys pacificus*, from Greek *thaleia* meaning rich, *ichthys* meaning fish, and *pacificus* meaning of the pacific.

COMMON NAMES: Smelt, candlefish, and oilfish.

DESCRIPTION: The eulachon is bluish on its upper half with silvery white sides and belly. The body is long and thin with a large mouth and skinny head. The average adult length is about 9 inches.

LIFECYCLE: The eulachon is an anadromous species, leaving the ocean to ascend rivers and streams to spawn. Adults enter fresh water and spawn from February to mid-May. Typically, males enter the rivers first, followed shortly by the females. Most spawning eulachon are three years old though they can live up to five years. Spawning is done in large masses and usually during the night. The females' eggs and the males' sperm are dispersed together into the water column and the fertilized eggs quickly attach to gravel, wood or the sandy bottom of rivers. Most adults die shortly after spawning. The 7,000 to 60,000 eggs per female hatch in five to six weeks. Because of its small size the larval eulachon are rapidly swept downstream and out into the estuaries and open ocean.

RANGE: Northern California to the eastern Bering Sea and the Pribilof Islands.

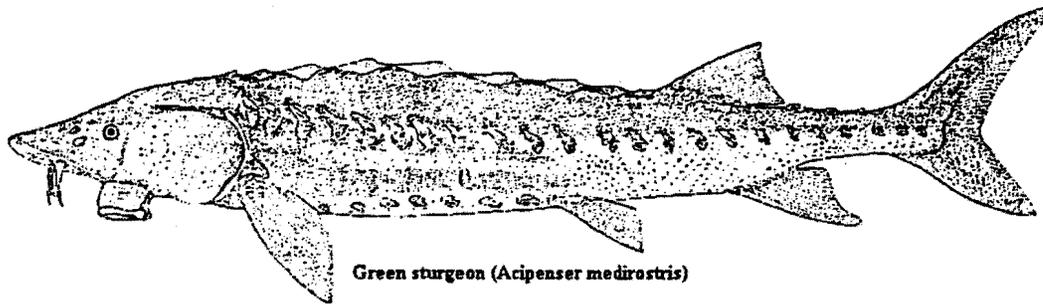
HABITAT AND ECOLOGY: All life stages of the eulachon feed primarily on plankton. The eulachon play an important role as prey or food for other animals. It is heavily preyed upon during spawning migrations, or while schooled up, by spiny dogfish, sturgeon, Pacific halibut, whales, sea lions, and birds. In the ocean, it is also preyed on by salmon and other large predatory fishes.

Young larval eulachon in estuaries and near shore ocean areas are sensitive to marine pollution and toxic runoff from agriculture and urbanization. Droughts and industrial pollution have been thought to heavily impact the species' ability to spawn. If conditions are not right, the eulachon will not return to spawn, and will instead stay in the ocean to return in another year when more desirable or favorable spawning conditions exist.

ECONOMIC VALUE: A commercial fishery in the Pacific Northwest has existed for eulachon as far back as the 1800's. Commercial landings of the eulachon have been fairly stable for many years. The eulachon is a very popular food fish and supports commercial, recreational, and tribal fisheries throughout the Pacific

Northwest. Native Americans have traditionally used the eulachon for food and for its very high oil content. Once extracted, the valuable oil was used for seasoning, preserving food, and for trading.

● GREEN STURGEON



Green sturgeon (*Acipenser medirostris*)

DID YOU KNOW? Green sturgeon are highly migratory in the ocean. Fish tagged in the Sacramento/San Joaquin estuary have been found in the Columbia River and Grays Harbor, Washington one year later.

SCIENTIFIC NAME: *Acipenser medirostris*, *acipenser* is an old world name for sturgeon and *medirostris* meaning moderate snout.

COMMON NAMES: Sakhalin sturgeon or sterlyad sturgeon.

DESCRIPTION: The green sturgeon is a primitive, bottom dwelling fish. It is characterized by its large size long round body. There are four barbels located in front of its large toothless mouth located on the bottom (ventral) side of the head. The sturgeon has no scales, instead it has "scutes" (or plates) located along their bodies. Scutes are actually large modified scales, that serve as a type of armor or protection. Green sturgeon have 9-11 scutes on their back (dorsal) located in front of a single dorsal fin, 1-2 scutes trailing the dorsal fin, 23-30 scutes along the side, and 7-10 scutes on the ventral side. The dorsal body color is a dark olive-green, with the ventral surface a lighter whitish green, with the scutes having a lighter coloration than the body. Green sturgeon can reach 7 feet in length and weigh up to 350 pounds.

LIFECYCLE: Very little is known about the green sturgeon's life history. The green sturgeon is an anadromous fish that spends most of its life in salt water and returns to spawn in fresh water. It is a slow growing and late maturing fish that apparently spawns every 4 to 11 years during the spring and summer months. The green sturgeon spends limited time in fresh water; only while young and spawning. Adult fish and older juveniles are commonly found in estuaries and marine environments.

RANGE: In North America, green sturgeon are found from Ensenada, Mexico, to Southeast Alaska. Green sturgeon are not abundant in any estuaries along the Pacific coast, although they are caught incidentally in the estuaries by the white sturgeon fishery.

HABITAT AND ECOLOGY: Green sturgeon rely on streams, rivers, and estuarine habitat as well as marine waters during their lifecycle. Like the white sturgeon, greens prefer to spawn in lower reaches of large rivers with swift currents and large cobble; no nest is built, adults broadcast spawn into the water column. The fertilized eggs sink and attach to the bottom to hatch. Research indicates that water flow is one of the key determinants of larval survival. As a result, water diversions for municipal and industrial uses, irrigation projects, and power generation projects that reduce the amount of water in the rivers can negatively impact green sturgeon. Accumulation of PCBs and other contaminants can also reduce sturgeon survival.

Feeding on algae and small invertebrates while young, green sturgeon migrate downstream before they are two years old. Juveniles remain in the estuaries for a short time and migrate to the ocean as they grow larger. Adult green sturgeon feed on benthic invertebrates and small fish. The green sturgeon can become highly migratory later in life. They have been documented as traveling over 600 miles between freshwater and estuary environments.

ECONOMIC VALUE: The green sturgeon is commercially caught along with the white sturgeon in the Columbia River, Grays Harbor, and Willapa Bay. The green sturgeon is not as valuable as the white sturgeon because its flesh is considered inferior to that of the white sturgeon.

PACIFIC LAMPREY

DID YOU KNOW: The Pacific Lamprey has no true fins, jaws, or bones.

SCIENTIFIC NAME: *Lampetra tridentatus*, from the Latin *lambere*, to suck, *petra* meaning stone, and *tridentatus* meaning three-toothed.

COMMON NAMES: Pacific sea-lamprey, three toothed lamprey, tridentate lamprey, and sea lamprey.

DESCRIPTION: The lamprey has a round, elongate, flexible cartilaginous body, and skin with no scales. Lamprey are very smooth and slimy to the touch. Its mouth is down-turned and adapted for clinging and sucking. Pacific lamprey are a dark bluish gray or dark brown in color and can reach 30 inches in length and weigh over a pound.

LIFE CYCLE: The Pacific lamprey is anadromous. Like salmon they are born in freshwater streams, migrate out to the ocean, and return to fresh water as mature adults to spawn. Also like the salmon, lamprey do not feed during their spawning migration. Mating pairs of lamprey construct a nest by digging together using rapid vibrations of their tails and by moving stones using their suction mouths.

The lamprey enter streams from July to October; spawning takes place the following spring when water temperatures are between 50 and 60 degrees Fahrenheit. They ascend rivers by swimming upstream briefly, then sucking to rocks and resting. Spawning takes place in low gradient sections of water, with gravel and sandy bottoms. Adults die within four days of spawning, after depositing about 10,000 to 100,000 extremely small eggs in their nest. The young hatch in 2-3 weeks and swim to backwater or eddy areas of low stream velocity where sediments are soft and rich in dead plant materials. They quickly burrow into the muddy bottom where they filter the mud and water, eating microscopic plants (mostly diatoms) and animals. The juvenile lamprey will stay burrowed in the mud for 4 to 6 years, moving only rarely to new areas. After a two month metamorphosis, triggered by unknown factors, they emerge as adults averaging 4.5 inches long. Then during high water periods, in late winter or early spring the new adults migrate to the ocean. During its ocean phase of life the Pacific lamprey are scavengers, parasites, or predators on larger prey such as salmon and marine mammals. After 2 to 3 years in the ocean they will return to freshwater to spawn.

RANGE: Baja California, to the Bering Sea in Alaska and Asia.

HABITAT AND ECOLOGY: While in their 4-6 year larval stage lamprey occupy a special niche in the stream system, filtering microscopic plants and animals from the bottom sediments. They fall prey to a wide variety of species including trout, crayfish, and birds.

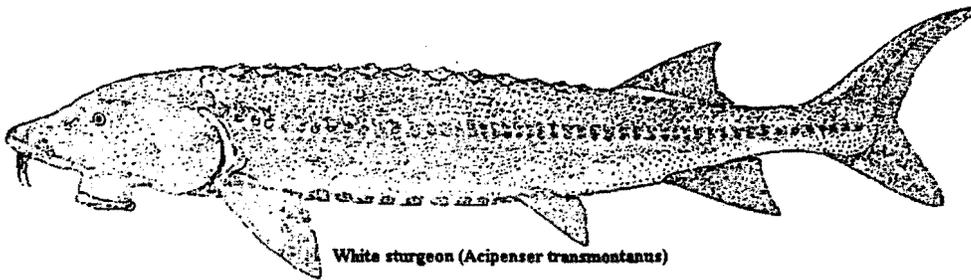
Lamprey have similar freshwater habitat requirements as do some of the Pacific salmon, therefore they have encountered similar habitat problems. Though absolute historical population sizes of the lamprey are not known, it is clear that the fish, once a significant tribal subsistence food, have shown severe decline.

Historical splash damming has scoured many of the stream bottoms down to bedrock, removing necessary habitat. Dams can hinder adult and juvenile passage or completely cut off prime spawning habitat. Inappropriate logging and grazing practices can alter stream flows and degrade habitat severely.

The first 4 to 6 years of the Pacific lampreys life are critical times. Animals that filter water and mud for food are very susceptible to pollutants in the water column and sediments. Lamprey may be impacted by pollutants from urban and agricultural runoff that can concentrate in the sediments. Because this species depends on muddy bottoms, backwater areas, and low gradient areas during its juvenile life stage, it is susceptible to loss of wetlands, side channels, back eddies, and beaver ponds resulting from agricultural, forestry or urban development practices or channelization for flood control. High stream temperatures and lack of stream cover can also reduce the lampreys' food supply.

ECONOMIC VALUE: The Pacific lamprey has little or no economic value in the Pacific Northwest. Before its decline the lamprey was a very important fish for many of the Tribal people of the Pacific coast and interior Columbia River basin. Tribal people harvested these fish for subsistence, ceremonial, and medicinal purposes.

● WHITE STURGEON



White sturgeon (*Acipenser transmontanus*)

DID YOU KNOW? White sturgeon are the largest freshwater fish in North America and can weigh over 1,500 pounds, be 20 feet in length, and live for over 100 years.

SCIENTIFIC NAME: *Acipenser transmontanus*. *acipenser* is an old world name meaning sturgeon and *transmontanus* meaning beyond the mountains.

COMMON NAMES: Pacific sturgeon, Oregon sturgeon, Columbia sturgeon, and Sacramento sturgeon.

DESCRIPTION: Like the green sturgeon the white sturgeon is a primitive, bottom dwelling fish. It is characterized by its large body size, large head and mouth, and long cylindrical body. It has four barbels located in front of its large, wide and toothless mouth, located on the bottom (ventral) side of its head. It has no scales, but "scutes" along its body for protection. Scutes are actually large modified scales, that serve as a type of armor or protection. White sturgeon have 11-14 scutes in front of their single dorsal fin, no scutes behind the dorsal, 38-48 scutes on the side, and 9-12 bottom (ventral) scutes. Dorsal color is dark to light gray, pale olive, or gray-brown. The white sturgeon's ventral or bottom surface is white. The scutes are lighter than the body in color, and the fins are dusky to opaque gray.

LIFECYCLE: The white sturgeon is a slow growing, late maturing anadromous fish. White sturgeon spawn in large rivers in the spring and summer months and remain in fresh water while young. Older juveniles and adults are commonly found in rivers, estuaries, and marine environments.

Anadromous white sturgeon most commonly move into large rivers in the early spring, and spawn May through June. Spawning usually takes place in swift current with a rocky bottom, near rapids. White sturgeon can spawn multiple times during their life, and apparently spawn every 4-11 years as they grow and mature. Females can produce from 100,000 to several million eggs each. Older white sturgeon produce more eggs and wait longer times between spawns. Adults apparently broadcast spawn in the water column and the fertilized eggs sink and attach to the bottom to hatch. Research shows that eggs can hatch in 4 days to 2 weeks, depending on water temperature, and it has been estimated that white sturgeon reach maturity in 5-11 years.

RANGE: In North America, white sturgeon are found from Ensenada, Mexico to Cook Inlet, Alaska. Found in most estuaries along the Pacific coast, white sturgeon prefer estuaries of large rivers. However, it is rare to find white sturgeon in Puget Sound or Hood Canal, Washington.

HABITAT AND ECOLOGY: White sturgeon rely on streams, rivers, and estuarine habitat as well as marine waters during their lifecycle. White sturgeon prefer to spawn in rivers with swift currents and large cobble; no nest is built. Research indicates that water flow is one of the key determinants of larval survival.

Young white sturgeon primarily feed on algae and aquatic insects while remaining in rivers and estuarine environments. White sturgeon primarily feed on fish, shellfish, crayfish, and on various aquatic invertebrates, clams, amphipods, and shrimp.

The building of dams has negatively impacted white sturgeon by creating landlocked populations and destroying spawning grounds by altering water flow. White sturgeon do not normally use fish ladders, so bypass mitigation measures tend to be unsuccessful.

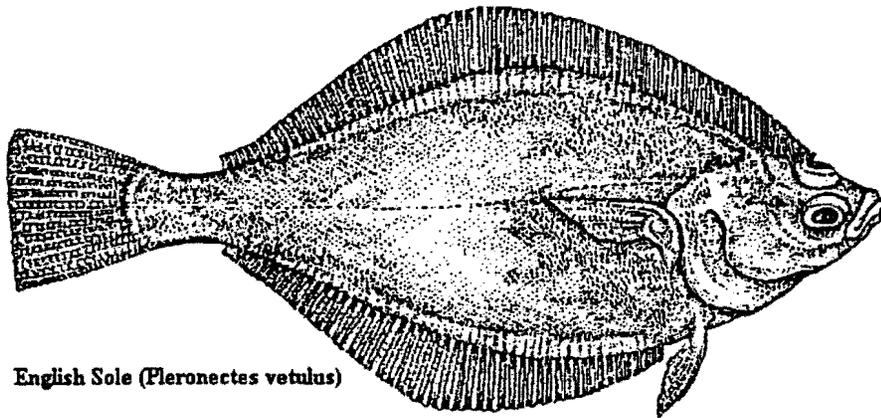
Because of its long life span white sturgeon tend to concentrate pollutants in their flesh. Bioaccumulation of PCBs and other contaminants inhibit sturgeon growth and decrease egg and larval survival. As a result, industrial pollutants as well as chemicals washing off farm, forest, urban, and residential lands all negatively impact white sturgeon.

ECONOMIC VALUE: A significant economic and cultural resource throughout the Northwest, white sturgeon recently became a popular target fishery with major commercial landings in the Columbia River. In fact, Columbia River sturgeon production, with its valuable roe for caviar, is second only to the former Soviet Union's production. The Columbia River is also the site of an intense sport fishery, as is the San Joaquin Delta in California and the Willapa Bay in Washington. The white sturgeon is also an important fish for Native American fishermen on the Columbia and Klamath rivers.

SALTWATER SPECIES

The species identified here depend on estuaries or shallow near shore marine environments for part of their life cycle. Their entire life is spent in saltwater environments.

ENGLISH SOLE



English Sole (*Pleuronectes vetulus*)

DID YOU KNOW? English sole rely on tidal currents to move into and out of the estuaries.

SCIENTIFIC NAME: *Pleuronectes* (or *Parophrys*) *vetulus*, from the Greek *para* or near, *ophrys* or eyebrow, and *vetulus* meaning old man.

COMMON NAMES: California sole, lemon sole, pointed nose sole, and sharp nose sole.

DESCRIPTION: The English sole has a compressed right-eyed body with a pointed snout. The eye is set high and is visible from the blind side. Most coloration is on the right side of its body. The side with the eye is brown and other side is white to pale yellow, commonly tinged with reddish brown coloration. English sole can grow up to 22.5 inches in length.

LIFECYCLE: English sole generally spawn during January through April at depths of 50 - 70 M over soft mud bottoms. Females usually produce 150,000 to over 1 million pelagic or free-floating eggs. The fertilized eggs commonly hatch in about 1 week and the young English sole usually mature in 2 to 4 years. The young depend heavily on inter-tidal areas, estuaries, and shallow near-shore waters for food and shelter. Adults are found in near-shore coastal waters and make only limited migrations.

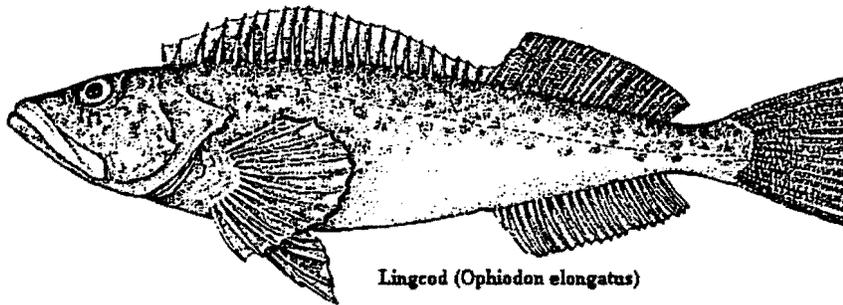
RANGE: English sole is found from Mexico to Alaska. The most abundant flatfish in Puget Sound, Washington, the English sole is an important flatfish in many shallow-water and estuarine environments.

HABITAT AND ECOLOGY: The English sole is very susceptible to changes in its environment. Relying heavily on estuaries for rearing, the English sole is impacted by pollution and habitat alteration. Often the dumping grounds for industrial and municipal wastes, bay waters and sediments also collect contaminants running off our streets and farms. In Puget Sound, for example, the many toxins English sole is exposed to accumulate in its tissue, resulting in high levels of contaminants which can cause disease, tumors, and reduced reproductive success.

The English sole is a carnivorous feeder that generally feeds on amphipods, molluscs, crustaceans and polychaetes. Piscivorous birds, such as the blue heron, are among the English sole's main predators. Others include larger fishes, marine mammals, and sharks.

ECONOMIC VALUE: A moderately important commercial fish, the English sole is caught primarily by trawls and marketed as filet of sole. It is ranked second in terms of pounds of flatfish landed on the Pacific Coast; the Dover sole ranks first.

LINGCOD



Lingcod (*Ophiodon elongatus*)

DID YOU KNOW? Lingcod populations are easily impacted by changes in their environment because they are slow growing and non-migratory.

SCIENTIFIC NAME: *Ophiodon elongatus*, from the Greek *ophis* or snake, *odons* meaning tooth, and Latin *elongatus* or elongate.

COMMON NAMES: Cultus cod, blue cod, bluefish, green cod, buffalo cod, and white cod.

DESCRIPTION: The lingcod has a large head, large mouth, and large teeth. Its long, elongate body tends to grow towards the tail. It has one long dorsal fin with the spinous and soft-rayed parts separated by a notch. Its body coloration tends to be dark gray, brown or a greenish color on the back with varying degrees of mottling or spotting present along the upper back. Lingcod can reach up to 5 feet in length.

LIFECYCLE: Lingcod spawn from November through April, usually within the inter-tidal zone in rocks or crevices. Females generally produce 60,000 to 500,000 eggs, depending on individual body size. The fertilized eggs attach to the rocky substrate, usually in large masses, up to 30 pounds of eggs in one mass. Males can spawn with more than one female in the same egg mass. The male guards the nest and apparently fans or moves water over the eggs with his tail. The eggs commonly hatch in six weeks, and sexual maturity is commonly reached in 2-3 years. Lingcod begin life in near-surface marine waters and estuarine areas. As juveniles lingcod primarily use estuaries, while adults are usually found in marine waters of 100-150 M deep.

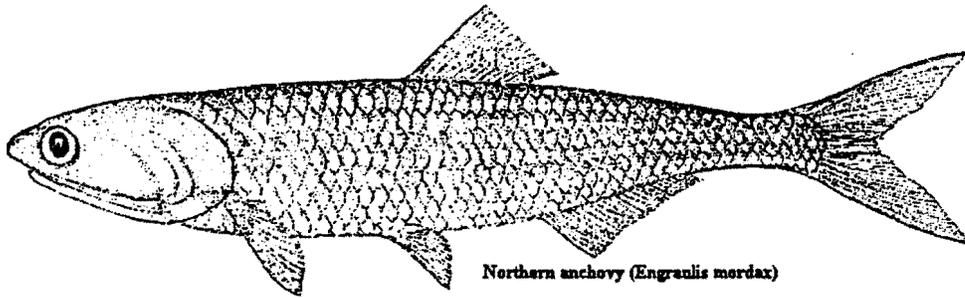
RANGE: Along the Pacific coast from Baja California to the Shumigan Islands in the Gulf of Alaska; although most abundant from Pt. Conception, California to Cape Spencer, Alaska.

HABITAT AND ECOLOGY: Lingcod lay eggs requiring well-oxygenated water in rocky, marine sub-tidal areas in crevices and overhangs. Larvae are found in the near-surface marine waters and estuarine areas. In this life-stage, lingcod feed primarily on copepods, eggs, and other crustaceans. As it matures, lingcod are commonly found in shallow, inter-tidal areas of bays near algae and seagrass beds. Mature lingcod feed primarily on other fish and smaller lingcod.

Because of its tendency to live around rocky coastal areas with good water movement and plentiful food, the lingcod is susceptible to petrochemical spills and can accumulate concentrations of heavy metals. Human impacts in estuaries, such as dredging shoreline for development, alteration and filling of wetlands, and runoff of nutrients from residential and agricultural areas, also pose a threat to the lingcod.

ECONOMIC VALUE: The lingcod is an important commercial species in Washington, Oregon, California and Alaska. In Puget Sound, lingcod is the eighth most important commercial species. In addition to its commercial value, lingcod is a highly valued sport fish because of its large size and excellent taste.

NORTHERN ANCHOVY



Northern anchovy (*Engraulis mordax*)

DID YOU KNOW? The breeding success of California brown pelicans and elegant terns is strongly correlated with anchovy abundance.

SCIENTIFIC NAME: *Engraulis mordax*, from the Greek *engraulis* (European anchovy) and Latin *mordax* (biting).

COMMON NAMES: California anchovy, pinhead, anchoa, anchoveta, and bay anchova.

DESCRIPTION: Small compressed fish with long snouts that overhang a large mouth. Bluish-green above and silvery below; adults have a faint silver stripe on the side. Up to 9 inches in length.

LIFECYCLE: The northern anchovy spawns throughout the year depending on the region; usually within 100 km of the coast near the surface. Anchovies are abundant in bays and estuaries in the spring, summer and fall. While anchovies move along the shore and offshore, they do not migrate extensively.

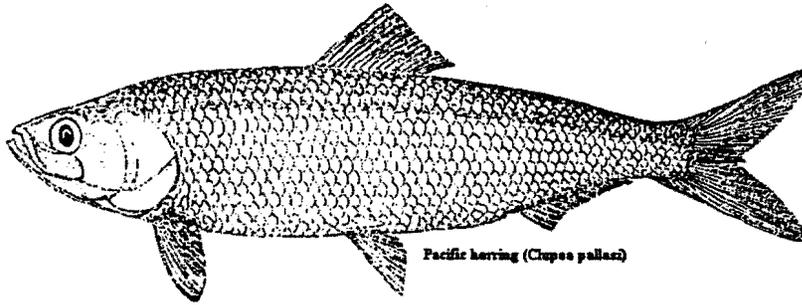
RANGE: In North America, the northern anchovy occurs from the Gulf of California, Mexico to Queen Charlotte Islands in Canada.

HABITAT AND ECOLOGY: Estuaries and bays provide important habitat for the northern anchovy, which spends significant time in these habitats. Primarily feeding on planktonic crustaceans and fish larvae, the northern anchovy in turn is an important food source for many species of fish, including California halibut, rock fish, yellow tail tuna, shark, chinook, and coho salmon. It is also important prey for marine mammals and birds. For example, the breeding success of California brown pelicans and elegant terns is strongly correlated with anchovy abundance.

Threats to wetlands such as poor forestry and agricultural management practices, urban development and channel diversion structures can negatively impact anchovies because wetlands help buffer estuaries from pollution and siltation. In addition, wetlands provide rich feeding grounds and protection from predators.

ECONOMIC VALUE: Following the collapse of the Pacific sardine fishery in the 1940's, fishermen initiated a commercial fishery for the northern anchovy that has developed into a multi-million dollar fishery. It is fished commercially from San Francisco, California to British Columbia. The northern anchovy is also the most important bait fish for marine recreational fisheries off of southern California, and is used as bait for sturgeon, salmon, and other fish in Washington and Oregon.

PACIFIC HERRING



DID YOU KNOW? Over 90% of the Pacific herring caught is for the roe fishery.

SCIENTIFIC NAME: *Clupea pallasii*, from the Latin *clupea* or herring, Low Latin *harengus* meaning army or multitude, and Perus Simon Pallas, a great Russian naturalist and explorer.

COMMON NAMES: California herring, eastern herring, and kara herring.

DESCRIPTION: Pacific herring is a compressed fish, silvery from below and bluish green to olive above; there are no black spots on sides or fins. Up to 18 inches in length and weigh up to 550 grams.

RECYCLE: Males and females school together to spawn at various times of the year, depending largely on the geographical location. Spawning commonly takes place in shallow near-shore environments close to vegetation. Males and females school together and spawn simultaneously. The fertilized eggs attach to vegetation, eelgrass, algae, grass, and brush in the inter-tidal and sub-tidal areas. Each female can produce 4,000 to 130,000 eggs that commonly hatch in 10 days to 2 weeks, and usually reach maturity in 2 to 4 years. Pacific herring commonly move onshore and offshore in schools to feed and spawn.

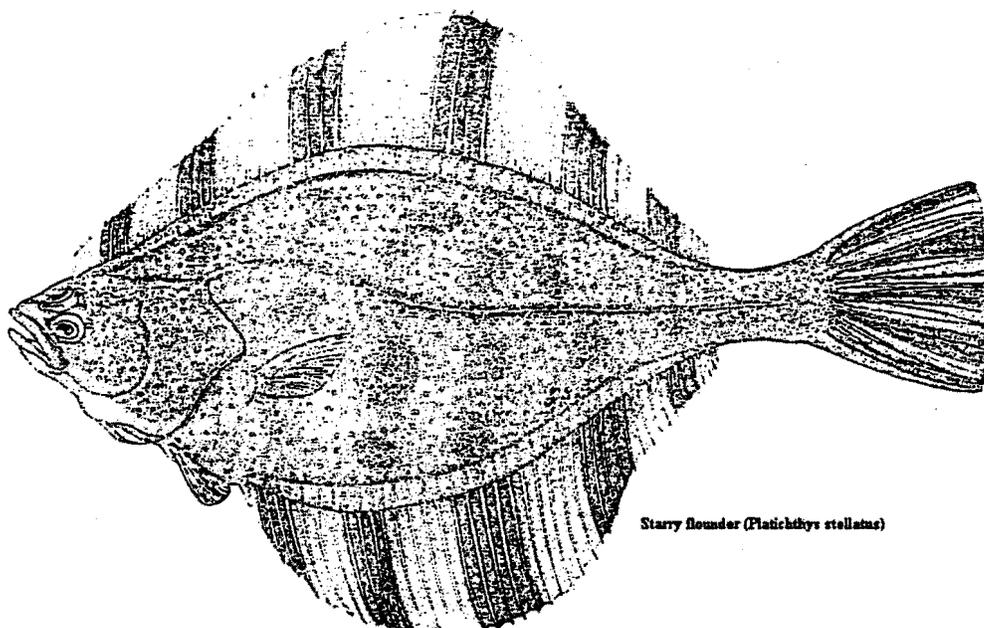
RANGE: In the North Pacific, Pacific herring can be found from Baja California to the Siberian Arctic.

HABITAT AND ECOLOGY: Pacific herring are plankton feeders, primarily feeding on copepods, amphipods, fish larvae, and molluscs. One of the most abundant species in the food chain, Pacific herring often serve as food for many other marine species, including salmon, marine mammals, and seabirds.

Because Pacific herring spawn in protected coastal habitats and estuaries, their eggs are especially susceptible to human actions such as shoreline development, residential drainage, and the filling of marine wetlands. Researchers believe that egg mortality is the major determinant of population size.

ECONOMIC VALUE: Pacific herring have been harvested for sale, fresh or salted, for a number of years as well as used for fish meal. Taking advantage of the Pacific herring's near-shore spawning cycle, fishermen have built a multi-million dollar fishing industry. Most U.S. harvests come from Washington, California, and Alaska. In addition, Pacific herring is an important bait fish.

● STARRY FLOUNDER



Starry flounder (*Platichthys stellatus*)

DID YOU KNOW? Along the coasts of Washington, Oregon and California, 50% of all starry flounder are right-eyed and 50% are left-eyed. However, along the Alaskan coast, 70% are right-eyed. In Japan, 100% are left-eyed.

SCIENTIFIC NAME: *Platichthys stellatus*, from the Greek words *platy* or flat, *ichthys* meaning fish, and from the Latin *stellatus* or starry.

COMMON NAMES: California flounder, grindstone flounder, roughjacket, sole, and diamond flounder.

DESCRIPTION: Starry flounder may be either right- or left-eyed with oblique dark bars alternating with yellowish-orange bars on dorsal, anal, and caudal fins. The eyed side is mostly brown to black and the blind side is white. Starry flounder can grow up to 3 feet in length and 20 pounds in weight.

LIFECYCLE: Starry flounders spawn near river mouths and sloughs; juveniles are found exclusively in estuaries. This species often finds its way up river, but it is estuarine dependent. Adults can be found in marine waters up to 375 M in depth.

RANGE: The starry flounder is found throughout the eastern Pacific ocean -- from the Santa Ynez River in California, to the Bering and Chukchi Seas in Alaska, to Bathurst Inlet in Arctic Canada.

HABITAT AND ECOLOGY: Starry flounder feed primarily on zooplankton, copepods, crustaceans, and amphipods. To reduce predation, the starry flounder will change its coloration to blend in with the bottom. Nonetheless, it falls prey to birds and marine mammals.

Because the starry flounder is dependent on estuaries, it is negatively affected by pollution and the destruction of wetland and estuarine habitat. Starry flounder are impacted by wetland draining and filling for shoreline developments, by polluted run-off from urban and agricultural lands, and by municipal and industrial waste

discharges. Additionally, the starry flounder has a demonstrated tendency to accumulate many contaminants it is exposed to in its environment, which can impair reproductive success.

ECONOMIC VALUE: Most of the commercial catch of starry flounder comes from the Puget Sound in Washington, as well as the coastal areas of Washington and Oregon. This species is also an important sport fish caught primarily in estuaries and near-shore shallow waters. It is the most abundant flatfish in many estuaries north of San Francisco Bay.

SURFPERCHES

DID YOU KNOW? That surfperches give birth to fully developed young.

FAMILY NAME: Embiotocidae.

COMMON NAMES: Calico surfperch, Redtail surfperch, Kelp perch, Shiner perch, Striped seaperch, Walleye surfperch, Silver surfperch, White seaperch, and Pile perch.

DESCRIPTION: There are twenty-three known species of surfperch, seaperch, and perch. All perches have short deep bodies that are very thin, with large eyes. All have a single dorsal fin, and deeply forked tail fins. Most perches are brightly colored, and usually have barred or striped coloration patterns. The size varies from 4 to 18 inches, and 1-5 pounds.

TYPICAL LIFECYCLE: The timing of mating and birthing for perches varies geographically by region. Typically, its intricate courtship and mating or breeding season begins in the spring. The female stores the males sperm for five to six months until her eggs are fertilized latter in the year, usually during November and December. She carries the developing young for about one year, and generally gives birth in the summer to 5 to 40 live young. The young are fully developed miniature replicas of their parents, and the female perch are usually larger than the males throughout their lives. Most females and males mature during their first year of life, and have a relatively short life span; it is uncommon to see perch over 6 years of age.

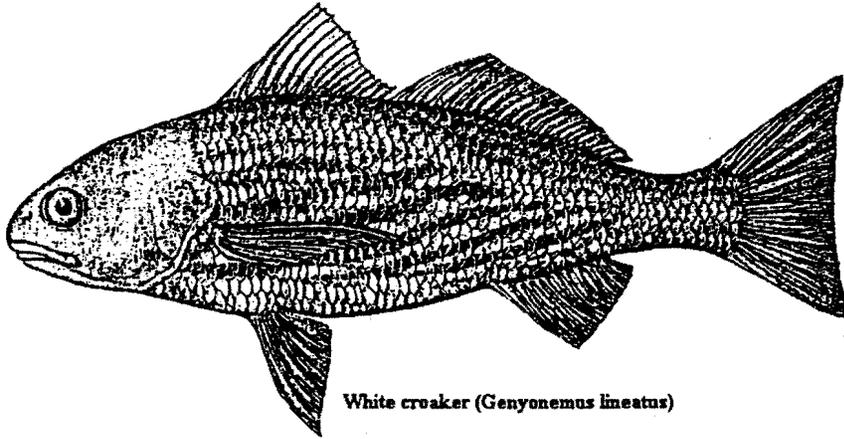
RANGE: From Baja California to southern Alaska depending on the species present. In North America, there are a number of surfperch species however, redbtail surfperch, shiner surfperch, and striped surfperch are the most common.

HABITAT AND ECOLOGY: Perches tend to be an aggressive fish that live primarily in and around estuaries, bays, and near-shore shallow areas, traveling in loose schools, moving seasonally inshore and offshore. Perch commonly live adjacent to rocky bottom coasts that provide important habitat structures. Perches rely on near-shore marine, bay and estuarine habitats; utilizing aquatic vegetation, docks, and pilings to rear their young. The feeding behavior of perches depends on food availability. Perches commonly feed in the morning hours on small crustaceans, algae, worms, mussels, and on the eggs of other fishes. The perch themselves are important food for sturgeon, salmon, barred sand bass, great blue herons, and harbor seals.

Research suggests that the quality of estuarine and near-shore marine areas limits the abundance of surfperches. Poor timber and agricultural management practices which cause erosion and run-off of agricultural toxins, further urban development, and wetlands loss can all negatively impact this species.

ECONOMIC VALUE: Several species are fished both commercially and recreationally, with the redbtail, striped, shiner, and walleye surfperch the most economically important. Along the Pacific Coast, 564,000 surfperches were caught by sport anglers in 1994. U.S. commercial landings of ocean perch have averaged 40.8 million pounds from 1989-93.

WHITE CROAKER



White croaker (*Genyonemus lineatus*)

DID YOU KNOW: The white croaker use to be so easily caught in some areas it was considered a nuisance.

SCIENTIFIC NAME: *Genyonemus lineatus*, from Greek *genys* or lower jaw, *nema* meaning barbel, and Latin *lineatus* or striped.

COMMON NAMES: Kingfish, king croaker, tommy, and weakfish.

DESCRIPTION: The croaker is a deep-bodied silvery fish with a deep body, a high back, two dorsal fins and a round nose. It has small barbels on its lower jaw. It can reach 12 to 15 years in age, grow over 15 inches in length and weigh well over a pound.

LIFE CYCLE: Adults spawn in near-shore shallow waters, from November until May. Fertilized eggs (800 to 37,000 per female) drift into shallow areas of bays and estuaries. After about one week the eggs hatch and the young migrate to the bottom. Juvenile fish progressively move to deeper and deeper water as they mature. Most juveniles fish reach maturity in one year.

RANGE: Baja California to Vancouver Island, BC. Most abundant south of San Francisco Bay.

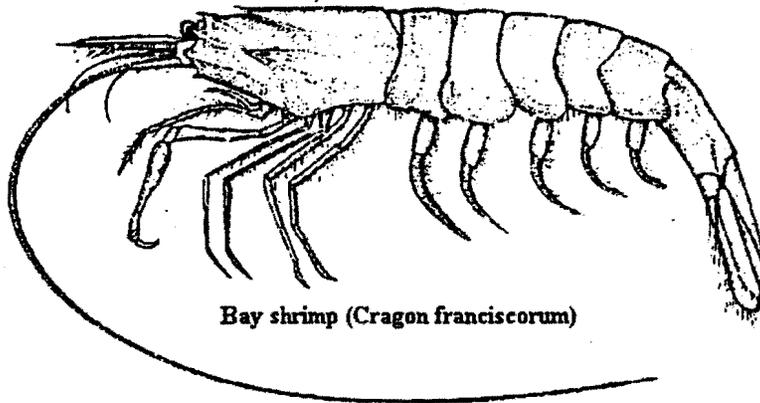
HABITAT AND ECOLOGY: The white croaker is an abundant near shore species that prefers the sandy bottoms of bays and estuaries and the area just outside the surf zone. Croakers are an omnivorous species; they will eat just about anything they can and prefer to feed at night. They are preyed on by sea lions, dolphin, sea bass, and tuna. The croaker spends most of its time in waters less than 30 meters deep, schooling and feeding near the sandy bottom. Because it prefers waters less than 30 meters deep and will eat just about anything, it is very susceptible to human impacts. Polluted effluents from bays and estuaries, and pollution from sewage outlets tend to concentrate in near shore areas of the ocean. The croaker accumulates these contaminants in its tissues from the food it eats, and some fisheries have had to be temporarily closed due to health threats to humans.

ECONOMIC VALUE: About 947,000 pounds of white croaker were caught by sport anglers in California in 1994. The croaker is also sold fresh-market, and as a bait fish. U.S. commercial landings of croaker have averaged over 6.8 million pounds a year from 1989-93.

SHELLFISH SPECIES

The shellfish species identified here depend on estuaries or shallow near shore marine environments for part of their life cycle.

BAY SHRIMP



Bay shrimp (*Crangon franciscorum*)

DID YOU KNOW? The bay shrimp is the most common shrimp in most Pacific coast estuaries.

SCIENTIFIC NAME: *Crangon franciscorum*.

COMMON NAMES: Sand shrimp, grass shrimp, common shrimp, black shrimp, California shrimp, and black tailed shrimp.

DESCRIPTION: Stout, depressed body with a thin shell and smooth surface. Color tends to be a dark and light yellowish gray with salmon-colored eyes.

LIFECYCLE: The bay shrimp is sensitive to temperature and salinity changes during its lifecycle. During reproductive periods which vary greatly with geographical location, bay shrimp move toward more saline areas of the estuaries to spawn. In their early life-stages, juveniles utilize the upper parts of estuaries as nurseries, preferring the lower salinity there. As it grows and matures, the bay shrimp moves to more saline areas of the estuary and offshore. Water temperature is especially critical to the bay shrimp as a regulator of its life functions. Females usually produce 2,000 to 8,000 eggs, and store the male's sperm inside their bodies. Egg fertilization is done when the female extrudes eggs into her 'brood pouch'; she carries with her for approximately 8 to 12 weeks until they hatch. Maturity is commonly reached in 1 to 1.5 years.

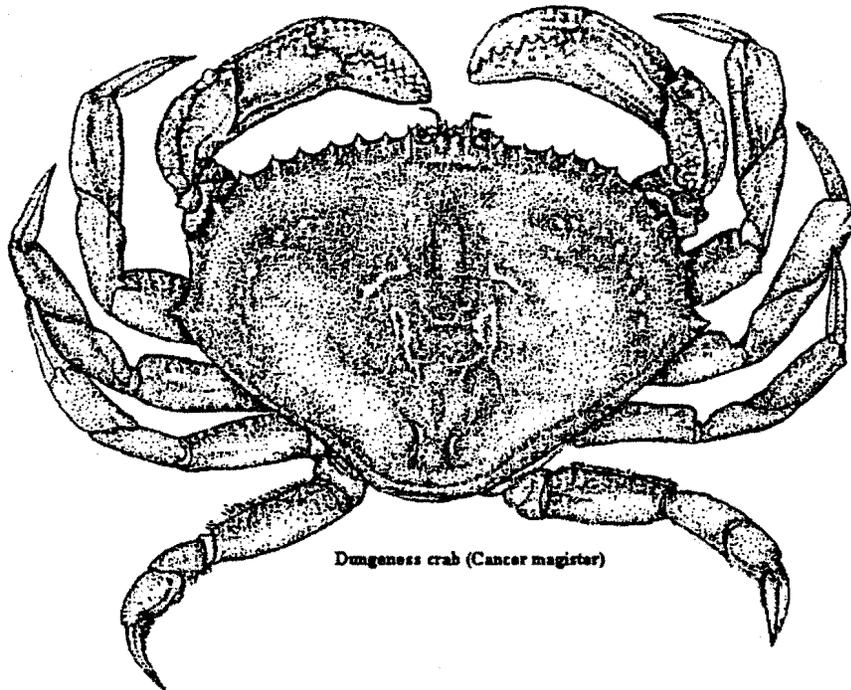
RANGE: Common in most Pacific coast estuaries from San Francisco to Puget Sound, although the bay shrimp is also found south of San Francisco to San Diego. The bay shrimp is abundant in bays with mud and sandy bottoms and offshore in deeper waters.

HABITAT AND ECOLOGY: As the most dominant shrimp in Pacific coast estuaries, the bay shrimp is an important part of the food chain. It is the predominant food of many sport and recreational fish, including striped bass, sturgeon, Dungeness crab and Pacific tom cod. The bay shrimp itself commonly feeds on bottom dwelling animals (epibenthic fauna), amphipods and plant material. In search of food, bay shrimp agitate the bottom and cycle nutrients into coastal systems. It is a short lived species that is sensitive to pollution in estuaries. Males commonly only live until their first spawn, 1 to 1.5 years, while females can live until their second spawn, approximately 2 to 2.5 years.

Because of the bay shrimp's preference for different levels of salinity during its lifecycle, freshwater inflow into estuaries strongly influences distribution, survival, and abundance. Maintaining the flow of freshwater into estuaries is critical because of its impact on water temperature, salinity, and landward currents. Because estuaries play a critical role in the bay shrimp's life history, alteration of this habitat directly affects its populations.

ECONOMIC VALUE: Fished commercially since the 1800's, the bay shrimp is presently fished commercially only in San Francisco Bay with landings ranging from 2 - 25 tons per year. It is fished mainly for bait. Some is used for human consumption though shelling and marketing bay shrimp is not economically lucrative.

DUNGENESS CRAB



Dungeness crab (*Cancer magister*)

DO YOU KNOW? Male dungeness crab find females with the use of pheromones (chemical scents) and after mating the male may remain with the soft-shelled female for two days to insure her protection.

SCIENTIFIC NAME: *Cancer magister*, *cancer* is Latin for crab.

COMMON NAMES: Pacific edible crab, dungeness crab, market crab, commercial crab, and edible crab.

DESCRIPTION: Beige to light brown with blue trim; often light orange below. Short eyestalks with small orbits. Broadly oval carapace; uneven, but not highly sculptured.

LIFECYCLE: Mating occurs outside of estuaries in near-shore coastal locations. Eggs hatch in two to three months. Larvae are planktonic using tidal currents to self propel and "hitch-hike" on jellyfish in order to travel into estuaries. Juveniles settle in shallow coastal waters, tidal flats, and estuaries, living on beds of eelgrass and other aquatic vegetation. Growing through a series of molts to adulthood, the Dungeness crab is common in coastal waters offshore and in estuaries. Studies suggest that growth rates vary along the Pacific coast and that higher water temperatures in estuaries (> 6 degrees Celsius) and abundant food can accelerate growth.

HABITAT AND ECOLOGY: The Dungeness crab plays an important role in the food chain as predator and prey in estuarine and marine environments. Early in life, Dungeness crab fall prey to nemertean (marine worms) that feed on their eggs. Dungeness crab larvae are important food for Pacific herring, Pacific sardines, rockfish, and chinook salmon. Juvenile Dungeness crabs are eaten by starry flounder, English, and rock sole, lingcod, rockfish, sturgeon, sharks, and skates. As juveniles living in estuaries, Dungeness crab feed primarily on fish, shrimp, molluscs, and crustaceans. During this life-stage, estuaries are especially important; thus any

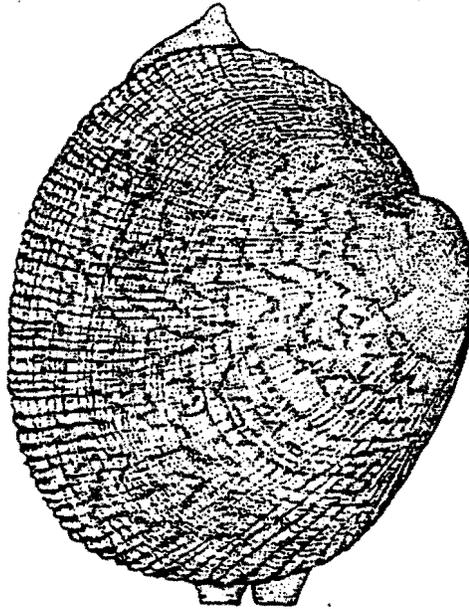
action, such as dredging or habitat modification projects, should be considered in light of their impacts on Dungeness crab. Adults feed on shrimp and bivalves and are eaten by humans, harbor seals, and sea lions.

Dungeness crab are intolerant of low dissolved oxygen conditions, and even low concentrations of ammonia are toxic. The insecticide sevin (carbaryl) which is sometimes used to control ghost shrimp in Pacific oyster beds is also very toxic to Dungeness crab. Dungeness crab larvae are highly sensitive to other insecticides and fungicides as well. They are also impacted by urban pollutants such as heavy metals, PCBs, and hydrocarbons. Concentrations of these contaminants presently exist in San Francisco Bay and sublethal impacts have been observed. The control of non-point source pollution -- pollution resulting from the runoff of pesticides and herbicides from our yards and farmland, as well as heavy metals and hydrocarbons from our streets -- is important to the health of Dungeness crab populations.

RANGE: Found in coastal waters from Santa Barbara, California, to the Pribilof Islands, Alaska. Dungeness crab probably inhabit all estuaries from Morro Bay, California to Puget Sound, Washington. Two important juvenile crab production estuaries are Willapa Bay and Grays Harbor in Washington state.

ECONOMIC VALUE: An important commercial shellfish harvested along the coast from California to Alaska, Dungeness crab are usually caught in near-shore marine waters under 120 feet deep with baited crab pots. An average of 17,000 tons, worth tens of millions of dollars, are caught annually, usually in the first two months of an average nine month season. Recreationally, Dungeness crab are also important, and are caught intertidally by hand or subtidally by crabpots, nets, or even hook-and-line.

PACIFIC LITTLENECK CLAM



Pacific littleneck clam (*Protothaca staminea*)

DID YOU KNOW? A small juvenile clam can use its foot to crawl to new areas.

SCIENTIFIC NAME: *Protothaca staminea*.

COMMON NAMES: Tomales Bay cockle, common littleneck, rock cockle, hardshell, rock clam, steamer and butter clams.

DESCRIPTION: Suboval shell with radiating ribs and concentric ridges. The color is highly variable. In the ocean and along the coast, the color is often whitish with patterns of brown lines along the sides. In bays and estuaries, the color is commonly gray or yellowish gray. Pacific littleneck clams are commonly found in the first 2 to 3 inches of substrate, and are found up to 2.5 inches in length.

LIFECYCLE: Spawning in the spring or summer depending on the region, pacific littleneck clam eggs and larvae are dispersed by the current throughout the water column. After developing a foot, larvae move to the bottom and search for a suitable surface to which they can attach. Young clams often attach in deeper water. As the clam grows, it moves toward shallower water. Adults are sedentary.

HABITAT AND ECOLOGY: Adult and juvenile Pacific littleneck clams are found in coarse, sandy-rock muds of estuaries and on the open coast where there is appropriate substrate, detritus (decaying plant material) and protection from predators. This species gathers food by filtering water for phytoplankton and diatoms. Rock crabs, fish, birds, sea otters, and others feed on clams depending on the region.

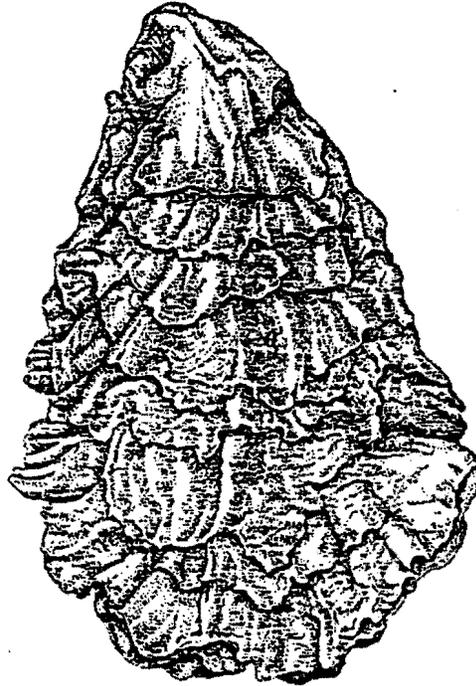
Because of their sedentary nature, clams are highly susceptible to human-induced changes in their environment. High coliform bacteria levels resulting from municipal sewage discharges have permanently closed some areas to harvest. High siltation caused by logging, upland development, dredging, and marina construction affect the abundance of Pacific littleneck clams. In addition, this species of clam is very sensitive to copper which is used

in antifouling boat paint. Coastal wetland destruction also adversely impacts this species since detritus, generated by the decay of wetland plants, is an important food source for the clam.

RANGE: The Pacific littleneck clam is abundant in Pacific coast estuaries from Baja California to the Aleutian Islands in Alaska. Significant spawning grounds include Coos Bay, Tillamook Bay, Yaquina Bay, and Puget Sound, Grays Harbor and Willapa Bay.

ECONOMIC VALUE: An important part of the heritage of many coastal communities and a key factor in rural economies, the Pacific littleneck clam is commercially harvested from Prince William Sound, Alaska, to Southern California. Pacific littleneck clams make up 8% of the entire clam harvest along the Pacific coast and is usually sold fresh in the shell, frozen or canned. Additionally, the Pacific littleneck clam is an important recreational species due to its good taste and accessible habitat.

PACIFIC OYSTER



Pacific oyster (*Crassostrea gigas*)

DID YOU KNOW? Pacific oysters were introduced from Japan. They develop first as males, and after a year begin to function as females.

SCIENTIFIC NAME: *Crassostrea gigas*.

COMMON NAMES: Japanese Oyster, Miyagi oyster, giant oyster, immigrant oyster, and giant Pacific oyster.

DESCRIPTION: Rough shell that is highly fluted and laminated. Shells are usually whitish with purple streaks and spots. Can reach 10 inches in length.

LIFECYCLE: The Pacific oyster is an exotic species, introduced into west coast estuaries from Japan. Because spawning depends on a rise in water temperatures above eighteen degrees Celsius, it only spawns erratically in west coast estuaries. As a result, cultured "spat" is used to seed oyster beds. When spawning does occur, it occurs primarily in July and August. Eggs and larvae are planktonic distributed throughout the water column in estuarine waters. Later stage larvae settle out of the water column and crawl on the bottom searching for suitable habitat before settling. Juveniles and adults are sedentary and are found in lower inter-tidal areas of estuaries. Oysters prefer firm bottoms, and usually attach to rocks, debris or other oyster shells. However, they can also be found on mud or mud-sand bottoms.

RANGE: In North America, the Pacific oyster is found from Southeast Alaska to Baja California. It is cultivated primarily on oyster farms in protected coastal estuaries; however, some wild beds exist in Washington and British Columbia.

HABITAT AND ECOLOGY: The Pacific oyster is a highly valuable estuarine species which is threatened by pollution in its environment because it concentrates contaminants. Presently, many estuarine areas are completely closed to oyster culture and harvest because of bacterial and chemical contamination associated with urban centers, marinas, and sewage outfalls. In fact, on any given day in the United States, one third of all shellfish beds are closed due to contamination. Oysters face many other threats as well. Antifouling paints containing copper can alter the growth of oysters as well as cause the shell to thicken and oxygen consumption to increase. The high sulfite content discharges by pulp mills in the Pacific Northwest are also known to reduce survival and growth of oysters. In addition, siltation and turbidity resulting from logging and onshore development can cause early larvae mortality. Dredging of estuaries has also severely restricted the areas available for successful production.

ECONOMIC VALUE: Introduced in the early 1900's from Japan, Pacific oysters quickly grabbed a foothold in North America's growing aquaculture industry. In fact, the Pacific oyster is Washington's most valuable shellfish resource. Important spawning beds are located in Puget Sound, Hood Canal, Grays Harbor, Tillamook Bay, Coos Bay and Morro Bay.

REFERENCES

For information regarding any of these documents, please contact the PSMFC's F.I.S.H. Habitat Education Project.

- U.S. Environmental Protection Agency. 1990. Beyond the Estuary: The Importance of Upstream Wetlands in Estuarine Processes. U.S. Environmental Protection Agency, Washington, D.C.
- Butler, T.H. 1980. Shrimps of the Pacific Coast of Canada. Department of Fisheries and Oceans, Ottawa, Canada.
- Chambers, J.R. 1992. Coastal Degradation and Fish Population Losses in Stemming the Tide of Coastal Fish Habitat Loss. National Coalition for Marine Conservation Inc., Savannah, Georgia.
- Crossman, E.J., and W.B. Scott. 1973. Freshwater Fishes of Canada. Fisheries Research Board of Canada, Ottawa.
- Downey, T. 1995. 1995 Annual Report. Eel Project. Confederated Tribes of the Siletz.
- Edwards, E. A., G. Gebhart, and O. E. Maughan. 1983. Habitat suitability information: Smallmouth bass. U.S. Dept. Int., Fish Wildl. Serv. FWS/OBS-82/10.36.
- Emmett, R.L., S.L. Stone, S.A. Hinton, and M.E. Monaco. 1991. Distribution and Abundance of Fishes and Invertebrates in West Coast Estuaries. Volume II: Species Life History Summaries. ELMR Rep. No. 8 NOAA/NOS Strategic Environmental Assessments Division, Rockville, MD.
- Eschmeyer, W.N., H. Hammann., and E.S. Herald. 1983. A Field Guide to Pacific Coast Fishes of North America. Houghton Mifflin Company, Boston, Mass.
- U.S. Department of Commerce. 1990. Estuaries of the United States. U.S. Department of Commerce, National Oceanic and Atmospheric Administration, National Ocean Service, Rockville, MD.
- Fitch, J.E. 1953. Common Marine Bivalves of California. State of California, Department of Fish and Game, Marine Fisheries Branch. Fish Bulletin No. 90.
- Hart, J.L. 1973. Pacific Fishes of Canada. Fisheries Research Board of Canada, Ottawa. Bulletin 180.
- Meehan, W.R. 1991. Influences of Forest and Rangeland Management on Salmonid Fishes and Their Habitats. U.S. Department of Agriculture, Forest Service. American Fisheries Society Special Publication 19. Bethesda, Maryland, USA.
- Lamb, A and P. Edgell. 1986. Coastal Fishes of the Pacific Northwest. Harbour Publishing. ISBN 0-920080-75-8.
- Oregon Department of Fish and Wildlife and Washington Department of Fish and Wildlife. 1994. Status Report. Columbia River Fish Runs and Fisheries, 1938-93.

Oregon Department of Fish and Wildlife. 1989. Oregon's Migratory Fish. Oregon Department of Fish and Wildlife, Portland, OR.

Simpson, J., and R. Wallace. 1978. Fishes of Idaho. A Northwest Naturalist Book. The University Press of Idaho. pp. 237. ISBN 0-89301-058-8

Sondenaa, A. Life History Overview of the Pacific Lamprey. Confederated Tribes of Siletz.

U.S. Fish and Wildlife Service. Life Histories and Environmental Requirements of Coastal Fishes and Invertebrates. Species Profiles, 1983 - 1989. U.S. Fish and Wildlife Service Biol. Rep. (11). U.S. Army Corps of Engineers, TR EL-82-4, Washington, D.C.

Washington State Department of Fish and Wildlife, Fisheries Fact Sheets for sockeye, chinook, and coho salmon, Olympia, WA.

Wydoski, R.S., and R.R. Whitney. 1979. Inland Fishes of Washington. University of Washington Press. Seattle and London. ISBN 0-295-95643-7.

ADDITIONAL INFORMATION:

For a more in-depth look at these fish and others, write for the 330 page book entitled: "Distribution and Abundance of Fishes and Invertebrates in West Coast Estuaries." Vol. II. Species Life History Summaries NOAA, Strategic Environmental Assessments Branch, 6001 Executive Blvd., Rm. 220, Rockville, MD 20852. (301) 443-8921.

Or contact: Environmental Protection Agency, Wetland's Protection Hotline: 1-800-832-7828.

You might also wish to contact your state's fishery and environmental protection departments, or the regional offices of the following federal agencies:

The National Marine Fisheries Service
National Sea Grant College Program

U.S. Fish and Wildlife Service
The Environmental Protection Agency

Funding for "Important Coastal Fish and Their Habitat Needs" comes in part from the National Fish and Wildlife Foundation and Federal Aid in Sport Fish Restoration Funds.

Wednesday, November 13, 1996 Item 7a

**San Onofre Nuclear Generating Station Amendment Application
and Condition Compliance Review (SONGS)**

Correspondence Package #2

Correspondence received after 3:00 p.m. October 7, 1996 until October 23, 1996

Letters from Scientists and Groups Regarding SCE's Proposal:

Proposed Amendments to the Request of SCE to Amend Permit No. 6-81-330
San Onofre Nuclear Generating Station, Presented by American Sportfishing
Association, United Anglers of Southern California to the California Coastal
Commission, October 8, 1996

Letter from Paul Dayton (Member of Independent Technical Review Panel) to members
of the Commission, October 8, 1996

Letter from Jerry C. Harmon, Chair - San Dieguito River Valley Regional Open Space
Park, San Diego to Commissioners and California Coastal Commission,
October 8, 1996

Letter from Nancy Weare, Chair - San Dieguito Lagoon Committee to Commission,
October 8, 1996

Letter from Wheeler J. North, Emeritus Professor of Environmental Science to
Chairman Louis Calcagno, cc: Executive Director Peter Douglas, October 8, 1996

Letter from Wheeler J. North, Emeritus Professor of Environmental Science to Robert
S. Grove, SCE Corp., October 8, 1996

Letter from William F. Wilson, President - Algalita Marine Research Foundation to
Commission Members and Staff, October 8, 1996

Letter from Robert H. Sulnick, Executive Director - American Oceans Campaign to
Chairperson Calcagno and California Coastal Commission, October 8, 1996

Testimony from Linda Sheehan, Center for Marine Conservation to California Coastal
Commission, October 8, 1996

Letter from Steve Horn, Deputy Executive Officer - Coastal Conservancy to
Chairperson Calcagno and California Coastal Commission, October 8, 1996

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Letter from Nino Mascolo, Manager, - Southern California Edison to Mr. Peter Douglas, Executive Director California Coastal Commission, cc: Jamee Patterson, Deputy Attorney General, Peter Kaufman, Deputy Attorney General, Susan Hansch, October 8, 1996

Letter from Craig Nusenow, Acting Secretary - Health Physics Society - San Diego Chapter to Chairperson Calcagno and Members of the Coastal Commission, October 9, 1996

Letter from Jim Morrissey, Member of the Assembly, sixty-ninth District to Chairperson Calcagno, October 10, 1996

Letter from Michael M. Hertel -Southern California Edison to Dr. John Skalski, University of Washington, Seattle WA, cc: Peter Douglas, Executive Director, Chairperson Calcagno, Members of the California Coastal Commission, October 21, 1996

Letter from Michael M. Hertel -Southern California Edison to Dr. Paul Dayton, Scripps Institute of Oceanography, La Jolla, CA, cc: Peter Douglas, Executive Director, Chairperson Calcagno, Members of the California Coastal Commission, October 21, 1996

Letter from Michael M. Hertel -Southern California Edison to Osenberg, University of Florida, Gainesville, FL, cc: Peter Douglas, Executive Director, Chairperson Calcagno, Members of the California Coastal Commission, October 21, 1996

Letter from Donald B. Kent, M.S., Senior vice-president, HUBBS SEA WORLD Research Institute, cc: Peter Douglas, Susan Hansch, Commission Byron Wear, October 21, 1996

Newspaper Articles:

Los Angeles Times, October 7, 1996

Los Angeles Times, October 10, 1996

General Letters of Concern/Opposition to SCE's Proposal:

Letter from D. Elliot Parks, Mayor, Del Mar City to Honorable Commissioners, California Coastal Commission, cc: Del Mar City Councilmember Diane Coombs, Sand Dieguito JPA, October 8, 1996

Letter from Robert A. Frank to Chairperson Calcagno and Members of the California Coastal Commission, October 8, 1996

Letter from Dan Farrell, President - Maywood Chamber of Commerce to Chairperson Calcagno and Members of the California Coastal Commission, October 8, 1996

Letter from Dolores Stephens, President - Maywood Senior's Club to Chairperson Calcagno and Members of the California Coastal Commission, October 8, 1996

Comments from David Beckman, Attorney with the Natural Resources Defense Council, Inc. to Honorable Commissioners, October 8, 1996

Letter from Fernando V. Bonada, President - Southern Graphics, Commerce, CA to Chairperson Calcagno and Members of the California Coastal Commission, October 8, 1996

Letter from Arlene & Richard Lighthall to California Coastal Commission, October 22, 1996

General Letters of Support for SCE's Proposal:

Letter from Gilbert Guevara, American GI Forum of California, Santa Maria to Chairperson Calcagno and Members of the California Coastal Commission, October 8, 1996

Letter from April M. Morris, President - Associated Engineers, Ontario, CA to Chairman Louis Calcagno and Members of the California Coastal Commission, October 11, 1996

Letter from Belia Arroyo, President - B.G.A. Financial Services, Alhambra, CA to Chairman Louis Calcagno and Members of the California Coastal Commission, October 8, 1996

Letter from Jack W. Beard, Beard Construction, Huntington Park, CA to Chairperson Calcagno and Members of the California Coastal Commission, October 8, 1996

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**Letter from Susan Becnel, President - Becnel Uniforms, Los Angeles, CA to
Chairperson Calcagno and Members of the California Coastal Commission,
October 11, 1996**

**Letter from Robert McDonald, President - Black Chamber of Commerce of Orange
County to Chairperson Calcagno and Members of the California Coastal
Commission, October 17, 1996**

**Letter from B.J. Rankin, Area Representative - Consolidated Disposal Service, Inc. to
Chairperson Calcagno and Members of the California Coastal Commission,
October 8, 1996**

**Statement from Consumers Coalition of California before the California Coastal
Commission, October 8, 1996**

**Letter from Ronald V. Garcia, President - Cudahy Chamber of Commerce to
Chairperson Calcagno and Members of the California Coastal Commission,
October 8, 1996**

**Letter from Maria Danna - Creative Weddings and Parties by Maria to Chairperson
Calcagno and Members of the California Coastal Commission, October 8, 1996**

**Letter from Daniel W. Lentz - Danny's Unocal 76 Service, Orange, CA to Chairperson
Calcagno and Members of the California Coastal Commission, October 8, 1996**

**Letter from Milton W. Jones, President - Desert Publication Inc., Palm Springs to
Chairperson Calcagno and Members of the California Coastal Commission,
October 9, 1996**

**Letter from Janet Wright, Executive Director - Duarte Chamber of Commerce to
Chairperson Calcagno and Members of the California Coastal Commission, cc:
Vince J. Taydel, October 8, 1996**

**Letter from Suzanne Sundber, Executive Director - Human Services Association, Bell
Gardens, CA to Chairperson Calcagno and Members of the California Coastal
Commission, October 8, 1996**

**Letter from Marina Flores, President - Las Flores Escrow, Downey, CA to Chairperson
Calcagno and Members of the California Coastal Commission, October 8, 1996**

**Letter from Robert Lee, Owner, Sir Speedy, Monterey Park to Chairperson Calcagno
and Members of the California Coastal Commission, October 11, 1996**

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Letter from Mark C. Edwards - Law Offices of Mirau, Edwards, Cannon & Harter to Chairperson Calcagno and Members of the California Coastal Commission, October 8, 1996

Letter from Henry M. Morgan to Chairperson Calcagno and Members of the California Coastal Commission, October 8, 1996

Letter from Joseph Coria, Manager, Physician Services - the Occupational Medicine Center, Los Angeles to Chairperson Calcagno and Members of the California Coastal Commission, October 8, 1996

Letter from Sandra Stanko, Executive Director - Oldtimers Foundation, Huntington Park to Chairperson Calcagno and Members of the California Coastal Commission, October 8, 1996

Letter from A. Patrick Sweeney, Director of Business Development - The Greater Oxnard Economic Development Corporation, Oxnard, CA to Chairperson Calcagno and Members of the California Coastal Commission, October 8, 1996

Letter from Douglas A. Yavarian, Executive Director - Oxnard Chamber of Commerce to Chairperson Calcagno and Members of the California Coastal Commission, October 8, 1996

Letter from Linda Stone - Pelican Productions, Lakewood, CA to Chairperson Calcagno and Members of the California Coastal Commission, October 7, 1996

Letter from Blanca I. Arellano, Chief Executive Officer - Pomona Economic Development Corp., Pomona, CA. to Chairperson Calcagno and Members of the California Coastal Commission, October 8, 1996

Letter from William S. White, President - Robert H. Peterson Co., City of Industry to Chairperson Calcagno and Members of the California Coastal Commission, October 9, 1996

Letter from Robert A. Rubio, Executive Director - Hondo Boys' & Girls' Club, Bell Gardens, CA to Chairperson Calcagno and Members of the California Coastal Commission, October 8, 1996

Letter from Scott Petterson, ASLA, Landscape Architect to Chairperson Calcagno and Members of the California Coastal Commission, October 8, 1996

Letter from Maurice A. Calderon, Senior Vice President - San Bernardino County Central Credit Union to Chairperson Calcagno and Members of the California Coastal Commission, October 8, 1996

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Letter from Sharp HOA Management, Inc. to Chairperson Calcagno and Members of the California Coastal Commission, October 10, 1996

Letter from Joan Thomas, Executive Director - Greater Stanton Chamber of Commerce to Chairperson Calcagno and Members of the California Coastal Commission, October 8, 1996

Letter from Scott K. Whitlock, Agent - State Farm Insurance, Rolling Hills Estates to Chairperson Calcagno and Members of the California Coastal Commission, October 8, 1996

Letter from Susan Foster, Agent - State Farm Insurance, South Pasadena to Chairperson Calcagno and Members of the California Coastal Commission, October 8, 1996

Letter from Tinamarie Squieri, Owner - Squieri Interiors Design Studio, Lakewood to Chairperson Calcagno and Members of the California Coastal Commission, October 8, 1996

Letter from Pasquale Squieri to Chairperson Calcagno and Members of the California Coastal Commission, October 8, 1996

Letter from Dean Larson, Sate Membership Director - Veterans of Foreign Wars, Maywood, to Chairperson Calcagno and Members of the California Coastal Commission, October 8, 1996

Letter from Mario de los Cobos, President - Ventura County Economic Development Association, Oxnard, CA to Chairperson Calcagno and Members of the California Coastal Commission, October 8, 1996

Letter from Mike Saliba, President - Ventura County Taxpayers Association to Chairperson Calcagno and Members of the California Coastal Commission, October 11, 1996

Letter from Peter K. Von Hagen - Von Hagen Investment Co., Palos Verdes, CA to Chairperson Calcagno and Members of the California Coastal Commission, October 8, 1996

Letter from Jacqueline A. Mathis - Von Hagen Investment Co., Palos Verdes, CA to Chairperson Calcagno and Members of the California Coastal Commission, October 8, 1996

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Letter from Robert N. Figeira, CCAM, PCAM - Woodbridge Village Association, Irvine, CA to Chairperson Calcagno and Members of the California Coastal Commission, October 10, 1996

Letter from Bruce W. Whitaker, Chief Spokesman fro the Committees of Correspondence, Orange County to Chairperson Calcagno and Members of the California Coastal Commission, October 8, 1996

**PROPOSED AMENDMENTS TO THE REQUEST
OF SCE TO AMEND PERMIT NO. 6-81-330
SAN ONOFRE NULEAR GENERATING STATION**

**PRESENTED TO THE
CALIFORNIA COASTAL COMMISSION
OCTOBER 8, 1996**

Presented by
**AMERICAN SPORTFISHING ASSOCIATION
UNITED ANGLERS OF SOUTHERN CALIFORNIA**

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**SPECIFIC COMPONENTS WHICH OUGHT TO BE INCLUDED IN ANY
SONGS MITIGATION PLAN - A PROPOSAL OF THE AMERICAN
SPORTFISHING ASSOCIATION and UNITED ANGLERS OF SOUTHERN
CALIFORNIA**

Current amendments under consideration lack two components of great value to the comprehensive and scientific management of California's marine resource. One component, mariculture, promises not only to directly mitigate for fish loss, but promises to enhance severely depleted stocks throughout the southern California bight. The second component, the implementation of a comprehensive methodology of the design and placement of artificial reefs, offers to pose the questions which need to be answered in adapting this already proven method of mitigation and enhancement to California, in order that future mitigation efforts product optimal results. We realize that the Commission may feel that their ability to impose such a condition is lacking, but we hope that SCE's interest in maximizing the true effect of their mitigation dollars would lead them to accept this component and the Commission's sense of responsibility to the resource, SCE and the public would allow SCE mitigation credit for accepting this ever so valuable component.

Component #1 **Mariculture**

Mariculture promises fine distinct advantages:

- 1) a reduction in the over-exploitation of local fisheries by enabling a shift from capture to culture,
- 2) a dramatic increase in our knowledge of the life cycles of important marine life through the production and release of large numbers of marked individuals,
- 3) augmentation of stocks of endangered species,

- 4) continued experimentation with the augmentation of harvestable stocks of depleted species such as white seabass, spotfin croaker, corbina, etc., and
- 5) increased public awareness of and involvement in marine resource issues by the general public.

Mariculture has been successfully utilized in other states to restore and enhance severely depleted fisheries stocks, but has not been scientifically analyzed which would serve as the basis for application to other stocks, habitats and uses. The State of California through the Ocean Resource Enhancement and Hatchery Program (OREHP), voluntarily funded by the sportfishing community has implemented a scientifically based mariculture program. The results achieved so far have boosted the promise of mariculture to the level of probabilities. The transformation of probabilities to realities is near. Additional funds to do so are crucial. The program is up and running, reaching its goals and fulfilling its promises. To assist in the fulfillment in the final stage \$2.5 million is needed for capital equipment and operational expenses.

We request that the amendment be conditioned upon a \$2.5 million direct grant to OREHP for the exclusive use of Mariculture. Mariculture the only mitigation element currently producing results.

Component #2 Artificial Reefs

The other critical element to us is artificial reefs. We believe that the current proposals should be supplemented. A consensus exists within the California Marine Science community that properly sited and managed artificial reefs are an important means to restore and enhance the value of our marine resources. This consensus extends to the recognition that the knowledge necessary to build the most beneficial reefs does not yet exist. Indeed, the gaining of that knowledge is considered a priority in the marine science community and within the marine conservation groups active through California. It is our belief that the most important questions now being asked about reef design can be substantially answered by the adoption of our proposal, a proposal which carries with it

substantial financial efficiency and the incentive for others to financially contribute, as well as attract the involvement of leading marine scientists.

The SONGS mitigation supports the concept of building, managing and monitoring experimental reefs, but falls short in answering the important questions that have already been identified. We believe that properly constructed reefs can substantially enhance the productivity and value of coastal waters. We support the San Mateo experiment, and although it would not be our first choice, we support it as a part of the broad attempt to simultaneously add productive habitat and learn about the implication of low relief reef designs.

We propose to implement a more complete experimental design by concurrently constructing additional smaller reefs in other areas. Implementation of our proposal will answer the questions that have been identified. We propose that the reefs be monitored by an independent scientific entity, such as UCLA's Marine Science Center, in order that the quality and integrity of the results are thoroughly credible. We believe that this would allow the mitigation program to attract scientific and financial support from other sources, thus increasing the value of SCE programs to society and SCE itself.

We also propose that the utility allow the UCLA Marine Science Center to coordinate the process of monitoring the experimental reefs. We believe that this will significantly increase the benefits at a cost comparable to or less than monitoring contracted for by the utility but will also add substantial credibility to the results and thus increase the likelihood of acceptance and application of those same results.

In summary, the adoption of our artificial reef proposals promises not only comprehensive answers to the questions raised about the efficacy and the efficiency of artificial reefs, but also will be of inestimable value to those who are looking beyond mere mitigation to focus on enhancement and restoration. The incremental increase in cost is relatively small, but the results it promises of great value. The financial and scientific support our proposal will generate would leverage SCE contributions even further and would enhance the California Coastal Commission reputation as a leader in sound, efficacious and rational resource mitigation.

We request that the Commission condition the amendment as follows:

1. adopt our artificial reef methodology
2. create an artificial reef trust to be administered and managed by UCLA in fulfillment of our methodology.
3. allocate an additional \$2.5 million towards our proposal's fulfillment.
4. Give SCE mitigation credit on a dollar for dollar basis for all dollars expended on our proposal.

ORDER OF PRESENTATION

I. Introduction and Overview

Milton C. Shedd

- . ASA/UASC Conservation Coordinating Committee **Chairman**
- . Retired Founding **Chairman** of Sea World, Inc.
- . Hubbs-Sea World Research Institute, **Chairman**
- . AFTCO Manufacturing Co. Inc., **Chairman**

II. Mariculture

A. The Promise - Robert Fletcher

- . Pacific Region Marine Fisheries Management Council, **Chairman**
- . Sportfishing Association of California (SAC), **Executive Director**
- . California Department of Fish and Game, **former Deputy Director**
- . Ocean Resource Enhancement and Hatchery Program, **Advisory Panel Member**

B. The Present - Donald P. Kent

- . Hubbs-Sea World Research Institute, **Senior Vice President**
- . White Sea Bass Hatchery, Hubbs-Sea World Research Institute, **Executive Director**

C. Public Support - Bill Shedd

- . United Anglers of Southern California (UASC), **Co-Founder**
- . American Sportfishing Association (ASA), **Director**
- . MAFAC, **Former member**

III. Artificial Reefs

A. Our position - Professor John Stephens

- . Occidental College, **Professor Emeritus, Marine Science**
- . Marine Resources Advisory Committee, **Academic Member**
- . Gill Net Initiative AB1 (1988), **Scientific Advisor**

B. Milton Love, Ph.D.

- . UCSB Marine Science Institute, **Associate Research Biologist**
- . **Ph.D.**, Zoology, UC Santa Barbara
- . National Biological Service, study of rocky reef fishes

C. Mark Steele

- . UCLA Dept. of Biology, **Postdoctoral Fellow**
- . UCSB **Ph.D.**, Biology
- . American Society of Ichthyologists and Herpetologists, **Member**

D. Community Support - Dan Frumkes

- . American Sportfishing Association, Conservation Network, **Executive Director**
- . United Anglers of Southern California, **Director**

IV. Summary - Milton C. Shedd

**SUMMARY OF THE ARGUMENT
REQUESTING \$2.5 MILLION
FOR MARICULTURE**

FIVE ADVANTAGES

1. Reduces over-exploitation of local fisheries by shifting from capture to culture.
2. Increase in our knowledge of the life cycles of important marine life through the Production and release of large numbers of marked individuals.
3. Augmentation of stocks of endangered species.
4. Continued experimentation with augmentation of harvestable stocks of depleted species
5. Demonstrable increases in public awareness and involvement in marine resource issues.

PRESENT STATUS

- **Promises more potential benefits than any other kind of mitigation**
- State of California creates OREHP
- Hubbs-Sea World Hatchery operational and successes increasing
- Scientifically based for reproducible success

PUBLIC SUPPORT

- Sportfishing Community *voluntarily* taxes itself in amounts in excess of \$1.1 million per year, for the level of current operations, but is none-the-less insufficient for current needs
- Volunteer man hours, currently, exceed 15,000 per year and are rising.

EXPANSION NOW IS CRUCIAL

- Current successes indicate that Mariculture's promise will be fulfilled, immediate expansion will optimize the benefit thus, gained.

**ONLY SONGS MITIGATION COMPONENT
CURRENTLY PRODUCING A MITIGATION BENEFIT**

SUMMARY OF THE ARGUMENT ON ARTIFICIAL REEFS

THE CONTEXT

1. Fish populations are subject to a myriad of manmade incursions including: sport and commercial fishing, habitat loss, water quality deterioration, and entrapment/entrainment in power plants.
2. Many important commercial and recreational species are part of the rock reef assemblage. This assemblage is habitat limited due to the dominance of soft substrate (sand/mud) of the inshore waters of Southern California.
3. California's Department of Fish and Game pioneered the development of artificial reefs as a method of enhancing fish populations. We feel that increasing rock reef habitat would serve to expand habitat limited reef fish assemblages.

THE PROBLEM

The present mitigation concept: Mitigation is required due to the MRC's finding of fish losses from entrapment/entrainment and partial loss of the San Onofre kelp bed.

1. A build out of about 17 acres of low relief rock and concrete rubble reefs at experimental densities designed to encourage and sustain a kelp bed, with monitoring to determine which, if any, material and substrate density will maintain a kelp bed (defined as a density of kelp equal to 4 plants/100 sq.m.).
2. At the end of a ten year monitoring period we may know how to build a successful kelp reef and if not, we will have enhanced the environment with acres of low relief, relatively unproductive habitat.
3. The burden of the success of mitigation would then rest entirely upon the wetlands restoration work which, though important, will not mitigate directly for the lost marine fish entrapped or entrained in the power plant.

ASA'S SOLUTION

Let's learn how to build effective artificial reefs by building a variety of designs in various locations throughout the Bight where we can test for both design and location. Build not only low relief reefs, but also high relief complex structures which may not sustain kelp, but would support diverse fish assemblages, even in its absence. **LET'S LEARN HOW TO BUILD ARTIFICIAL REEFS THAT WILL SUSTAIN DENSE AND DIVERSE FISH ASSEMBLAGES** while at the same time monitoring both the artificial reef sites and adjacent habitats to learn how these reefs and their assemblages affect the density and diversity of our marine fish resource. **LET'S ENHANCE THE RESOURCE WHILE SEARCHING FOR THE BEST DESIGN FOR HABITAT ENHANCEMENT.**

**THE SCIENTISTS WHO REVIEWED AND ASSISTED DR. J. STEPHENS, JR.
IN THE PRODUCTION OF OUR SUGGESTED CHANGES TO THE SCE
PERMIT:**

Dr. Larry Allen, California State University, Northridge (CSUN)
Dr. Richard Ambrose, University of California, Los Angeles (UCLA MS)
Dr. Michael Domeier, Hubbs Research Institute
Mr. Daniel Frumkes, Director ASA Conservation Network
Dr. Willima Hamner, UCLA, Director of Marine Science Center (MSC)
Mr. Donald Kent, MS, Assistant Director Hubbs Research Institute
Dr. Milton Love, UCSB-Marine Science Institute (MSI)
Mr. Dan Pondella, M.A., Director Vantuna Research Group, Occidental
College, UCLA-MSC
Dr. M.L. Patton, Rainbow Marine Consultants

**THE SCIENTISTS WHO DEVELOPED THE ORIGINAL REEF RESEARCH
PROPOSAL AT BIG SYCAMORE CANYON:**

Dr. John J. Stephens, Jr., Occidental College (James Irvine Professor of
Environmental Biology, Emeritus)
Dr. Dan Pondella, M.A., Directors Vantuna Research Group, Occidental
College, UCLA-MSC
Dr. Milton Love, UCSB-MSI
Dr. M. L. Patton, Rainbow Marine Consultants
Mr. Daniel Frumkes, B.A., Director ASA Conservation Network

**THE SCIENTISTS INVOLVED IN THE CURRENT RESEARCH PROPOSAL
AT BIG SYCAMORE CANYON INCLUDE:**

Ms. Irene Beers, M.A., UCLA-MS
Dr. Mark Carr, UCSB, assist Research Biologist Marine Science Institute
Dr. Graham Forrester, UCLA-MSC
Dr. M.L. Patton, Rainbow Marine Consultants
Mr. Dan Pondella, M.A., Director Vantuna Research Group, Occidental
College, UCLA-MSC
Dr. Mark Steele, UCLA-MSC
Dr. John J. Stephens, Jr., Occidental College (James Irvine Professor of
Environmental Biology, Emeritus)

Curriculum Vitae

MILTON C. SHEDD

Personal Data

Birth Date Sept. 26, 1922

Address AFTCO INC.
17351 Murphy
Irvine, Calif. 92714

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Education

B.A. 1947 UCLA Banking and Finance

Business Experience

1947-1963 Investment Banking

1963-1982 Co Founder and Founding Board Chairman of SEA WORLD INC.

1982-Present Board Chairman of Family owned AFTCO INC.

Public Service Activities

1960-1964 Chairman of Newport Beach Parks Beaches and Recreation
Commission

1963 Founder of the Hubbs/Sea World Marine Research Institute and its
Chairman, Board of Trustees until 1983

Past member of Advisory Board UCLA's College of Letters and Science

Significant supporter of the process for developing UCLA's Marine Science
Center

Thirty three years of substantial philanthropic support for and personal
involvement in scores of marine science research projects including several
of international scope --Many of these programs involved marine resource
conservation and enhancement programs



SPORTFISHING ASSOCIATION OF CALIFORNIA

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ROBERT C. FLETCHER
PRESIDENT

W. A. NOTT
PRESIDENT EMERITUS

FISHERIES MANAGEMENT EXPERIENCE

of

Bob Fletcher, President
SPORTFISHING ASSOCIATION OF CALIFORNIA
November 30, 1995

I have spent my whole life in the marine arena. I was born and raised in San Diego, and grew up on, in or under California's coastal waters. After graduating from college I spent four years as an officer in the Air Force. After returning to San Diego I earned a Captains license to operate sportfishing passenger boats, and spent the next 12 years as a skipper and boat owner. I have also fished commercially for tuna and commercially harpooned swordfish. In 1983 I was appointed to the California Department of Fish & Game as Deputy Director and later Chief Deputy Director and spent the next 6 years on that side of the regulatory fence. During those 6 years I represented the state on the Pacific Fishery Management Council (PFMC), and was its Chairman for a year and a half. I also represented the state as a Commissioner on the Pacific States Marine Fisheries Commission (PSMFC), and as the California representative on the U.S./Mexican Fisheries group known by the acronym, MEXUS PACIFICO.

In 1989 I left the Department to return to the private sector and became the President of the Sportfishing Association of California (SAC). At present I represent close to 200 commercial passenger sportfishing vessels berthed between the ports of Morro Bay and San Diego. This fleet carries nearly 750,000 passengers a year on fishing and natural history/whale watching excursions. One of my main jobs with SAC is to negotiate access agreements with the Mexican Fisheries Division of their federal government. In 1991 I was appointed to serve as a California At-Large member of the PFMC, and in the summer of 1995 I was elected to become the PFMC's Chairman. I am also still involved with the PSMFC as a California advisor from the sportfishing industry.

As you can see, I've looked at this from all sides over a career that has spanned a lifetime.

Donald B. Kent, M.S.

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EDUCATION:

B.A., Univ. of Calif. at San Diego, 1974 (Biology with emphasis in Neurobiology)
M.S., San Diego State Univ., 1980 (Biology with emphasis in Marine Ecology)

PROFESSIONAL EXPERIENCE:

University of California, San Diego:

- Laboratory Technician, Neurobiology Unit, Scripps Institution of Oceanography, 1972-74;
- Undergraduate research study on benthic communities in the La Jolla Underwater Reserve, 1973-74;
- Undergraduate research on frequency discrimination capabilities of electric sensory organs in gymnotid fish, Brain Research Institute, Scripps Institution of Oceanography, 1973-75.

San Diego State University:

- Aquaculture Technician for Sea Grant Program, SDSU Department of Biology, 1974-75;
- Aquaculture Laboratory Manager for Sea Grant Program, SDSU Department of Biology, 1975-77;
- University of California Sea Grant Trainee and graduate student studying enhancement of sport fishery for the striped bass, SDSU Department of Biology, 1977-80;
- Laboratory Manager, SDSU Marine Laboratory, 1980-1994;
- Member SDSU Diving Control Board, 1984-1994;
- Instructor, College of Sciences, 1984-94
- Adjunct Professor, College of Sciences, 1986-present.

University of San Diego:

- Adjunct Professor, College of Sciences, 1987-present

Hubbs-Sea World Research Institute:

- Laboratory Manager and Research Coordinator, 1980-1981;
 - Facilities Manager, 1981-86;
 - Senior Vice-President, 1986-Present
 - Acting Director, 1986-1990
 - Director for Operations, 1990-Present

**RESEARCH
ACTIVITIES:**

Principal Investigator for cooperative program with the California Department of Fish and Game to study the feasibility of transplanting striped bass into southern California, 1980-83.

Co-Principal Investigator in study supported by the Bureau of Land Management to determine the effects of surface oil on migrating California gray whales, 1980-82.

Co-Principal Investigator for field testing of linear hydrophone array designed to conduct acoustical surveys of marine animals, 1980.

Co-Principal Investigator in a study supported by the National Marine Fisheries Service to determine the pod morphometrics of pilot whales in the Southern California Bight, 1981-83.

Principal Investigator for Ocean Resources Enhancement and Hatchery Program, 1983-present.

**PROFESSIONAL
AFFILIATIONS:**

Charter Member, *Society for Marine Mammalogy*
Member, *American Association for Zoological Parks and Aquariums*
Member, *American Association for the Advancement of Science*
Member, *World Aquaculture Society*
Member, *California Aquaculture Association*
Member, *Sigma Xi, The Scientific Research Society*
(President, San Diego Chapter, 1991-92)
Member, *American Fisheries Society*

**PUBLICATIONS/
MANUSCRIPTS**

Kent, D.B. 1980. Interaction of temperature and ration level on the growth and growth conversion efficiency of striped bass (*Morone saxatilis*). M.S. Thesis, San Diego State University.

Kent, D. B. 1980. Report on the use of Biocon-610 to enhance the growth of two species of marine tropical fish. Sea World Research Institute Tech. Rept. 80-125.

Kent, D.B. and J.S. Leatherwood. 1981. Responses of migrating gray whales (*Eschrichtius robustus*) to oil on the sea surface: Results of a field evaluation. Sea World Research Institute Tech. Rept. 81-131.

Bartley, D.M. and D.B. Kent. 1990. Genetic Structure of of white seabass population from southern California Bight region: applications to hatchery enhancement. California Cooperative Oceanic Fisheries Investigations Report 31:97-105.

Orhun, M.R., S.R. Johnson, D.B. Kent, and R.F. Ford. 1991. Practical approach to high density production of the rotifer, *Brachionus plicatilis*. Rotifer and Microalgae Culture Systems. Proceedings of a U.S.-Asia workshop, Honolulu, HI.

Bartley, D.M., D.B. Kent and M.A. Drawbridge. 1995. Conservation of genetic diversity in a white seabass (*Atractoscion nobilis*) hatchery enhancement programme in southern California. American Fisheries Society Symposium 15:249-258.

Kent, D.B., M.A. Drawbridge and R.F. Ford. 1995. Accomplishments and roadblocks of a marine stock enhancement program for white seabass in California. American Fisheries Society Symposium 15:492-498.

Kent, D.B., M.A. Drawbridge, M.A., D.B. Kent, R.F. Ford, and M.A. Shane 1995. The assessment of marine stock enhancement in southern California: a case study involving the white seabass. American Fisheries Society 15:568-569.

PRESENTATIONS Dutton, P.H., R.F. Ford, and D.B. Kent, 1989. Effects of stocking density, food density, and photoperiod on cannibalism in white seabass, *Atractoscion nobilis*, larvae. World Aquaculture Society, Los Angeles, CA.

Kent, D.B., M.A. Drawbridge, and R.F. Ford, 1993. Bioeconomic assessment of marine fisheries enhancement. World Aquaculture Society, Hilton Head, SC.

Kent, D.B., S. Johnson, R.F. Ford, and M.A. Drawbridge, 1993. An eight year spawning history of white seabass (*Atractoscion nobilis*) under artificially controlled temperature and photoperiod conditions. World Aquaculture Society, Torremolinos, Spain.

M.A. Drawbridge, D.B. Kent, R.F. Ford, and M.A. Shane, 1993. An evaluation of a mark and recapture program for hatchery-reared white seabass (*Atractoscion nobilis*) released into the wild. World Aquaculture Society, Torremolinos, Spain.

Kent, D.B., R.F. Ford, and M.A. Drawbridge, 1993. Evaluation of a regional marine fish enhancement program utilizing a central hatchery and satellite pen-

rearing stations. World Aquaculture Society, Torremolinos, Spain.

M.A. Drawbridge, D.B. Kent, R.F. Ford, and M.A. Shane, 1993. An evaluation of a mark and recapture program for hatchery-reared white seabass (*Atractoscion nobilis*) released into the wild. American Fisheries Society, Portland, OR.

Kent, D.B., 1993. Evaluating the use of hatchery-reared juveniles to enhance depleted marine fisheries in southern California. Sea Grant Workshop, Seattle, WA.

Shane, M.A., M.A. Drawbridge, D.B. Kent, and R.F. Ford, 1994. A brief description of the early development of giant sea bass, *Stereolepis gigas*, (Percichthyidae) in the laboratory. American Society of Ichthyologist and Herpetologists, Los Angeles, CA.

Kent, D.B., M.A. Drawbridge, and R.F. Ford, 1994. A comprehensive assessment program for hatchery-reared white seabass, *Atractoscion nobilis*, released into the wild. World Aquaculture Society, New Orleans, LA.

Drawbridge, M.A., D.B. Kent, and D.B. Schloss, 1995. Growth and survival of white seabass, *Atractoscion nobilis*, fed different commercially available pellets. World Aquaculture Society, San Diego, CA.

Kent, D.B., M.A. Drawbridge, and R.F. Ford, 1995. Development of an economic model for assessment of marine fisheries enhancement in southern California. World Aquaculture Society, San Diego, CA.

Rudolph, J.D., R.F. Ford, D.B. Kent, and M.A. Drawbridge, 1995. Predator avoidance strategies of cultured white seabass, *Atractoscion nobilis*. World Aquaculture Society, San Diego, CA.

BILL SHEDD

Marine Resource Background

- Co-Founder of United Anglers of Southern California (UASC)
- Chairman, UASC White Seabass Committee (The entity largely responsible for organizing sportfishing community support of OREHP)
- Member of the American Sportfishing Association (ASA) Board of Directors and its Executive Committee. (The ASA is the industry association that looks after this nation's \$30 billion sportfishing industry and, as its #1 goal, how to help insure a healthy fishery resource.)
- Chairman, ASA West Region
- Chairman, ASA Government Affairs Committee
- Member of United Sport Fishermen (USF) Board of Directors
- Member of OREHP Advisory Committee
- Member of Hubbs-Sea World Research Institute Board of Directors
- Former member of MAFAC, which is an advisory committee to the National Marine Fisheries Service
- President of AFTCO Mfg. Co., Inc. (worldwide manufacturer and distributor of high quality fishing tackle for ocean sportfishing)
- President of Bluewater Wear (manufacturer of marine-themed sportswear)

VITAE

JOHN S. STEPHENS, JR.

James Irvine Professor of Environmental Biology and Director of Vantuna Research Group, Occidental College,
Los Angeles, California
Emeritus

BORN

May 12, 1932

EDUCATION

B.A. (1954), Stanford University
M.A. (1957), University of California, Los Angeles
Ph.D. (1960), University of California, Los Angeles

POSITIONS

Teaching Associate, University of California, Santa Barbara, 1958-59
At Occidental College since 1959
Assistant Professor, 1960-65
Associate Professor, 1966-72
Professor, 1972-74
James Irvine Professor of Environmental Biology, 1974-
Faculty Council President, 1980-82
Director, Vantuna Research Program, 1969-
Chairman, Department of Biology 1971-74
Consultant, Southern California Edison-- Effects of Coastal Generating Stations on
Marine Biota
Co-Chairman/Coordinator, Third International Artificial Reef Conference,
1984, Irvine, CA
Consultant, Scientific advisor to gill net initiative AB1 (1988)
Academic Member--Directors Marine Resources Advisory Committee, Dept. of Fish and Game,
1988-
Member, Peer Review Panel, Orange County Sanitation District
Consultant, Ballona Wetlands Redevelopment
Consultant, NMFS--Effects of DDT-PCB Deposition on nearshore fauna and possible
mitigation

MEMBERSHIPS IN PROFESSIONAL ORGANIZATIONS

American Society of Ichthyologists and Herpetologists
Sigma Xi
Society for Systematic Zoology
American Society of Zoologists
American Institute of Fishery Research Biologists
Convenor, SNICCR

RESEARCH INTEREST

Ecology and systematics of fishes
Effects of manmade environments on fishes
Pollution and fisheries biology

RESEARCH GRANTS

- | | |
|---|--|
| NSF GB3037 (1964-66) | The Comparative Ecology of Three Sympatric Species of California Blennies of the Genus <u>Hypsoblennius</u> Gill (Teleostomi, Blenniidae) |
| NSF GB5940 (1967-69) | Growth, Longevity, and the Effect of Size on the Biology of Certain Blenniidae Fishes |
| NSF GB6880 (1969-71) | Vantuna Consortium |
| NSF GB2766 (1970-72) | The Osteology of Chaenopsid Blennies and Basal Cliniform Species |
| SCCWRP (1971-72) | Biology of Inshore Fishes of the Southern California Bight |
| Sea Grant, USC (1972-73) | Fishes of Los Angeles Harbor |
| Southern California Edison Research Contracts (1974-present) | Effects of Thermal Effluent from Southern California Edison's Redondo Beach Steam Generating Plant on the Warm Temperate Fish Fauna of King Harbor Marina |
| California Department of Fish and Game (1985-present) | Preliminary Investigations of the Artificial Propagation of the California Halibut, <u>Paralichthys californicus</u> |
| Los Angeles Department of Water and Power (1984-present) | Monitoring and Bioassays |
| California Department of Fish and Game (1986-91) | Salton Sea Sport Fish Study |
| Harbor Department and University of Southern California (1984-present) | Marina del Rey Fish Populations |
| City of Rancho Palos Verdes (1988) | Effects of Landslide Turbidity on Rocky Subtidal Organisms |
| U.S. Corps of Engineers | Effects of landslide induced turbidity on marine life |

PUBLICATIONS BY JOHN S. STEPHENS, JR.

- Stephens, J. S. 1961. A description of a new genus and two new species of chaenopsid blennies from the western Atlantic. *Notulae Naturae*, No. 349, 8 pp.
- Stephens, J. S., Jr. 1961. Range extension of the temperate blennioid fish, Neoclinus bryops, into the tropical western Pacific. *Copeia*, No. 4, pp. 484-485.
- Stephens, J. S., Jr. 1963. A revised classification of the blennioid fishes of the American family Chaenopsidae. *Univ. Calif. Publ. Zool.*, Vol 68, 165 pp.
- Stephens, J. S., Jr. 1965. Ecological specificity in two sympatric species of the blennioid genus Hypsoblennius. *Amer. Zool.*, 5:356.
- Stephens, J. S., Jr., E. S. Hobson and R. K. Johnson. 1966. Notes on distribution, behavior, and morphological variation in some chaenopsid fishes from the tropical eastern Pacific, with descriptions of two new species, Acanthemblemaria castroi and Coralliozetus springeri. *Copeia*, No. 3, pp. 424-438.
- Stephens, J. S., Jr. 1970. Seven new chaenopsid blennies from the western Atlantic. *Copeia*, No. 2, pp. 280-309.
- Stephens, J. S., Jr., R. K. Johnson, G. S. Key and J. S. McCosker. 1970. The comparative ecology of three sympatric species of California blennies of the genus Hypsoblennius Gill (Teleostomi, Blenniidae). *Ecol. Monogr.*, 40:213-233.
- Stephens, J. S., Jr. and V. G. Springer. 1971. Neoclinus nudus, new scaleless clinid fish from Taiwan with a key to Neoclinus. *Biol. Soc. Wash.*, 84:65-72.
- Stephens, J. S., Jr. 1972. Bay and inshore fishes. *Proc. So. Calif. Coastal Zone Symposium*, March 1972, pp. 18-21.
- Phillips, L. C., C. Terry and J. S. Stephens, Jr. 1973. Status of the White Croaker (G. lineatus) in the San Pedro Bay region. A Preliminary Report to the Southern California Coastal Water Research Project. SCCWRP TR109: Nov. 23, 1973, 49 pp.
- Stephens, J. S., Jr., D. Gariner and C. Terry. 1973. The demersal fish population of San Pedro Bay. Part II. In (D. Soule and M. Oguri, eds.), *Biological Investigations in Marine Studies of San Pedro Bay, California*. Allan Hancock Harbors Environmental Program and Sea Grant, Inst. Mar. Coast. Stud., University of Southern California, pp. 149-166.
- Stephens, J. S., Jr. and V. Springer. 1973. Clinid fishes of Chile and Peru, with description of a new species Myxodes ornatus from Chile. *Smithsonian Contrib. to Zool.*, No. 159, 24 pp.
- Stephens, J. S., Jr., C. B. Terry, S. Subber and J. Allen. 1974. Abundance, distribution, seasonality, and productivity of the fish populations in Los Angeles-Long Beach Harbors, 1972-73. Part IV. In (D. Soule and M. Oguri, eds.), *Biological Investigations in Marine Studies of San Pedro Bay, California*. Allan Hancock Harbors Environmental Program and Sea Grant, Inst. Mar. Coast. Stud., Univ. South. Calif., 101 pp.
- Stephens, J. S., Jr. 1975. Effects of thermal effluent from Southern California Edison's Redondo Beach steam generating plant on the warm temperate fish fauna of King Harbor Marina. Annual Report for Phase I, February 1, 1974-February 28, 1975. Submitted to Southern California Edison under Research Contract No. U0654902. 129 pp.

- C. B. Terry and J. S. Stephens, Jr. 1976. A study on the orientation of selected embiotocid fishes to depth and shifting seasonal vertical temperature gradients. *Bull. So. Calif. Acad. Sci.*, 75:170-183.
- Stephens, J. S., Jr. and J. P. Ellison. 1977. A study of fish food habits as it relates to the biological enrichment of an area. *Sea Grant-Fish Food Habits Symposium*, pp. 19-24.
- Stephens, J. S., Jr. 1977. Effects of thermal effluent from Southern California Edison's Redondo Beach steam generating plant on the warm temperate fish fauna of King Harbor Marina. Field study report for Phase II. Southern California Edison Research and Development Series 77-RD-64. 111 pp.
- Rosenblatt, R. H. and J. S. Stephens, Jr. 1978. Mccoskerichthys sandae, a new and unusual chaenopsid blenny from the tropical eastern Pacific. *Los Angeles County Museum, Contrib. in Sci.*, No. 293, 22 pp.
- Stephens, J. S., Jr. 1978. Breakwaters and harbors as productive habitats for fish populations--why are fishes attracted to urban complexes? *So. Calif. Ocean Studies Consortium, Tech. Pap. #1, The Urban Harbor Environment*, pp. 49-60.
- Stephens, J. S., Jr. 1978. Effects of thermal effluent from Southern California Edison's Redondo Beach steam generating plant on the warm temperate fish fauna of King Harbor Marina. Field and laboratory study reports for Phase III. Southern California Edison Research and Development Series 78-RD-47. 109 pp.
- Ehrlich, K. F., J. S. Stephens, Jr., G. Muszynski and J. M. Hood. 1979. Thermal behavioral responses of speckled sand dabs (Citharichthys stigmaeus): laboratory and field investigations. *Fish. Bull.*, 76:867-872.
- Ellison, J. P., C. Terry and J. S. Stephens, Jr. 1979. Food resource utilization among five species of embiotocids at King Harbor, California, with preliminary estimates of caloric intake. *Mar. Biol.*, 52:161-169.
- Stephens, J. S., Jr. and J. B. Palmer. 1979. Can coastal power stations be designed to offset impacts by habitat enrichment? *Proc. Mitigation Symp.*, pp. 446-450.
- Stephens, J. S., Jr. 1980. Effects of thermal effluent from Southern California Edison's Redondo Beach steam generating plant on the warm temperate fish fauna of King Harbor Marina. Field study report for Field and laboratory study reports for 1977-1978. Southern California Edison Research and Development Series 80-RD-43. 149 pp.
- Stephens, J. S., Jr. and K. Zerba. 1981. Factors affecting fish diversity on a temperate reef. *Env. Biol. Fish.*, 6:111-121.
- Stephens, J. S., Jr. 1981. Fish in Southern California: an evaluation of pollution ecology. *Occidental College Magazine*, Spring, pp. 11-15.
- Stephens, J. S., Jr. 1981. Ecolobalance of fish populations in receiving waters of a coastal steam electric generating station: a seven year analysis of the fishes of King Harbor, California. Submitted to Southern California Edison.
- Shrode, J. B., K. E. Zerba and J. S. Stephens, Jr. 1982. Ecological significance of temperature tolerance and preference of some inshore California fishes. *Amer. Fish. Soc.*, 111:45-51.
- Hose, J. E., T. D. King, K. E. Zerba, R. J. Stoffel, J. S. Stephens, Jr. and J. A. Dickinson. 1982. Does avoidance of chlorinated seawater protect fish against toxicity? In (R. L. Jolley, ed.), *Laboratory and field observations. Water Chlorination: Environmental Impact and Health Effects*, Vol. 4, Book 1,

Chemistry and Water Treatment. Ann Arbor Science Publ., Ann Arbor, MI, pp. 967-982.

- Shrode, J. B., L. J. Purcell and J. S. Stephens, Jr. 1983. Ontogeny of thermal preference in four species of viviparous fishes (Embiotocidae). *Env. Biol. Fish.*, 9:71-76.
- Stephens, J. S., Jr., P. A. Morris and W. Westphal. 1983. Assessing the effects of a coastal steam electric generating station on fishes occupying its receiving waters. *In* (D. F. Soule and D. Walsh, eds.), *Waste Disposal in the Oceans. Minimizing Impact, Maximizing Benefits*. Westview Press, Boulder, CO.
- Stephens, J. S., Jr. 1983. The fish of King Harbor: a nine year study of fishes occupying the receiving waters of a coastal steam electric generating stations. Southern California Edison Research and Development Series 83-RD-1, 144 pp.
- Hose, J. E., T. D. King and J. S. Stephens, Jr. 1984. Effects of dechlorinated seawater on fish behavior. *Mar. Environ. Res.*, 11:67-76.
- Stephens, J. S., Jr., P. A. Morris, K. E. Zerba and M. S. Love. 1984. Factors affecting fish diversity on a temperate reef II: the fish assemblage of Palos Verdes Point, 1974-1981. *Env. Biol. Fish.*, 11:259-275.
- Stephens, J. S., Jr. 1985. Assessing the subtidal fish communities of the Southern California Bight. *Coastal Ocean Pollution Assessment News*, 3:38-39.
- Buckley, R., J. Grant and J. S. Stephens, Jr. 1985. Third International Artificial Reef Conference 3-5 November 1983, Newport Beach, CA. *Bull. Mar. Sci.*, 37:1-2.
- Stephens, J. S., Jr., G. Jordan, P. A. Morris, M. M. Singer and G. McGowen. 1986. Can we relate larval fish abundance to recruitment or population stability? A preliminary analysis of recruitment to a temperate rocky reef. *CalCOFI*, 27:65-83.
- Love, M. S., J. S. Stephens, Jr., P. A. Morris and M. M. Singer. 1986. Inshore soft substrata fishes in the Southern California Bight: an overview. *CalCOFI*, 27:84-104.
- Stephens, J. S., Jr., J. E. Hose and M. S. Love. 1988. Fish assemblages as indicators of environmental change in nearshore environments. *In* (D. Soule and G. S. Kleppel, eds.), *Marine Organisms As Indicators*, Chapter 5, pp. 91-105. Springer Verlag.
- Stephens, J. S., Jr., Michael Singer, and Laura Targgart. 1989. Notes on the First Record of the Orangethroat Pikeblenny, *Chaenopsis alepidota* (Gilbert) in Mainland California, *Cal. Fish & Game Bull.*, 75:169-183.
- Love, M. S., M. Sandhu, J. Stein, K. T. Herbinson, R. H. Moore, M. Mullin and J. S. Stephens, Jr. 1989. An analysis of fish diversion efficiency and survivorship at the San Onofre nuclear generating station fish return system. NOAA Tech. Rpt. NMFS 76. 16 pp.

CURRICULUM VITAE

MILTON LOVE

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PERSONAL:

Date of Birth: 10 March 1947
Place of Birth: Los Angeles, California

EDUCATION:

B.A.	1970	Environmental Biology (Honors)	University of California, Santa Barbara, California
M.A.	1974	Zoology	University of California, Santa Barbara, California
Ph.D.	1978	Zoology	University of California, Santa Barbara, California

POSITIONS:

1991-present Associate Research Biologist, University of California, Santa Barbara, Marine Science Institute.

1993-present Science Writer.

Present assignments include:

MARE (Marine Activities, Resources and Education),
Lawrence Hall of Science, University of California, Berkeley. Write
teachers' guides to MARE curricula.

MacGillivray Freeman Films, Laguna Beach, CA. Editing company newsletter.

Past assignments:

Jean-Michel Cousteau Productions, Santa Barbara, CA and Enteractive Media
Inc., Washington, D. C. Co-writing and editing the CD-ROM "Coral Reefs".

MacGillivray Freeman Films, Laguna Beach, CA. Created the education package
for and assisted in the script of the IMAX film *The Living Sea*.

California Seafood Council, Santa Barbara, CA. Developed elementary school
curricula on California fisheries.

California Environmental Affairs Agency
Development of a Market and Fishery for the Dogfish Shark, and Aspects of Its Biology

6/1/89-5/31/90
\$63,440

California Environmental Affairs Agency
The Biology and Fishery of the Pacific Hagfish (*Eptatretus stouti*) off Southern California

6/1/89-5/31/90
\$51,722

California Environmental Affairs Agency
Research into Marketing Under- and Non-utilized Fish Species, with Particular Attention to the Live Fish Market

7/1/90-5/31/91
\$56,045

Minerals Management Service
Effects of OCS Oil and Gas Production Platforms on Rocky Reef Fishes and Fisheries

6/1/90-5/31/91
\$186,245

National Underwater Research Project
Rockfishes of the Northeast Pacific Workshop

12/3/93-12/5/93
\$9,450

National Biological Service
The Ecological Role of Natural Reefs and Oil and Gas Production Platforms on Rocky Reef Fishes in Southern California.

6/1/95-5/30/98
\$1,094,481

TEACHING - UCSB

- 1985 Lecturer, Zoology 105, Biology of Fishes, Winter Quarter; Biology 105, Aquaculture, Spring Quarter
- 1986 Lecturer, Zoology 105, Biology of Fishes, Winter Quarter; Biology 105, Aquaculture, Spring Quarter
- 1987 Lecturer, Zoology 105, Biology of Fishes, Winter Quarter; Biology 105, Aquaculture, Spring Quarter
- 1988 Lecturer, Biology 105, Aquaculture, Spring Quarter
- 1996 Lecturer, Zoology 161, Fishes, Fall Quarter

PAPERS PRESENTED

Annual Meeting of Ichthyologists and Herpetologists - "Isolation of Olive Rockfish Populations in Southern California." June 1980.

American Fisheries Society - "Aspects of the Life History of the White Croaker, *Genyonemus lineatus*." January 1980.

West Coast Groundfish Conference - "Biology and Fishery of the White Croaker, *Genyonemus lineatus*." January 1984.

West Coast Groundfish Conference - "A Summary of Knowledge of Rockfish Movements." January 1986.

West Coast Biological Station, Nanaimo, British Columbia - "The Effectiveness of the Fish Diversion System of the San Onofre Nuclear Generating System." May 1986.

West Coast Groundfish Conference - "Aspects of the Life Histories of 19 Species of Rockfish (*Sebastes* spp.). February 1989.

Minerals Management Service - "Status of Knowledge of Fishes Living Around Offshore Oil Platforms Off Southern California." March 1989.

Joint U.S.-Japan Symposium on the Early Life History of Rockfishes - "Life History of Benthic Juvenile Rockfishes." June 1989.

Minerals Management Service - "Techniques for estimating fish populations around oil platforms." March 1991.

Minerals Management Service - "Effects of offshore platforms on local fisheries." June 1991.

Joint Conference American Fisheries Society, Cal-Neva and Humboldt Chapters - "Wake-Up Lecture for Fisheries Nerds". March 1994.

West Coast Groundfish Conference - "What we did on our Fall Vacation." January 1996.

PUBLICATIONS:

Books

1971 Cailliet, G.M., P.Y. Setzer and M. Love. Everyman's guide to ecological living. New York: MacMillan, 119 pp.

1979 Love, M. and G.M. Cailliet. Readings in ichthyology. Santa Monica, CA: Goodyear Publishing Company, 525 pp.

- 1986 Cailliet, G.M., M. Love and A.W. Ebeling. Fishes: a field and laboratory manual on their structure, identification, and natural history. Belmont, CA: Wadsworth Press, 194 pp.
- 1991 Love, M. Probably more than you want to know about the fishes of the Pacific Coast. Santa Barbara, CA: Really Big Press, 226 p.
- 1996 Love, M. Probably more than you want to know about the fishes of the Pacific Coast. 2nd Ed. Santa Barbara, CA: Really Big Press, 335 p.

CD-ROM

- 1995 Jean-Michel Cousteau's World. Vol. 1. Cities under the sea - corals reefs. Jean-Michel Cousteau Productions, Santa Barbara, CA and Enteractive Media Inc., Washington, D. C.

Articles: Technical

- 1974 Love, M. and R. Lee. 1974. New geographic and bathymetric records for fish from southern California. Calif. Fish Game 60:212-216.
- 1975 Moser, M. and M. Love. *Henneguya sebasta* sp. n. (Protozoa, Myxosporida) from California rockfish, *Sebastes* spp. J. Parasitol. 61:481-483.
- 1976 Moser, M., M. Love and L. Jensen. Myxosporida (Protozoa in California rockfish, *Sebastes* spp. J. Parasitol. 62:690-692.
- Love, M. and M. Moser. *Davisia reginae* sp. n. (Protozoa, Myxosporida) from four California marine fish. J. Parasitol. 62:982-983.
- 1978 Love, M. and M. Moser. Common parasites of California marine fish. Calif. Dept. Fish Game, Mar. Res. Leaflet 10.
- Love, M. and A. Ebeling. Food and habitat of three "switch-feeding" fishes in the kelp forests of Santa Barbara, California. Fish. Bull U.S. 76:257-271.
- Love, M. and R. Larson. Geographic variation in the occurrence of tympanic spines and possible genetic differentiation in the kelp rockfish (*Sebastes atrovirens*). Copeia (1):53-59.
- 1980 Love, M. Isolation of olive rockfish, *Sebastes serranoides*, populations off southern California. Fish. Bull. U.S. 77:975-983.
- 1981 Love, M. Evidence of movements of some deepwater rockfishes (Scorpaenidae: genus *Sebastes*) off southern California. Calif. Fish Game 67:246-249.
- Love, M. and W. Westphal. Growth, reproduction and food habits of olive rockfish, *Sebastes serranoides*, off central California. Fish. Bull. U.S. 79:533-545.

- Love, M., D. Teebken-Fisher, J.E. Hose, J.J. Farmer III, F.W. Hickman and G.R. Fanning. *Vibrio damsela*, a marine bacterium, causes skin ulcers on the damselfish, *Chromis punctipinnis*. Science 214:1139-1140.
- Love, M. and W. Westphal. A correlation between annual catches of Dungeness crab, *Cancer magister*, along the west coast of North America and mean annual sunspot number. Fish. Bull. U.S. 80:794-796.
- 1983 Love, M. and M. Moser. A checklist of parasites of California, Oregon and Washington marine and estuarine fishes. NMFS Tech. Rept. SSRF-777, 576 pp.
- 1984 Love, M., K. Shriener and P. Morris. Parasites of olive rockfish *Sebastes serranoides* (Scorpaenidae) off central California. Fish. Bull. U.S. 82:530-537.
- Love, M., G. McGowen, W. Westphal, R. Lavenberg and L. Martin. Aspects of the life history and fishery of the white croaker, *Genyonemus lineatus*. Fish. Bull. U.S. 82:179-198.
- 1985 Stephens, J.S., Jr., P.A. Morris, K. Zerba and M. Love. Factors affecting fish diversity on a temperate reef II: The fish assemblages of Palos Verdes Point, 1974-1981. Env. Biol. Fish. 11:259-275.
- Love, M., W. Westphal and R.A. Collins. Distributional patterns of fishes captured aboard commercial passenger fishing vessels along the northern Channel Islands, California. Fish. Bull. U.S. 83:243-251.
- 1986 Love, M., J.S. Stephens, Jr., P.A. Morris, M.M. Singer, M. Sandhu and T. Sciarrotta. Inshore soft substrata fishes in the Southern California Bight, an overview. CalCOFI Rpt. 27:84-106.
- 1987 Love, M., B. Axell, P. Morris, R. Collins and A. Brooks. Life history and fishery of the California scorpionfish, *Scorpaena guttata*, within the Southern California Bight. Fish. Bull. U.S. 85:99-116.
- 1988 Stephens, J.S., Jr., J.E. Hose and M. Love. Fish assemblages as indicators of environmental changes in nearshore environments. In: Marine organisms as indicators, D.S. Soule and G.S. Kleppel, eds., Springer Verlag, New York, pp. 91-106.
- 1989 Love, M., M. Sandhu, J. Stein, K.T. Herbison, R.H. Moore, M. Mullin and J.S. Stephens, Jr. An analysis of fish diversion efficiency and survivorship at the San Onofre nuclear generating station fish return system. NMFS Tech. Rept. 76. 16 p.
- 1990 Love, M. and A. Brooks. Size and age at first maturity of the California halibut, *Paralichthys californicus*, in the Southern California Bight. pp. 167-174 In: C.W. Haugen (ed.), The California halibut, *Paralichthys californicus*, resource and fisheries. Calif. Dept. Fish Game, Fish Bull. 174.

- Love, M., P. Morris, M. McCrae and R. Collins. Life history aspects of 19 rockfish species (Scorpaenidae: *Sebastes*) from the Southern California Bight. NMFS Tech. Rept. 87, 38 pp.
- Love, M. and W. Westphal. A comparison of fishes taken by a sportfishing party vessel around oil platforms and adjacent natural reefs near Santa Barbara, California. Fish. Bull. U.S. 88:599-605.
- 1991 Love, M., M. Carr and L. Haldorson. The ecology of substrate-associated juveniles of the genus *Sebastes*. Env. Biol. Fish. 30:225-243.
- Boehlert, G.W., M. Love, J. Wourms and J. Yamada. A summary of the symposium on rockfishes and recommendations for future research. Env. Biol. Fish. 30:273-280.
- Haldorson, L. and M. Love. Maturity and fecundity in the rockfishes, *Sebastes* spp. Mar. Fish. Rev. 53(2):25-31.
- 1992 Love, M. California scorpionfish; Blackgill rockfish. In: Leet, W., C.M. Dewees and C.W. Haugen (eds.). California Living Marine Resources and Their Utilization. Davis, California: University of California Sea Grant Extension Program.
- Yoklavich, M.M., H.G. Greene, G. Moreno, G.M. Cailliet, D. Sullivan, D. Watters, M. Love. The importance of small-scale refugia to deepwater rockfishes (*Sebastes* spp) - A pilot study in Soquel Canyon, Monterey, CA. EOS, Transactions, American Geophysical Union, 052A-01.
- 1994 Love, M., J. Hyland, A. Ebeling, T. Herrlinger, A. Brooks and E. Imamura. A pilot study of the distribution and abundance of rockfishes in relation to natural environmental factors and an offshore oil and gas production platform off the coast of Southern California. Bull. Mar. Sci. 55:1062-1085.
- 1995 Allen, L. G., T. E. Hovey, M. S. Love and J. T. W. Smith. The life history of the spotted sand bass (*Paralabrax maculatofasciatus*) within the southern California Bight. CalCOFI Rpt. 36:193-203.
- 1996 Love, M. S., A. Brooks, D. Busatto, J. Stephens and P. A. Gregory. Aspects of the life histories of the kelp bass and barred sand bass (*Paralabrax clathratus* and *P. nebulifer*) from the southern California Bight. Fish. Bull. U.S. 94. In press.

Submitted for Publication

Love, M. S., A. Brooks and J. R. Ally. An analysis of the commercial passenger fishing vessel fisheries for kelp and barred sand basses (*Paralabrax clathratus*

and *P. nebulifer*) from the southern California Bight. Calif. Fish Game

Southward range extension of the quillback rockfish, *Sebastes maliger*, to San Miguel Island, California. Calif. Fish Game

Articles: General

- 1979 Love, M. Guests and hosts. Nat. Hist. 88(6):84.
1980 Love, M. The alien strategy. Nat. Hist. 89(5):30-32.
1980 Love, M. Oh sex, where is thy sting? Nat. Hist. 89(11):26-28.
1981 Love, M. With a little help from my friends. Nat. Hist. 90(11):16-19.
1981 Love, M. Poem. No paean. J. Amer. Med. Assoc. 245:1668.
1982 Love, M. Once upon a time. New Sci. 93:391.
1982 Love, M. A rose by any other name. New Sci. 94:431-432.
1982 Love, M. The mass media science show. New Sci. 96:851.
1983 Love, M. Scientific promotions (inc.). New Sci. 97-673.
1983 Love, M. Never cross a potential reviewer. New Sci. 98:158.
1983 Love, M. Rampant scientists. New Sci. 99:806.
1983 Love, M. Incompatible relations. New Sci. 100:41.
1983 Love, M. Small relationships. New Sci. 100:680.
1984 Love, M. Hairy chested earwig story. New Sci. 101:32-33.
1984 Love, M. Taken to exitus. New Sci. 101:48-49.
1984 Love, M. Mother Nature's gardeners. New Sci. 101:36-37.
1984 Love, M. Eat, drink, and be sad. New Sci. 103:50-51.
1984 Love, M. The public face of science. New Sci. 103:31.
1984 Love, M. Survival of the smartest. New Sci. 104:44.
1989 Love, M. Symbiosis. Ocean Realm. Summer, p. 47-52.
1989 Love, M. Camouflage. Ocean Realm. Fall, p. 49-57.
1990 Love, M. Sex in the sea. Ocean Realm. Spring, p. 60-67.
1990 Love, R.M. Marine parenting. Ocean Realm. Summer, p. 40-43.
1990 Love, R.M. Cleaning stations. Ocean Realm. Fall, p. 68-72.
1991 Love, R.M. Love's way. Ocean Realm. Winter, p. 16-17.
1991 Love, R.M. Kelp canopies. Ocean Realm. Spring, p. 48-51.
1991 Love, R.M. Asteroids, stars of the sea. Ocean Realm. Summer, p. 27-31.
1991 Love, R.M. Things I bet you don't know about marine migration. Ocean Realm. Fall, p. 97-101.
1992 Love, R.M. Living shells, jewels of the sea. Ocean Realm. January, p. 67-73.
1992 Love, R.M. Marine bioluminescence. Ocean Realm. July/August, p. 54-59.
1992 Love, R.M. Nudibranchs. Ocean Realm. October, p. 61-71.
1992 Love, R.M. Frogfish. Ocean Realm. December, p. 41-43.
1993 Love, R.M. Sponges get no respect. Ocean Realm, February, p. 58-67.
1993 Love, R.M. Venomous fishes. Ocean Realm, April, p. 70-78.
1993 Love, R.M. Urchins. Ocean Realm, July, p. 80-87.
1993 Love, R.M. Living arrangements in the sea. Ocean Realm, September, p. 44-51.
1993 Love, R.M. and T. Thys. Molas. Ocean Realm, November, p. 43-47.
1994 Love, R. M. That naughty El Nino. Ocean Realm, April, p. 9.
1994 Love, R. M. Mangroves. Ocean Realm, April, p. 68-73.
1994 Love, R. M. Jellyfish. Ocean Realm, June, p. 68-75.
1994 Love, M. Creature Feature: Mola mola. Dolphin Log, July, p. 12-13.

- 1994 Love, R. M. Squid. Ocean Realm, September, p. 50-56.
1994 Love, R. M. Synchronicity. Ocean Realm, November, p. 49-51.
1995 Love, R. M. Decorator crabs. Ocean Realm, February, p. 50-55.
1995 Love, M. A Sea of Energy-Savers and Recyclers. Dolphin Log, March, p. 4-5.
1995 Love, M. Cool Blue Shark. Dolphin Log, March, p. 12-13.
1995 Love, M. The Strange Ways of Nature. Calypso Log, April, p. 17-19.
1995 Love, R. M. Sea Snakes. Ocean Realm, April, p. 48-56.
1995 Love, M. The Frogfish. Dolphin Log, May, p. 12-13.
1995 Love, M. Sponge Scene. Dolphin Log, July, p. 12-13.
1995 Love, M. The Case of the Piscine Proteus. Dive Travel, Fall, p. 15-16.
1995 Love, M. Yikes, Spikes! Dolphin Log, September, p. 12-13.
1995 Love, R. M. Weird and wonderful sand creatures. Ocean Realm, September p. 48-63.
1996 Love, M. Look for the tattoo. Dive Travel, Winter, p. 12-14.
1996 Love, M. High-flying Hawkfishes. Dolphin Log, January, p. 12-13.
1996 Love, R. M. Strange and Startling Stingers in the Sea. Ocean Realm, January, p. 40-55.
1996 Love, M. Sex! Sex! Dive Travel, Spring 1996, p. 10-14.
1996 Love, M. More Than Most People Know-Or Maybe Want to Know-but Should Know About the uses of Algae. Ocean Realm, March/April 1996.

REFERENCES

Dr. A.W. Ebeling
Department of Biological Sciences
University of California
Santa Barbara, California 93106

Dr. John Stephens, Jr.
Department of Biology
Occidental College
1600 Campus Road
Los Angeles, California 90041

Dr. G. Cailliet
Moss Landing Marine Laboratory
Post Office Box 450
Moss Landing, California 95039

Mr. Greg MacGillivray
MacGillivray Freeman Films
P.O. Box 205
Laguna Beach, CA 92652

Curriculum Vitae

MARK A. STEELE

Personal Data

Birth Date: April 9, 1967

SS#: 564-98-6852

Address: Department of Biology, UCLA
405 Hilgard Avenue
Los Angeles, CA 90095-1606

Phone: work: (310) 825-4132

FAX: (310) 206-3987

E-mail: masteele@ucla.edu

Education

B.A. 1989. University of California, San Diego. Major: Ecology, Behavior, and Evolution; Cum Laude.

Ph.D. 1995. University of California, Santa Barbara. Biology.

Professional Experience

- 1995-present Postdoctoral Fellow, Department of Biology, University of California, Los Angeles, with Graham Forrester.
- 1990-1995 Teaching Assistant, Department of Biological Sciences, University of California, Santa Barbara.
- 1991, 1995 Research Assistant, Department of Biological Sciences, University of California, Santa Barbara.
- 1987-1989 Teaching Assistant, Biology Department, University of California, San Diego.

Fellowships and Honors

- 1995 UCSB General Affiliates Graduate Dissertation Fellowship
- 1994 Regent's Fellowship, University of California, Santa Barbara
- 1994 Graduate Student Fee Fellowship, University of California, Santa Barbara
- 1993 Graduate Student Fee Fellowship, University of California, Santa Barbara
- 1992 Graduate Student Fee Fellowship, University of California, Santa Barbara
- 1991 Honorable Mention, National Science Foundation Graduate Fellowship
- 1990 Regent's Fellowship, University of California, Santa Barbara
- 1988 President's Undergraduate Fellowship, University of California, San Diego

Grants and Scholarships Awarded

- 1995 University of California Travel Grant
- 1994 International Women's Fishing Association Scholarship
- 1993 Sigma Xi Grant-in Aid of Research
- 1993 Lerner-Gray Fund for Marine Research
- 1993 International Women's Fishing Association Scholarship
- 1992 Sigma Xi Grant-in Aid of Research
- 1992 Lerner-Gray Fund for Marine Research
- 1992 International Women's Fishing Association Scholarship

Professional Memberships

American Society of Ichthyologists and Herpetologists
Ecological Society of America
Sigma Xi
Western Society of Naturalists

Publications

- Steele, M. A. 1995. The contributions of predation, competition, and recruitment to population regulation of two temperate reef fishes. Ph.D. Dissertation. University of California, Santa Barbara, California, USA.
- Steele, M. A. 1996. Effects of predators on reef fishes: separating cage artifacts from effects of predation. *Journal of Experimental Marine Biology and Ecology* 198:249-267.
- Steele, M. A. The relative importance of processes affecting recruitment of two temperate reef fishes. *Ecology*, *in press*.

Publications in Review and in Preparation

- Steele, M. A. Population regulation by post-settlement processes in two temperate reef fishes. (submitted to *Ecology*).
- Steele, M. A. Effects of predators and competitors on populations of two temperate reef fishes. (to be submitted to *Ecology*).

DANIEL FRUMKES
24958 Malibu Road
Malibu, California 90265
(310)456-2518

EDUCATION:

B.A. Zoology, U.C.L.A., 1962 .

PROFESSIONAL EXPERIENCE

Fisheries Research, 1982 - present
Malibu, CA (310)456-2518

Liaison between marine scientists and government and public advocates. Review fisheries literature relevant to proposed legislation. Develop written documentation necessary to draft and pass legislation and testify in committee. Critique and conduct research on release mortality and waste associated with fishing gears.

Director, ASA Conservation Network, 1996 - present

Malibu, CA (310)456-9201, Alexandria, Virginia (703)519-1872

Form alliances of institutions and individuals to focus the greatest amount of supporting information, personnel, and political astuteness in support of the rational management of specific marine resources or issues relating to rational marine resource management. Develop an understanding of the resources available within the networked organization to enable those resources to be efficiently utilized in support of the mission. Design and construct a computerized resource index to enable future alliances to build on past experiences.

Chairman, Habitat Research and Enhancement Committee, United Anglers So. California, 1994 - present

Huntington Beach, CA (714) 846-8259

Development and coordination of research projects to act as foundation for the creation of a large number of artificial reefs and marine parks as environmental mitigation or funded primarily by industry through demolition and landfill savings.

Chairman, Proposition 132 Committee, United Anglers So. California, 1990 - 1994

Huntington Beach, CA (714) 846-8259

Helped to develop and pass Proposition 132, The Marine Resources Protection Act. This act excluded gillnets from most state waters and provided for increased research. It was the only conservation initiative to be enacted in 1990. Consulted with the scientific community, provided research, and wrote most support documents based on research. Led efforts of United Anglers of Southern California designed to ensure that the Act withstands court challenges and is implemented as intended by the voters.

President, Socal Stores Inc. 1987 - 1990

Brentwood, CA (310) 471-0013

Developed, built, owned, and managed two ARCO convenience store-gas stations including the highest grossing market in the chain.

Scientific Liaison, California State Legislators 1984 -1990

Sacramento, CA

Reviewed literature, consulted with the scientific community, provided research, wrote support documents based on that research, testified during legislative hearings and often helped draft legislation. Legislation included:

1988 - 1989, Assemblywoman Doris Allen, AB 1, attempted to restrict the use of gillnets, later modified to become proposition 132.

1989, Senator Henry Mello, SB 473, restricted the use of trawl nets.

1987-1988, Senator Cecil Green, SB 2020, created the Director's Marine Resources Advisory Committee and attempted to restrict the use of gillnets.

1987 , Assemblywoman Cathie Wright, AB 3707, restricted the use of gillnets.

1986 , Assemblywoman Cathie Wright, AB 3584, increased the Department of Fish and Game's accountability to the legislature.

1986, Senator Marian Bergeson, SB 1738, restricted the use of and take from gillnets.

1984 -1985, , Assemblywoman Cathie Wright, AB 307, Legislation attempted to restrict the use of gillnets.

Scientific Liaison, Marine Resources Restoration Committee 1984-1988

Ventura, CA (805) 654-2706

Assisted Supervisor John Flynn, consulted with scientific community, provided research, wrote all support documents based on research, and testified during legislative hearings

Environmental Representative, Santa Monica Bay Advisory Committee, 1985

Santa Monica, CA (310) 451-5733

Assisted Assemblyman Tom Hayden, helped design and critique the Sportfishing Revitalization Study.

Home Builder, 1978 -1983

Malibu, CA (310) 456-2518

Assistant Director Statistical Research Laboratory, Brentwood V. A. Hospital 1971 -1978

Brentwood, CA

Supervised and coordinated staff of statisticians and programmers developing new techniques to collect and analyze program evaluation, clinical and laboratory data. Conducted research in interactive access to relational data bases. Consulted with researchers. Assisted the hospital director in coordinating the departments of research, education, and program evaluation.

Biological Statistician, Health Sciences Computing Facility, U.C.L.A. 1963 - 1970

Westwood, CA

Assisted in the design and analysis of a variety of medical and other scientific research projects. Was project leader on several large studies. Developed new approaches to improve data quality in longitudinal data bases. Developed analytical techniques and wrote generalized statistical programs which were published and distributed worldwide as components of the BMD statistical analysis series.

Telemetry Technician, Douglas Missiles and Space Division 1963

Santa Monica, CA

Reduced, graphically displayed, and annotated analog telemetry data from rockets.

PUBLICATIONS :

"Biological Report", California Angler Magazine, Mar. 1990.

"Gillnets, Trammel Nets, and Trawl Nets: A Fact Sheet", South Coast Sportfishing Magazine, Nov. 1987.

BMDP1D and BMDP2D, University of California Press, 1979.

"Management And Analysis Of Non Rectangular Databases", Proceedings on the Interface,
University of California Press, 1978

MEMBER: California Department of Fish and Game Director's Marine Resources
Advisory Committee
Board of Directors, United Anglers of Southern California Foundation
Southern California Nearshore Ichthyologists Committee on Research
City of Malibu Environmental Review Board

**FOR FURTHER INFORMATION
PLEASE CONTACT:**

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17351-B MURPHY
IRVINE, CA
92614**

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(Home) 714-548-5991
(Fax) 714-660-7067**

10/08/96 11:00 AM
Paul Dayton, 12:04 PM 10/8/96 -0700, I added one word and one comma

Date: Tue, 8 Oct 1996 12:04:32 -0700 (PDT)
X-Sender: pdayton@popmail.ucsd.edu
Mime-Version: 1.0
To: Susan_Jordan@newscom.com
From: pdayton@ucsd.edu (Paul Dayton)
Subject: I added one word and one comma

Attention
Susan Jordan

Susan, these are the comments that I dictated to you on the phone. I believe that they are correct.

>To the Coastal Commissioners
>California Coastal Commission

>
>Dear Commissioners,

>
>I am in substantial agreement with the views expressed in Craig Osenberg's
>letter to the Coastal Commission, dated October 2, 1996, and feel that
>Southern California Edison (SCE) has selectively edited the findings in our
>report to minimize the mitigations they may be required to do to offset the
>impacts of SONGS, and they appear to have selectively used the data in the
>Dean and Deysher report as well.

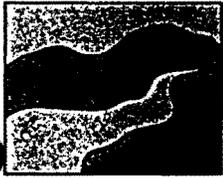
>
>The Coastal Commission staff report appears to me to be a well-balanced
>compromise.

>
>
>Sincerely,

> *Paul Dayton*
>Paul K. Dayton,
Professor of Marine Ecology, and
Member, Independent Review Panel

Received at Commission
Meeting

OCT - 8 1996



San Dieguito River Valley
Regional Open Space Park
1500 State St., Suite 280
San Diego, CA 92101
(619) 235-5445 Fax (619) 235-4323

**JOINT POWERS AUTHORITY
BOARD OF DIRECTORS**

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Supervisor
County of San Diego

Pam Slater
Supervisor
County of San Diego

Dr. Phillip Pryde
Chair
Citizens Advisory Committee

Diane Barlow Coombs
Executive Director

Received at Commission Meeting ^{October 7, 1996}

OCT - 8 1996

From: _____

Honorable Commissioners
California Coastal Commission
45 Fremont Street, Suite 2000
San Francisco, CA 94105-2219

Dear Chairperson Calcagno and Commissioners:

Subject: Item 15a. Permit No. 6-81-330-A (SONGS, Southern California Edison)

The San Dieguito River Park Joint Powers Authority supports many of the recommendations included in your staff report, but requests that you consider the following points in your discussion at today's meeting. We also ask that you not make your final decision on this matter until your November meeting in San Diego so that the many people in San Diego who have been involved in this project for so long, and care so much about the San Dieguito Lagoon can be present to testify.

For your information, the San Dieguito River Park Joint Powers Authority Board has adopted two general policies with respect to the San Dieguito Wetlands Restoration Plan. Those are that the SCE project should maximize opportunities at San Dieguito before doing additional work at another location; and that the monitoring, remediation, management and maintenance programs should not place any unfunded responsibilities on the JPA.

Support for Trust Fund for Wetlands at San Dieguito

Among the recommendations your staff has made is that Southern California Edison should have the option to pay into a trust fund for the design and implementation of a wetlands project at San Dieguito. The JPA can support the trust fund option if it can be assured that the funds will be adequate to cover all costs and will be spent to create and restore wetlands at San Dieguito.

Add San Dieguito River Park Joint Powers Authority to Management Oversight Committee

As the major landowner affected by the San Dieguito Wetlands Restoration, and as the lead agency for CEQA, it is appropriate that the JPA help develop and oversee the Monitoring and Management Plan for the wetlands restoration project.

Analyze Feasibility of Maximizing Wetland Opportunities at San Dieguito

The San Dieguito River Park JPA and others are convinced that the whole 150 acres of wetland creation/restoration is feasible at San Dieguito. The JPA believes it is premature for your Commission to approve a preliminary plan that would call for only 92 acres credit at San Dieguito and 58 acres credit at Ormond Beach. The

proper time to address the feasibility of restoring all 150 acres at San Dieguito is in the EIR/EIS process.

The San Dieguito River Park JPA believes that San Dieguito is the best site for a full 150 acre restoration, and that it is premature to determine otherwise for the following reasons:

- Southern California Edison has indicated for some time that it is not possible to create 150 acres of wetlands at San Dieguito because of the flooding and scour constraints identified in Dr. Howard Chang's report. However, in a letter to Edison dated July 26, 1996, your staff noted, "One possible way to satisfy the entire wetland mitigation obligation at San Dieguito Lagoon is to reinforce the existing infrastructure so that it is not damaged by rare flood events. Engineers hired by the Coastal Conservancy estimated that the appropriate bridge and bank reinforcements would add approximately \$4 million to the overall program costs....Because reinforcing the infrastructure at San Dieguito Lagoon would remove a major design constraint, we believe that this approach would allow the best possible mitigation project to occur at San Dieguito Lagoon." We believe it is possible to design infrastructure improvements at San Dieguito which would be acceptable to the public.

We believe that Edison should be responsible for infrastructure improvements needed to implement the entire wetland restoration project at San Dieguito. We note that the Batiquitos Lagoon restoration - the closest and most recent precedent - rebuilt bridges and made other necessary infrastructure improvements. Edison should be treated equally. In fact, if the Commission does not include infrastructure improvements in the permit, you would be acting counter to the precedent set at the Port of Los Angeles' Batiquitos project.

- San Dieguito can be done cost effectively because so much work has already been accomplished. Millions of dollars have been spent on flood studies, hydrological studies, land acquisition, etc. There have been years of public involvement and government agency support for the San Dieguito project. There are multi-party agreements in place. The San Dieguito River Park Joint Powers Authority has acquired the 89-acre Airfield property and is contributing its use for wetland mitigation because the JPA wishes to be a partner with the resource agencies and SCE in seeing the San Dieguito Lagoon fully restored. We believe it is totally inappropriate at this point in midstream to pull the plug and approve diversion of some of the San Dieguito project to Ormond. That judgment should only be made after the EIR/EIS is completed and the alternatives at San Dieguito have been studied. If, at that time, it is proven to be infeasible to do all 150 acres at San Dieguito, then you can amend the permit to incorporate the addition of acreage at Ormond or some other location. Making that decision before the EIR/EIS process would shortchange the process. It would be bad public policy and economically inefficient.
- We are only at the preliminary planning stage at this point. A final restoration plan and a coastal construction permit will be required later, and approvals will be needed from the US Army Corps of Engineers for a Section 404 permit, and from the City of Del Mar and the

10/7/96

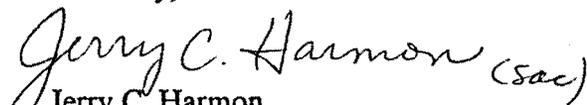
Page 3

City of San Diego. The San Dieguito River Park Joint Powers Authority, which owns a substantial portion of the property to be restored, must approve the final restoration plan per its Memorandum of Agreement with SCE. None of these approvals can or will be given until the EIR/EIS process is completed; a process which has not yet started. The EIR/EIS will determine feasibility, exactly how to do the job at San Dieguito, what type of mitigation and monitoring is required for the specific design, and what will be involved in the long-term management. The Commission should not at this early point approve details and parameters that will prevent getting the best project at San Dieguito for the dollar.

- Because so much work has already been done at San Dieguito, there is tremendous momentum to move forward at San Dieguito.
 1. SCE and the JPA already have Memoranda of Agreements that lay out the roles and responsibilities of each during the planning and environmental process, and will serve as a structure for long term management. (See attached, but note that the documents were signed several years ago, and that revisions may be necessary due to changed circumstances.)
 2. There is established public support and an established public involvement process.
 3. The JPA owns the 89-acre Airfield property to be used for wetland restoration, and SCE owns the 86-acre Horseworld property (which they purchased for restoration) and has already agreed to transfer title to that property to the JPA. The JPA owns or controls much of the additional land needed to get to 150 acres.
 4. Valuable experience has been gained from the Batiquitos Lagoon restoration located just to the north of the San Dieguito wetlands, that will be useful in the design and construction process at San Dieguito.
 5. We have agency support - all the affected cities and the County are member agencies of the JPA and strongly support implementing the entire 150 acre wetland restoration project at San Dieguito.

The JPA's goal is to achieve the best possible and most appropriate wetland restoration project for the San Dieguito Lagoon. We are asking the Coastal Commission to help us achieve this goal by incorporating in your final decision the recommendations set forth in this letter. Edison should be required to fulfill the 150 acre wetland restoration requirement at San Dieguito through the pursuit of all feasible and appropriate restoration options as will be identified in the Final EIR/EIS. We stand ready to work with your staff to make changes in the recommended action for final consideration at your November meeting in San Diego.

Sincerely,


Jerry C. Harmon (Sac)
Chair

MEMORANDUM OF AGREEMENT

Parties

This Memorandum of Agreement ("MOA") is by and between the San Dieguito River Valley Regional Open Space Park Joint Powers Authority ("JPA") and the Southern California Edison Company ("Edison"), (at times collectively referred to as "Parties"). The MOA establishes an agreement between the Parties for the restoration of certain wetlands located within the San Dieguito River Valley.

Recitals

WHEREAS, the JPA is a joint powers authority existing pursuant to California Government Code Section 6500, et seq. whose purposes and powers include the power to jointly "acquire, plan, design, improve, manage, operate and maintain the San Dieguito River Valley Regional Open Space Park";

WHEREAS, the JPA and the County of San Diego owns certain properties located south of the San Dieguito River and west of Interstate 5 (totalling approximately 89.3 acres and referred to as the "Airfield" property), comprised in whole or in part of degraded wetlands;

WHEREAS, the JPA controls the entire Airfield property for the purposes set forth in this MOA, including coastal wetland restoration;

WHEREAS, the JPA plans to acquire and restore an 88 acre parcel, comprised in whole or in part of degraded wetlands, located along the San Dieguito River and east of Interstate 5 (referred to as the "Horseworld" property);

WHEREAS, Edison desires to assist the JPA in the acquisition and restoration into functional coastal wetlands of the Horseworld property;

WHEREAS, Edison desires to assist the JPA in restoring the Airfield property into functional coastal wetlands;

WHEREAS, Edison's actions are subject to pre-approval by the California Coastal Commission;

WHEREAS, the Parties believe the restoration of these degraded coastal wetlands will provide significant benefits to fish, wildlife, riparian and other important resources; and

WHEREAS, the Parties recognize that no commitment to proceed with actual restoration, or possibly even the development of a restoration plan, on either the Airfield or Horseworld properties can be approved until CEQA compliance is first achieved and, consequently, the Parties recognize that this MOA does not represent a commitment to undertake any project subject to CEQA in advance of CEQA review.

THEREFORE, the Parties Agree As Follows:

I. Acquisition of Horseworld Property

- A. Edison agrees to purchase the Horseworld property for an amount as close to the appraised value as possible, but not greater than six million dollars (\$6,000,000), unless the MOA is terminated in accordance with Article V.B. If Edison pays more than the fair market appraised value for the property, appropriate recitals shall be included in the purchase documents making clear that any payment in

excess of the appraised value is not a reflection of the fair market value of the property but is made for other reasons. The purpose of this provision is to ensure that any such price higher than appraised fair market value cannot be used as a "comparable sale" for purposes of valuing other property. The JPA shall have the right to review and comment upon the language to be included in the purchase agreement to ensure this paragraph is satisfied.

- B. Edison will transfer the title in fee to the Horseworld property to JPA within 30 days of Coastal Commission approval of the restoration plan defined in Article II.D for and in consideration of the covenants and promises of JPA made herein, and no additional consideration shall be required.
- C. Edison shall appoint an appraiser to establish the market value of the Horseworld property. Edison shall pay for the fee charged by the appraiser.
- D. Edison shall provide JPA with a copy of all material given to Edison by the appraiser in support of the market value determination, including the results of the appraisal, on a confidential basis.
- E. When Edison transfers the title to the Horseworld property to JPA, JPA will accept as a condition of title language which implements the provisions of Article II.B.

II. Restoration of Horseworld and Airfield Properties

- A. The JPA grants Edison the exclusive right to restore the Horseworld and Airfield properties into coastal wetlands which provide valuable habitat for fish and wildlife.
- B. The JPA agrees not to sell, lease, or otherwise encumber the Horseworld or Airfield properties during the term of this MOA, unless written permission is given by Edison. Such written permission shall be given if the purpose of the encumbrance is consistent with the development of the San Dieguito River Valley into restored wetlands and is not inconsistent with the Plan described in Article II.D. JPA further agrees to manage the properties to preclude any use inconsistent with the development and operation of the properties as functional coastal wetlands.
- C. Edison shall accept the exclusive right to restore the Horseworld and Airfield properties into coastal wetlands contingent upon the California Coastal Commission authorizing the San Dieguito River Valley as the site for performing wetlands restoration.
- D. When Edison accepts the exclusive right to restore the Horseworld and Airfield properties, Edison shall develop a "Plan for the Wetland Restoration of the Horseworld and Airfield Properties" ("Plan") in accordance with any constraints, conditions, and requirements imposed by the California Coastal Commission or its staff. Edison's Plan shall be consistent with the JPA's restoration plan for

the entire San Dieguito River Valley Regional Open Space Park. Edison shall provide the JPA with an opportunity to review and approve Edison's Plan, and any draft Plan, prior to seeking any Coastal Commission approval of the Plan.

- E. Once approved, Edison must present any suggested amendments to the Plan to the JPA for review and approval, prior to Edison seeking Coastal Commission approval of Plan amendments. The JPA recognizes that the Coastal Commission may require changes to the Plan and any amendments as approved by the JPA and agrees, subject to Article II.H., to accept the Plan and any amendments approved by the Coastal Commission.
- F. Edison shall have full responsibility for implementing the Plan to restore the Horsecworld and Airfield properties. Additionally, Edison shall be responsible for all project planning, permitting, environmental review, and monitoring costs associated with the Plan.
- G. JPA shall use its best efforts to assist Edison in implementing the restoration Plan, including, but not limited to, being named a joint applicant on any permit or license application submitted by Edison to a governmental agency exercising control over the Plan.
- H. Edison and/or JPA must comply with the California Environmental Quality Act ("CEQA") before the Edison restoration Plan is implemented. As the governmental

agency with greatest responsibility for supervising the Plan, JPA shall seek to become the lead agency for determining Plan compliance with CEQA. This MOA describes the process by which Edison's restoration Plan will be developed and allocates responsibility for the Plan's implementation. Entering into this MOA does not constitute an adoption of a Project or a commitment to carry out a Project as those terms are used in CEQA.

III. Access

Edison, its employees, agents, and consultants, shall have the right to proceed with research, including site investigation, testing and other related or necessary activities 1) for the Airfield property, upon the effective date of the MOA, and 2) for the Horseworld property, upon the transfer of title to JPA by Edison. Upon approval of Edison's Plan and subject to Articles I.B., if applicable, and II.H., Edison, its employees, agents, and consultants, shall have the right to proceed with restoration, maintenance, monitoring and other related or necessary activities for the Airfield and Horseworld properties. Edison shall indemnify, defend, and hold harmless JPA and the County of San Diego and their officers, agents, and employees from and against any personal injury, property damage, mechanic lien, or other lien or claim of any kind, including attorneys fees and costs, which may arise as a result of the exercise of the access rights granted by this paragraph.

IV. Wetlands Management

- A. Edison shall manage, including monitoring and maintaining, the restored wetlands for a period determined by the California Coastal Commission. Such period shall be for a minimum of twenty (20) years from the completion of the wetland restoration required by the Plan, or the operating life of the San Onofre Nuclear Generating Station Units 2 and 3, whichever is longer. With the approval of the Coastal Commission, Edison may contract with JPA, on terms to be negotiated between JPA and Edison, for JPA to perform Edison's management obligations hereunder.
- B. JPA agrees to assume responsibility for management of the restored wetlands upon the expiration of the period in which Edison is required by the Coastal Commission to perform such management. JPA agrees to establish a Wetlands Management Endowment Fund for the Management of the San Dieguito River Valley Regional Open Space Park ("Endowment Fund"). Upon Coastal Commission approval of the Edison Plan, Edison shall deposit the sum of Five Hundred Thousand Dollars (\$500,000) in the Endowment Fund. JPA may, but is not required to, deposit additional funds into the Endowment Fund.

V. Termination

- A. After eighteen months past the effective date of the MOA and upon sixty (60) days written notice, the JPA may terminate the MOA if the Coastal Commission has not reached a final decision, including any court appeals, in the ongoing proceedings regarding allegations of environmental harm caused by the operation of the San Onofre Nuclear Generating Station and Edison has not purchased the Horseworld Property.
- B. Upon thirty (30) days written notice, Edison may terminate either 1) the entire MOA, or 2) the MOA as it applies to the restoration of only the Horseworld property, if Edison cannot acquire the Horseworld property for six million dollars (\$6,000,000) or less.
- C. Either Party may terminate the MOA upon sixty (60) days written notice, as it applies to the Horseworld and/or Airfield properties if 1) either the Parties or the Coastal Commission determines the property cannot be successfully restored into valuable coastal wetlands, or 2) necessary permits/authorizations, including any decision of the Regional Water Quality Control Board, San Diego Region, in current proceedings regarding alleged wastewater permit violations at Edison's San Onofre Nuclear Generating Station, cannot be obtained within three years of the effective date of the MOA.

D. This MOA shall terminate the day after the JPA assumes responsibility for management of the restored wetlands pursuant to Article IV.B.

VI. Notice

Any notice given under this MOA from one Party to the other shall be in writing and deemed to be delivered to either Party if personally served or sent by registered or certified mail, postage prepaid to the person and address below:

Southern California Edison Company
Manager, Environmental Affairs
P.O. Box 800
Rosemead, California 91770

San Dieguito River Valley Regional
Open Space Park Joint Powers Authority
Executive Director
401 B. Street, Suite 800
San Diego, California 92101

VII. Confidentiality

This MOA shall be kept confidential to the full extent authorized by law; provided that disclosure may occur when the purchase of the Horseworld property is completed.

VIII. Execution

The signatories to this MOA represent they have the appropriate authority to enter into this MOA on behalf of the Party for whom they sign. The MOA shall become effective as of the date last stated below.

Southern California Edison Company

By: Robert Dietz
Name: ROBERT DIETZ
Title: VICE PRESIDENT
Date: 8/13/91

San Dieguito River Valley Regional
Open Space Park Joint Powers Authority

By: Diane B. Coombs
Name: DIANE B. COOMBS
Title: Executive Director
Date: 8/14/91

October 7, 1996
201 Ocean View Avenue
Del Mar, California 92014
Received
Meeting

California Coastal Commission
45 Fremont Street, Suite 2000
San Francisco, California 94105-2219

OCT - 8 1996

From: _____

Dear Coastal Commission Members:

The San Dieguito Lagoon Committee regrets that this hearing is not being held in San Diego so that members of the public, many of whom have been working since 1972 to bring about substantial restoration of the San Dieguito Lagoon ecosystem, could attend this meeting and express their opinions. The Committee supports many of the Coastal Commission (CCC) staff positions expressed in the recent report written in response to Southern California Edison's (SCE) request for amendments to their 1991 permit conditions. However, we have some important changes or conditions which we strongly urge you to consider and incorporate in your final decision.

(1) *We urge that the Coastal Commission continue its long held position that SCE carry out the ENTIRE 150-acre wetland restoration mitigation requirement in the San Dieguito Lagoon.* All expert studies to date, including the exhaustive site selection analyses, indicate that a 150-acre mitigation project is feasible at San Dieguito. The recent findings of the biological agencies, including the CCC staff (see Hansch 7-26-96 letter to SCE), continue to support the site selection conclusions. Furthermore, the costly consultation of Dr. Howard Chang indicates that extensive restoration, even beyond that which would be included in a 150-acre mitigation project and a supplemental Earth Island project, is possible at San Dieguito with infrastructure improvement such as carried out in the Batiquitos Lagoon enhancement project. It is also very important to note that the detailed studies which will show just how many acres of restoration, with and without infrastructure improvements, can take place at San Dieguito will be conducted in the forthcoming CEQA and NEPA processes. The Coastal Commission compromise to allow about 35 acres credit (28.1% MHHW) for inlet opening in perpetuity is very reasonable. We agree with the CCC staff that, including the 35 acre credit for inlet opening, SCE is proposing to do only about a total of 92 acres of actual restoration. We believe that it is possible to carry out the entire 150 acre mitigation condition agreed to by both SCE and the CCC in 1991 at San Dieguito and that the CCC should not change this condition.

(2) *Although we consider clean-up and restoration of the biologically significant Ormond property to be a worthwhile project, we strongly urge that this enhancement is not carried out at the expense of mitigation acres at San Dieguito.* Certainly, the proposal to transfer 58 acres of credit from San Dieguito to Ormond is unreasonable. This would represent more than one-third of the original 150-acre project and would obviously threaten the successful restoration at San Dieguito. So much time and money has gone into preliminary planning for San Dieguito it seems extremely wasteful to jettison mitigation acres now, especially before the CEQA and NEPA studies. In regard to restoration at Ormond, it is relevant to consider the fact that the negative effects to the complex fishery ecosystem by San Onofre operations have continued since the permit conditions were adopted in 1991. Perhaps additional restoration above the original 150-acre requirement is appropriate to compensate for these extra five years of fishery damage.

(3) *We believe that Trust Funds for implementing both the restoration and monitoring are appropriate but only if these funds are dedicated solely for use at San Dieguito.* It is our opinion that these Trust Funds are a good idea in light of SCE's tendency to take adversarial stands against Coastal Commission staff positions and their propensity to waste so much money doing so and on consulting reports. Trusts Funds, if they are adequately funded, will remove SCE from

the process and allow SCE to see an end to their involvement in this mitigation project. If the CEQA/NEPA process indicates that the full 150-acre mitigation cannot be carried out at San Dieguito then this money could be released.

(4) We enthusiastically support the CCC staff's request for independent monitoring but believe that monitoring should be carried out for a minimum of fifteen years in order to adequately overlap the approximate ten-year cycles of wet/dry and storm events. We trust that such independent monitoring, adequately funded, would be carried out with Interagency Wetland Advisory Panel (IWAP) oversight in cooperation with the Joint Powers Authority for the San Dieguito River Park. We believe that the weak provisions (proposed amendments to Condition II-D) SCE is proposing for the monitoring program are totally inadequate. We are distressed at SCE's apparent cynicism in suggesting such amendments.

Finally, we ask the Commission not to abandon all the time, effort and money that have brought all parties, including the public, this far. We ask you to complete the full 150 acres of mitigation credit at San Dieguito.

Sincerely,



Nancy Weare, Chair
San Dieguito Lagoon Committee

WHEELER J. NORTH
October 4 1996

RECEIVED
OCT 08 1996

Chairman Louis Calcagno
California Coastal Commission
45 Fremont Street
San Francisco California 94105

CALIFORNIA
COASTAL COMMISSION
FAX 408-633-6320

Dear Chairman Calcagno:

This letter expresses my interest in the upcoming hearing regarding mitigation by Southern California Edison Company (SCE) for alleged impacts by their San Onofre Nuclear Generating Station (SONGS) on the San Onofre kelp bed (SOK). I am a marine biologist specializing in kelp bed ecology and am currently Professor of Environmental Science Emeritus at the California Institute of Technology. I have served as consultant to SCE by conducting field studies at SOK but I am not currently under contract. This letter was prepared in cooperation with Robert S. Grove of SCE. I have also consulted for several State Agencies including the Department of Fish & Game, Parks & Recreation, the local Regional Water Pollution Control Board as well as several municipalities such as the Cities of San Francisco, Los Angeles, and San Diego.

Several reports and publications have appeared since my field studies at SOK terminated. My opinion regarding impacts from SONGS on SOK have altered slightly in the light of the recent material. I have stated before and still believe that negative effects on SOK from SONGS have yet to be demonstrated. Some of the recent information, however, does indicate that the discharge systems of SONGS Units 2 & 3 do enhance levels of tissue nitrogen in nearby kelp canopies by artificially upwelling substantial amounts of bottom water (Jahn *et al.* In Press). Such action, of course, benefits the affected kelp plants and probably assists survival during stressful seasonal and other periods when water temperatures are high and background concentrations of nutrients are low. Consequently my current position is that net benefits from SONGS operations are modest for SOK under normal oceanographic conditions but are apt to be critical to bed survival during major El Nino events such as occurred from 1982 to 1984. The only portion of SOK that survived this catastrophe was the offshore region, especially where the kelp canopies are contacted by the plume from SONGS. (Petersen, 1985).

The 1982-84 El Nino, with its series of powerful storms and transport of warm seawater into the Southern California Bight, decimated kelp populations throughout southern California. Kelp stands at San Mateo Point (SMK) and SOK lost most of their adult plants. SMK recovered quite rapidly in 1985-86 and continued expanding southeasterly into territory not occupied for many years prior to 1982. SOK recovered much more slowly than SMK, not attaining its pre-El Nino dimensions until 1989-90 when it became stimulated by a La Nina episode. Both kelp beds have cycled more or less in unison from 1988 onward. Dean & Deysher (1996) graph the sizes of SMK and SOK, based on sonar data, from 1978 to the present. The cycling patterns from both SMK & SOK

Chairman Louis Calcagno
October 4 1996

-2-

correlate well except for the recovery period following the 1982-84 El Nino (i.e. 1985-88).

BACIP analyses based on sonar data from the late 1970s to the late 1980s were strongly influenced by the slow recovery of SOK from the 1982-84 El Nino vs the rapid pace at SMK. This was interpreted as indicating a large impact on SOK from operations at SONGS (SONGS commenced discharging in May 1983). Subsequent BACIP analyses have concluded that the impact size was over-estimated initially. The reduced estimate from the later analyses occurred because cycling by SMK and SOK since 1989 has resembled the pattern exhibited before SONGS discharging began in 1983. The conclusion of an impact by SOK thus depended strongly on the well-established circumstance that recovery from the 1982-84 El Nino required about two years at the control site (SMK) versus four years for the test population (SOK).

One must also consider whether natural phenomena may have influenced the recovery patterns at SMK vs SOK. My observations indicated that indeed there were negative physical and biological factors operating then at SOK but not at SMK which should be taken into account.

1. The sources of kelp spores (i.e. adult plants) that are required for repopulation of a decimated bed were nearby the depleted areas at SMK but far away for a substantial part of SOK.

2. The offshore part of SOK suffered a massive invasion by white urchins, beginning in 1986 and continuing for several years. Urching grazing destroyed a substantial fraction of the offshore kelp population during 1986 and 1987. Thus SOK lost an important fraction of its spore sources at a critical time during the recovery period.

These biological problems during 1985-88 at SOK were sufficient, in my opinion, to account for the slow recovery by this kelp bed compared to SMK.

If there truly is a negative impact at SOK from operations at SONGS, it should have been present ever since the discharge commenced, from 1983 to the present. If so, a BACIP analysis omitting the controversial four years of 1985 through 1988, ought still to demonstrate a negative impact occurring at SOK. I have not attempted such an analysis. Simply viewing the records for 1978 to the present leads me to believe that a BACIP analysis ignoring the 1985-88 period would favor a null hypothesis conclusion (i.e. no impact demonstrated). The fact that the recent BACIP analysis by Dean & Deysher yielded a reduction of impact compared to results from earlier analyses, favors my hunch that the presumed impact will disappear if we eliminate the data for 1985-88.

Sincerely,



Wheeler J. North

Emeritus Professor of Environmental Science

Chairman Louis Calcagno
October 4 1996

-3-

REFERENCES

- Dean, T.A. & L.E. Deysher, 1966. Reevaluation of the SONGS related changes in kelp at San Onofre. Coastal Res. Assoc. Inc., 20pp. + Tab. & Charts.
- Jahn, A.E., W.J.North, J.B.Palmer & R.S.Grove, In Press. Enhancement of kelp nitrogen content by the discharge of a coastal power plant. 21 pp.
- Petersen, J.H., 1985. Kelp maps. Chap. 7 in Mar. Env. Anal. & Int. SONGS, SCE Corp. 85-RD-37. 12 pp.

cc Executive Director Peter Douglas

FAX 415-904-5400

WHEELER J. NORTH

October 2 1996

RECEIVED

OCT 08 1996

Robert S. Grove
SCE Corp., Room 405
P.O. Box 800
Rosemead California 91770

CALIFORNIA
COASTAL COMMISSION
FAX 818-302-9730

Dear Bob;

This letter responds to our telephone conversation yesterday, requesting my current opinions regarding possible effects on the San Onofre kelp bed (SOK) from operations at the San Onofre Nuclear Generating Station (SONGS) in the light of recent data, reports, and publications that have become available during the past two or three years.

None of the newly available evidence alters my conviction that negative effects on SOK from SONGS have yet to be demonstrated. Some new information, however, does indicate that the discharge systems of SONGS units 2 & 3 do enhance levels of tissue nitrogen in nearby kelp canopies by artificially upwelling substantial amounts of bottom water (Jahn et al. In Press). Such action, of course, benefits the affected kelp plants and probably assists survival during stressful seasonal and other periods when water temperatures are high and background concentrations of nutrients are low. Consequently my current position is that net benefits from SONGS operations are modest for SOK under normal oceanographic conditions but are apt to be critical to bed survival during major El Nino events such as occurred from 1982 to 1984. The only portion of SOK that survived this catastrophe was the offshore portion, especially where the plume from SONGS contacts the kelp canopies (Petersen, 1985).

The 1982-84 El Nino, with its series of powerful storms and transport of warm seawater into the Southern California Bight, decimated kelp populations throughout southern California. Kelp stands at San Mateo Point (SMK) and SOK lost most of their adult plants. SMK recovered quite rapidly in 1985-86 and continued expanding southeasterly into territory not occupied for many years prior to 1982. SOK recovered much more slowly than SMK, not attaining its pre-El Nino dimensions until 1989-90 when it became stimulated by a La Nina episode. Both kelp beds have cycled more or less in unison from 1988 onward. Dean & Deysher (1996) graph the sizes of SMK and SOK, showing large cyclical fluctuations from 1978 to the present, based on data from side-scan sonar. The cycling patterns from both SMK and SOK correlate well except for the recovery period following the 1982-84 El Nino (i.e. 1985-88). Recovery at SMK was much faster than at SOK.

BACIP analyses based on sonar data from the late 1970s to the late 1980s were strongly influenced by the slow recovery of SOK from the 1982-84 El Nino vs the rapid pace at SMK. This was interpreted as indicating a large impact on SOK from operations at SONGS (which commenced discharging in May 1983). Subsequent BACIP analyses have concluded that the impact size was over-estimated initially. The reduced estimate from the later analyses occurred because cycling by SMK and SOK since 1989 has

Robert S. Grove
October 2 1996

-2-

resembled the pattern exhibited before SONGS discharge began in 1983. The conclusion of an impact by SOK thus depended strongly on the well-established circumstance that recovery from the 1982-84 El Nino required about 2 years at the control site (SMK) vs 4 years for the test population (SOK).

One must consider also whether natural phenomena may have influenced the recovery patterns at SMK vs SOK. My observations indicated that indeed there were negative biological factors operating at SOK but not at SMK, that should be taken into account.

1. The sources of kelp spores (i.e. adult plants) that are required for repopulation of a decimated bed were nearby the depleted areas at SMK but far away for a substantial part of SOK.

2. The offshore part of SOK suffered a massive invasion by white urchins, beginning in 1986 and continuing for several years. Urchin grazing destroyed a substantial fraction of the offshore kelp population during 1986 and 1987. Thus SOK lost an important fraction of its spore sources at a critical time during the recovery period.

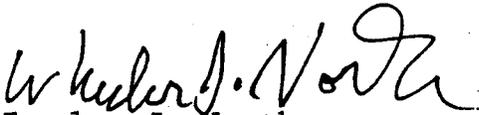
These biological problems during 1985-88 at SOK were sufficient, in my opinion, to account for the slow recovery by this kelp bed vs SMK.

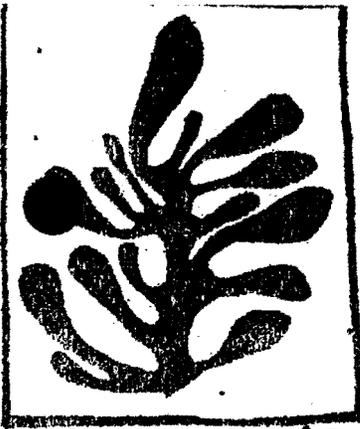
If there is truly a negative impact at SOK from operations at SONGS, it should have been present ever since the discharge commenced in 1983. If so, a BACIP analysis omitting the controversial four years of 1985 through 1988, ought still to demonstrate a negative impact occurring at SOK. I have not attempted such an analysis. Simply viewing the records for 1978 to the present leads me to believe that a BACIP analysis ignoring the 1985-88 period would favor a null hypothesis conclusion (i.e. no impact demonstrated). The fact that the recent BACIP analyses by Dean & Deysher yielded a reduction of impact compared to results from earlier analyses, favors my hunch that the presumed impact will disappear if we eliminate the data for 1985-88.

REFERENCES

- Dean, T.A. & L.E. Deysher, 1966. Reevaluation of the SONGS related changes in kelp at San Onofre. Coastal Res. Assoc. Inc., 20pp. + Tab. & Charts.
- Jahn, A.E., W.J. North, J.B. Palmer & R.S. Grove, In Press. Enhancement of kelp nitrogen content by the discharge of a coastal power plant. 21 pp.
- Petersen, J.H., 1985. Kelp maps. Chap. 7 in Mar. Env. Anal. & Int. SONGS, SCE Corp. 85-RD-37. 12 pp.

Sincerely,


Wheeler J. North
Prof. Emeritus



Algalita

Algalita Marine Research Foundation

7037 Hanbury St.

Long Beach, California 90808-2321

Phone/Fax (310) 496-4072 E-mail bfischer@aol.com

Received at Commission Meeting
<http://www.vandelay.com/surfridor/algalita>

OCT - 8 1996

From: _____

October 8, 1996

STATEMENT TO THE CALIFORNIA COASTAL COMMISSION

RE: Monitoring and Restoration of Kelp Beds and Mitigations Related to the Discharge of Heated Seawater into the Marine Environment at the SCE San Onofre Nuclear Facility

Dear Commission Members and Staff:

On behalf of Algalita Marine Research Foundation, I would like to take the opportunity offered by this hearing to urge both the Commission and SCE to pursue continued monitoring and restoration of degraded kelp beds or other mitigations in connection with the environmental impacts of cooling water discharges into the nearshore environment along the southern Orange County coastline. The importance of wetlands and kelp beds to the viability of California's fisheries has already been amply stated. In addition, the positive impacts of California's wetlands and kelp forests on water quality, sediment transport, visual amenities, and the overall marine environmental amenity that forms such a vital component of the State's economic well-being cannot be over-emphasized.

The argument has been made that enough money has been spent on this effort since the project's inception, and that SCE, its ratepayers, and its shareholders, are in the energy business, not the wetlands or kelp business. This restates the essentially 19th century paradigm of big business that regarded the public Commons as their rightful domain when it comes to extraction of resources (in this case, seawater) or the discharge of wastes. In fact, we have come to realize that these impacts, formerly seen as off-the-books externalities, are, indeed, a cost of doing business.

Algalita Marine Research Foundation urges all parties to continue to make, not just a good faith effort, but their best effort, in restoring our damaged coastal and nearshore environment and ecosystem, to take advantage of this opportunity to develop

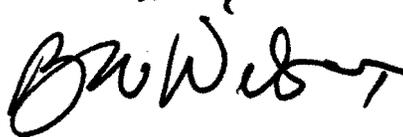
the science and techniques of restoration and regeneration, and to explore new options that will assist them in accomplishing these goals.

One option that may not have been considered involves the North Orange County Regional Occupational Program (ROP), which is a State effort to provide quality job training, career guidance, and job placement assistance for Californians about to enter the workforce or making career changes. As part of the ROP, under Gordon Lehman, trainees are given thorough professional and commercial SCUBA training over a two-year period. One focus of this underwater competency training and certification is in the expanding field of environmental survey work, monitoring, and restoration. A particularly exciting aspect of this program has been development of techniques for kelp planting and training of divers in these techniques.

AMRF has participated in these efforts, through our expert Board members from the Southern California Marine Institute and by funding research by Ph.D. candidate Lydia Ladah at the Universidad Autonoma de Baja California, at their ideally situated facility in Ensenada. Lydia is now recognized as a world leader in the propagation of *Macrocystis*. We are proud to have Gordon Lehman on our Board of Directors as well.

In closing, I would like to reiterate that we live in an interconnected, multi-faceted world, and our businesses and institutions need to keep this in mind and take a systems-based approach to the design of our activities and enterprises. Indeed, this is already taking place, and SCE is a leader in many of these areas, including renewable energy development, and should be commended for their efforts thus far in regard to the issues we are discussing here today. This is not the time to declare an end.

Yours truly,

A handwritten signature in black ink, appearing to read "W. F. Wilson". The signature is fluid and cursive, with a large initial "W" and "F".

William F. Wilson
President

October 8, 1996

AMERICAN OCEANS CAMPAIGN

Faxed to (415) 904-5400
Hand delivered at hearing

Commissioner Louis Calcagno
California Coastal Commission
45 Fremont Street, Suite 2000
San Francisco, California 94105-2219

Dear Chairman Calcagno and Commissioners:

Re: Agenda Item 15a

American Oceans Campaign, a national, nonprofit organization dedicated to the protection of this Nation's oceans and coasts, supports the 1991 permit as a "minimum" mitigation package to offset the environmental impacts of the of San Onofre Nuclear Generating Station (SONGS) Units 2 and 3. The 1991 permit should remain in full force and effect. The evidence submitted by the permittee is not sufficient to warrant permit amendment.

The Kelp data does not meet the test of "newly discovered information" as this would apply under the "adaptive management" concept adopted in the 1991 permit.

Recognizing that environmental impacts were momentous and the mitigation techniques untried, the 1991 permit reflects a commitment to adaptive management --a learn as you go--approach. Thus, the 1991 permit anticipated two phases: phase I called for an experimental reef that would provide data about the effectiveness of artificial reefs for mitigation; phase II reef design was to be based on the findings of phase I. As scientists Richard F Ambrose and Susan L. Swarbrick point out in the *Bulletin of Marine Science* (vol. 44 no. 2, 1989, pp. 731), "[o]ne of the most critical decisions about reef design involves the size of the reef." Their extensive research on artificial reefs in southern California makes clear that the size of the reef necessary to compensate for the destructive impacts (such as those caused by SONGS Units 2 and 3) should be

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OCT - 8 1996

From: _____

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substantially larger than the natural reef destroyed. Thus, a reef of 300-acres could be needed to ensure that a 122-acre reef is ultimately established.

Currently all that is before the Commission is some qualitative but inconclusive data suggesting that kelp loss may not be as substantial as originally predicted, yet we do not know for certain what the impact of SONGS has been. More importantly, we do not know anything about what size reef could compensate for losses, however large or small they turn out to be. Therefore, it is inappropriate to open up the permit to amendment at this time. The 16.8-acre, experimental reef should be developed to comply with phase I of the original mitigation agreement. After that information is available, the size of the phase II mitigation reef can be determined scientifically as envisioned by the 1991 permit.

If the kelp study did rise to the test of new information, then only the part of the permit dealing with kelp mitigation conditions (Condition C) should be considered by the Commission.

Consideration of one aspect of the permit should not open the door to reconsideration of every aspect of the permit; "adaptive management" was a concept adopted in good faith that was to govern precisely how the mitigation was to be conducted; but it does not mean that the permittee should be coming every few months to ask the Commission to revisit permit issues. To consider each issue will open a Pandora's box.

If the Commission does decide to consider aspects of the permit unrelated to the kelp mitigation, AOC maintains that the wetland mitigation requirements be increased.

Data related to fish indicate that losses are far greater than predicted. The "minimum" wetland mitigation package embodied in the 1991 permit is inadequate to compensate for fish losses and therefore, based on this new information, wetland requirements should be increased.

Monitoring oversight, and evaluation requirements should reside with an independent body, alternatively the commission should seriously consider creating trusts, with adequate insurance to address mitigation shortcomings.

It is against all good public policy to ask the permittee to monitor and evaluate its own endeavors. This is done nowhere. Concerns of private profit will always compete with concern for the public good and compromise the public's confidence in the permittee's findings. Southern California Edison has made it amply apparent that concerns for shareholders outweigh concern for ratepayers and the environment.

In conclusion, it is bad policy to violate the principle that mitigation precedes construction. Edison has received many benefits and now has little incentive to, in good faith, follow through on its original "full support" of the 21991 mitigation plan. AOC asks the CCC to hold true to its 1991 agreement and use its power to force the permittee to meet their end of the bargain without making any amendments that would compromise the success of the mitigation designed to offset the ecological devastation caused by SONGS Units 2 and 3.

AOC appreciates the Commission's close attention to these matters and is optimistic that they can be resolved with the best interest of the public and environment in mind, and that the mitigation process can move in the direction of compliance with the 1991 agreement.

Sincerely,

Robert H. Sulnick

Robert H. Sulnick
Executive Director

Testimony of Linda Sheehan,
Center for Marine Conservation
California Coastal Commission, 10/8/96
Agenda Item # 15a

Received at Commission
Meeting

OCT - 8 1996

From: _____

Good afternoon. My name is Linda Sheehan, and I represent the Center for Marine Conservation.

I have distributed copies of CMC's comment letter on SONGS. The main point of this letter is "Edison is wrong." Edison has given you no valid information on which to change the 1991 permit, and I'll explain why.

First, Edison is asking for a 94% reduction in kelp bed mitigation. Their data are wrong; not because CMC says so, but because the very independent scientists that Edison agreed should review its data say so. If you haven't read Dr. Osenberg's and Dr. Dayton's letter to you on this, you should.

Second, Edison's telling you that San Dieguito and Ormond Beach settle its 150-acre debt to the public. What Edison isn't telling you is that new data, data that Edison has been trying to hide and misrepresent, show that its wetland debt is significantly more than 150 acres.

The last page of the CMC comment letter shows a chart of adult fish kills at SONGS since the early 1980's. This is Edison's data, collected under its NPDES permit. As you can see, the data from the early 1980's, which was when young fish deaths were measured, averages more than twice as low as the period to date. It's low because an El Nino occurred then, and there simply weren't as many fish around to count. Edison has been telling you over and over that this El Nino effect doesn't matter; that the Marine Review Committee adjusted for it and found that ~~predicted~~ kills at SONGS are within the range currently being measured. Edison is misleading you.

The Marine Review Committee only adjusted for El Nino in counting adult fish deaths, deaths mitigated in part by the Fish Return System, which is Condition B of the permit. The Marine Review Committee never adjusted for El Nino impacts on data for young fish kills, which are mitigated by the wetlands, Condition A.

In other words, the wetlands mitigations are based on fish death figures that should be much higher. Edison's trying to hide this by doing a sleight-of-hand and comparing apples and oranges, and the Marine Review Committee studies back us up.

If you consider any new data, you should consider all new data. Edison's giving you new kelp data and new fish kill data, but Edison's only talking about the new kelp data. That's because the new fish kill trends are bad for them. They indicate significant increases in deaths of young fish, data that were never adjusted for El Nino-related problems. This means that the wetlands mitigation should be much higher than the 150 acres "created or substantially restored" that Edison must achieve now.

Both of these two new sets of data together indicate that you should stick with the 1991 permit. Why? Because it balances those changes out. As discussed in our letter, the Marine Review Committee found that new kelp habitat can help mitigate for young fish losses; that is, any "extra" kelp requirements in the 1991 permit will partly offset, or mitigate for, newly-discovered increases in young fish losses. The 1991 permit thus contains the only set of mitigation measures that fully mitigate for all the new impacts identified.

To reiterate, there is simply no new data to support Edison's proposal. All the new data support the 1991 permit. We urge you to support the 1991 permit and reject Edison's proposal. Thank you.



October 8, 1996

Louis Calcagno
Chairperson
California Coastal Commission
45 Fremont Street, Suite 2000
San Francisco, CA 94105-2219

SUBJECT: Proposed Permit Amendment, Southern California Edison (SONGS)

Dear Chairperson Calcagno:

I am writing to express the concerns of the staff of the State Coastal Conservancy regarding the proposed wetland restoration component of the amendment.

The Coastal Conservancy has been involved for more than ten years with wetland preservation efforts at both San Dieguito Lagoon and the Ormond Beach/Mugu Lagoon wetlands complex. Our staff has provided direct technical assistance to the local governments at each site, we have met many times with landowners and concerned local citizens, and the Coastal Conservancy has funded both design and implementation of wetland protection and enhancement projects. At each site, the Coastal Conservancy will continue to carry out wetland enhancement efforts regardless of the decision of the Commission on the mitigation program that is currently proposed.

Because of this historical involvement and planned future role, the Coastal Conservancy would be pleased to assist the Commission and Southern California Edison in implementing the proposed wetland restoration program, to whatever extent that assistance would be useful to you. As you know, this is the traditional and statutory role of the Coastal Conservancy: facilitating compliance with the requirements of the coastal management program, so that we are able to achieve the results that we seek without creating an undue burden on individual permit applicants. To this end, Coastal Conservancy staff has provided hundreds of hours of our time over the past several years, trying to assist both the Commission staff and Southern California Edison staff to reach resolution. We are hopeful that this will shortly lead beyond conflict and on to real benefits for fish and wildlife resources.

1330 Broadway, 11th Floor
Oakland, California 94612-2530
510-286-1015 Fax: 510-286-0470

letter to Chairperson Louis Calcagno re: SONGS permit amendment, page two

Regarding the process of accomplishing either of the proposed wetland restoration projects, the Commission should be aware that substantial further detailed design work and environmental analysis lies ahead for whomever takes the lead in implementation. Our experience at other sites would indicate that changes are very likely to be required as we move from concept plan to development, and the Commission may expect that you or your staff will be called upon to approve revisions as the design work proceeds. Given that the restoration plan is conceptual at this stage, we would suggest that some provision for administrative flexibility should be incorporated into the program, perhaps through direction to the Executive Director.

A final point that should be acknowledged is the interest of local governments and private conservation organizations in these projects, and the practical importance of keeping them fully involved. The Coastal Conservancy always strives to maximize opportunities for public involvement in our projects, and we believe that this is a key to both getting the best project design and then successfully implementing it. Whether the Coastal Conservancy is involved in carrying out these projects or not, we believe that you should ensure that concerned local parties are fully integrated into the implementation process.

Congratulations to the staffs of the Commission and Southern California Edison for the very substantial efforts that each has made in seeking resolution of this difficult issue. We hope that we may help bring those efforts to fruition.

Very truly yours,



Steve Horn

Deputy Executive Officer



SOUTHERN CALIFORNIA
EDISON

An EDISON INTERNATIONAL Company

Nino J. Mascolo
Senior Attorney

October 7, 1996

Received at Commission
Meeting

OCT - 8 1996

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

From: _____

Subject: Coastal Commission Decisions And Documents
Cited In Southern California Edison's Response
To Commission Staff Report For "Request To
Amend And Fulfill Conditions Of Permit
No. 6-81-330 (SONGS)"

Dear Mr. Douglas:

Last week Mr. William Boyd, an attorney advising Edison on matters involving our "Request To Amend And Fulfill Conditions Of Permit No. 6-81-330 (SONGS)," contacted Ms. Susan Hansch to request the duplication of certain Coastal Commission decisions and documents for purposes of assuring that the full text of these items is included in the Administrative Record of the August, 16, 1996 SONGS amendment application/mitigation plan approval submittal. Ms. Hansch objected to the workload burden of copying materials already on record with the Coastal Commission for submittal back to the staff for inclusion in the SONGS Administrative Record. Mr. Boyd then discussed these concerns with Jamee Patterson and Peter Kaufman of the Attorney General's office, who advised that the workload burden on the Commission staff of duplicating Commission decisions and documents already a matter of public record and available to the public at the Commission's San Francisco office could be avoided by: (1) stating Edison's intent to have the entirety of certain documents included in the SONGS Administrative Record and (2) having Edison's copies of these Coastal Commission decisions and documents available for review by anyone who wishes to do so during the hearing.

The cited documents and decisions to be included in the Administrative Record are:

- Findings and Permit for Coastal Development Permit No. 5-88-119, Port of Long Beach;

Port of Long Beach, Memorandum of Understanding for the

Mr. Peter Douglas
Executive Director
California Coastal Commission
October 7, 1996
Page 2

Anaheim Bay Mitigation Program (January/February 1986); and
Port of Long Beach, Request for Proposals to Conduct Biological
Monitoring at the Seal Beach National Wildlife Refuge
(December 5, 1989).

- Findings for Application No. 6-90-219, City of Carlsbad (Batiquitos Lagoon Enhancement Project).
- Findings for Application No. 5-91-463, Maguire Thomas Partners - Playa Vista; including subsequent actions/findings for:
Application 5-91-463 C.3;
Application 5-91-463 C.1.2.iii;
Application 5-9-463 A.2; and
Application 5-9-463 E1.
- Findings and LCP documents for County of Orange Bolsa Chica LCP (approved January 1996 and subsequently certified).
- Submittal documents and staff report for: Consistency Determination for Bolsa Chica Lowlands Projects (USFWS September 11, 1996); Coast Staff Report and Recommendation on Consistency Determination No. CD-115-96; Staff Recommendation on Coastal Conservancy Enhancement Plan, Conservancy Project No. CP-1-96; Staff Recommendation on Port of Los Angeles Port Master Plan Amendment No. 15 (September 18, 1996); Staff Recommendation on Port of Long Beach Master Plan Amendment No. 8 (September 18, 1996).

Thank you for your assistance in this matter.

Sincerely,



Nino J. Mascolo

cc: Jamee Patterson, Deputy Attorney General
Peter Kaufman, Deputy Attorney General
Susan Hansch



Health Physics Society - San Diego Chapter

University of California at San Diego
Environment, Health & Safety Department
Radiation Safety Division
9500 Gilman Drive, La Jolla, CA 92093-0920

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OCT - 9 1996

October 7, 1996

Chairman Louis Calcagno and Members
of the California Coastal Commission
45 Fremont Street, Suite 2000
San Francisco, CA. 94105

CALIFORNIA
COASTAL COMMISSION

Dear Chairman Calcagno and Commissioners:

I am writing to you regarding Southern California Edison's proposed amendment to their coastal permit for the San Onofre Nuclear Generating Station (SONGS).

All human activities have impacts on the environment -- from driving our cars to building homes to turning on our lights. For the operation of SONGS, the Commission requires mitigating any adverse effects on the marine environment resulting from the operation of SONGS.

By itself this requirement may seem to many of us to be too aggressive if not oppressive given the benefits of the operation of SONGS -- supplying enough electricity to meet the needs of 3 million residential customers in Southern California with virtually no air pollution.

We understand that the amendment seeks to change the mitigation requirements based on new information regarding the actual impact of the plant. Certainly this is appropriate. To deny the amendment and require mitigation based on earlier and less reliable estimates of plant impact can only be viewed as punitive.

Given the Coastal Commission's own financial interests in this amendment, we urge you to be completely fair and impartial in reviewing this application.

Sincerely,

Craig Nusenow
Acting Secretary
Signed on behalf of the Board of Directors
Health Physics Society, San Diego Chapter

1996-1997 OFFICERS

President: Rick Jervey (714) 298-9946
Secretary: Craig Nusenow (619) 534-6018
Treasurer: Richard Belanger (619) 483-0807

Board of Directors: Joel T. Baumbaugh, Kenneth S. Helm, Don Holmes, Martha M. McDougall, J. Newell Stannard



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OCT 10 1996

Jim Morrissey ASSEMBLYMAN, SIXTY-NINTH DISTRICT

CALIFORNIA
COASTAL COMMISSION

CALIFORNIA LEGISLATURE, STATE CAPITOL, SACRAMENTO, CA 95814 (916) 445-7333 FAX: (916) 327-1783

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Consumer Protection,
Governmental Efficiency, and
Economic Development

MEMBER
Appropriations
Environmental Safety
and Toxic Materials
Utilities and Commerce
Joint Audit Committee
Joint Legislative
Sunset Review Committee
Select Committee
on California-Mexico Affairs
Task Force on
Defense Conversion

APPOINTEE
Commission on the
California's
Small Business
Development Board

October 7, 1996

Louis Calcagno, Chairman
45 Fremont Street, Suite 2000
San Francisco, CA 94105

Dear Mr. Calcagno:

I am writing to you in regards to the marine mitigation program at San Onofre Nuclear Generating Station (SONGS). I would like to express my support for Southern California Edison's amendment to the coastal permit regarding the mitigation program.

According to recent reports, the severity of the anticipated impact of the generating station on the marine environment has proven to be substantially lower than originally predicted by the Marine Review Committee. Therefore, I feel that it is unnecessary to impose the terms of the original permit condition and incur substantial costs for unneeded mitigation.

I strongly urge you to vote in favor of the amendment proposed by Southern California Edison.

Sincerely,


JIM MORRISSEY
Member of the Assembly
Sixty-Ninth District

JM:dm

DISTRICT OFFICE
930 WEST 17TH STREET, SUITE C
SANTA ANA, CA 92706
(714) 285-0355
FAX (714) 285-1301

October 15, 1996

RECEIVED
OCT 21 1996

CALIFORNIA
COASTAL COMMISSION

Dr. John Skalski
University of Washington
Columbia Basin Research
Suite 1829
1325 Fourth Avenue
Seattle, WA 98101

Re: SONGS Permit Amendment

Dear Dr. Skalski:

At the Coastal Commission's October 8, 1996, hearing on Southern California Edison's application to amend the mitigation provisions of the permit for San Onofre Nuclear Generating Station, communications from some of the Independent Review Panel (IRP) were presented. As you know, prior to the introduction of these communications, Edison scrupulously observed the protocol under which the work of the IRP was undertaken. Namely, we endeavored to do our best to maintain the independence of the IRP and to let the panel speak as a group through its written report.

While we continue to believe the IRP's work was finished when it submitted its report as contracted, some Coastal Commissioners asked the Commission staff to request your attendance at the Commission's November hearing on this issue. As was done prior to the October hearing, other parties may attempt to contact you, making various claims about Edison's interpretation of the IRP report. You must determine your own course, but we believe each of you should have an accurate statement of Edison's position on the San Onofre kelp issues, rather than rely on the incomplete representations of others. Therefore, we are providing you with a copy of our submittal to the Commission.

Edison's position on the SONGS impact on San Onofre Kelp bed is that the impact may be as low as zero to as much as 56.3 acres (as explained in the Dean and Deysher report). Within our submittal to the Commission, your attention is drawn, in order of priority, to:

- 1) Drs. Dean and Deysher's "Addendum to the Estimation of SONGS Effects on Kelp," dated October 1, 1996 in Volume II, Appendix C, and
- 2) "Edison's Position - Kelp Mitigation," Volume I, Tab 4, especially 4-3 through 4-7.

Respectfully submitted,



Enclosures

cc: Executive Director Peter Douglas
Chairman Louis Calcagno and
Members of the California Coastal Commission

P. O. Box 800
2244 Walnut Grove Ave.
Rosemead, CA 91770
818-502-9456

October 15, 1996

Dr. Paul Dayton
Scripps Institution of Oceanography
8602 LaJolla Shores Drive
La Jolla, CA 92037

Re: SONGS Permit Amendment

Dear Dr. Dayton:

At the Coastal Commission's October 8, 1996, hearing on Southern California Edison's application to amend the mitigation provisions of the permit for San Onofre Nuclear Generating Station, communications from some of the Independent Review Panel (IRP) were presented. As you know, prior to the introduction of these communications, Edison scrupulously observed the protocol under which the work of the IRP was undertaken. Namely, we endeavored to do our best to maintain the independence of the IRP and to let the panel speak as a group through its written report.

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- 2) "Edison's Position - Kelp Mitigation," Volume I, Tab 4, especially 4-3 through 4-7.

Respectfully submitted,



Enclosures

cc: Executive Director Peter Douglas
Chairman Louis Calcagno and
Members of the California Coastal Commission

October 15, 1996

Dr. Craig Osenberg
University of Florida - Dept of Zoology
223 Barram Hall
Gainesville, FL 32611-1107

Re: SONGS Permit Amendment

Dear Dr. Osenberg:

At the Coastal Commission's October 8, 1996, hearing on Southern California Edison's application to amend the mitigation provisions of the permit for San Onofre Nuclear Generating Station, communications from some of the Independent Review Panel (IRP) were presented. As you know, prior to the introduction of these communications, Edison scrupulously observed the protocol under which the work of the IRP was undertaken. Namely, we endeavored to do our best to maintain the independence of the IRP and to let the panel speak as a group through its written report.

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- 2) "Edison's Position - Kelp Mitigation," Volume I, Tab 4, especially 4-3 through 4-7.

Respectfully submitted,



Enclosures

cc: Executive Director Peter Douglas
Chairman Louis Calcagno and
Members of the California Coastal Commission

P. O. Box 800
2244 Walnut Grove Ave.
Rosemead, CA 91770
818-502-9456



October 14, 1996

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OCT 21 1996

CALIFORNIA
COASTAL COMMISSION

Mr. Louis Calcagno
Chairperson
California Coastal Commission
45 Fremont Street, Suite 2000
San Francisco, CA 94105-2219

Dear Chairman Calcagno:

I am the Co-Principal Investigator of the Ocean Resources Enhancement and Hatchery Program (OREHP), more popularly referred to as the white seabass enhancement project, that has been incorporated as a part of the San Onofre Nuclear Generating Station (SONGS) mitigation plan. During the public testimony portion of the Commission hearings in Los Angeles last week, I offered a very brief description of our program's hatchery facility in Carlsbad and of the research that is the basis of this mitigation effort. Because of the exhaustive calendar and the number of speakers needing to be heard that night, I felt that many of the questions the Commissioners had regarding this project were left unanswered.

I spoke with Peter Douglas during the hearing and suggested to him that since the next scheduled meeting of the Commission is here in San Diego, perhaps we could arrange a site visit by the Commissioners and staff to the hatchery. He informed me that Commission staff was already looking into the possibility of a visit to the San Dieguito River estuary as part of the SONGS mitigation plan review. The hatchery is located another fifteen minutes north on Interstate 5 from the river, and a tour would take less than an hour.

From my observations at the hearing, it is obvious that the SONGS mitigation discussion is not yet settled. Considering the number of years that this has been at issue and the relative lack of progress made toward the actual commencement of a mitigation plan, perhaps the Commissioners would appreciate seeing the one part of the mitigation plan that is fully supported by the public, that has little controversy associated with it and that is almost fully operational. It would also serve as an excellent introduction to the field of aquaculture of which few, if any, of the Commissioners have any practical working knowledge. Considering the need for Commission review of any coastal development including aquaculture, this could be a valuable consideration.

Mr. Louis Calcagno

Page 2

October 10, 1996

Please let me know whether or not such an inspection tour would complement the Commissioners' schedule for the next meeting. I would be pleased to help coordinate transportation at this end, if desired. I will work directly with Commission staff to plan this event.

Thank you for your consideration of this offer, and I hope we can work out the details of a tour.

Sincerely,

A handwritten signature in black ink, appearing to read "D B Kent". The signature is fluid and cursive, with a large initial "D" and "K".

Donald B. Kent, M.S.
Senior Vice-President

cc: Mr. Peter Douglas
Ms. Susan Hansch
Mr. Byron Wear

10. Susan Throckmorton
From Steve Schuster

L.A. TIMES / COMMUNITIES / NEWS / STORY



Thursday, October 10, 1996

PREV STORY

NEXT STORY

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SPORTS

BUSINESS &
TECHNOLOGY

LIFE & STYLE

CALENDAR

COMMENTARY

WEEKLY
SECTIONS

ORANGE COUNTY

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VALLEY

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COUNTY

Coast Panel Delays Edison Plant Ruling

■ Environment: Hearing to resume next month on amending mitigation order relating to kelp damage at San Onofre.

By DEBORAH SCHOCH, Times Staff Writer

LOS ANGELES--Beset by factions warring over kelp and wetlands, the California Coastal Commission this week postponed a final decision whether to relax requirements intended to offset damage to the marine environment near the San Onofre nuclear power plant.

Commissioners voted 7 to 3 early Wednesday to delay action until next month on the hotly debated proposal from plant operator Southern California Edison that would cancel a planned 300-acre artificial kelp reef off the coast of San Clemente and make changes in required wetlands restoration and monitoring.

The proposal has unleashed a storm of controversy, with environmentalists accusing Edison of going back on its word.

Commissioners heard more than eight hours of testimony before adjourning after 12:30 a.m. Wednesday, promising to resume at a November meeting in San Diego.

Testimony ranged from technical to bombastic.

Edison argued that damage to kelp is much less extensive than earlier feared, and that Edison should be allowed to build only an artificial reef of only 16.8 acres rather than the 300 initially envisioned or the 122 now sought by the commission staff.

Environmentalists claimed Edison is distorting numbers to hide what they claim is continuing damage to kelp and fish.

And some San Diego residents worried that Edison's plan to divide funds between two wetlands projects--at San Dieguito Lagoon in San Diego County and Ormond Beach in Ventura County--would dilute the original project slated for San Dieguito.

The kelp controversy has rekindled public interest in how the twin reactors at the San Onofre Nuclear Generating Station may be altering the ocean.

A major 14-year scientific study determined in 1989 that the plant's cooling system was damaging a nearby kelp bed and sucking up and killing 21 to 57 tons of fish and 4 billion eggs and larvae annually.

So a 1991 mitigation plan, approved by the

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CALIFORNIA
COASTAL COMMISSION

Coast Panel Delays Edison Plant Ruling

commission with Edison's support, required plant owners to reduce damage with steps such as the 300-acre artificial reef and restoration of a coastal wetlands--steps that Edison is now attempting to modify.

In hopes of resolving their differences, the staff and Edison earlier this year relied on a panel of three scientists to review Edison's kelp data. That panel concluded that damage to the kelp is not as great as formerly thought.

Two of the three scientists have questioned Edison's interpretation of their conclusions.

Craig W. Osenberg, assistant professor at the University of Florida, wrote the commission staff Oct. 2 that an Edison press release and its amendment request selectively quote the panel's report and contain potentially misleading comments.

And Paul Dayton, professor of marine ecology at Scripps Institution of Oceanography in San Diego, took issue with a comment in an Edison summary that the "San Onofre kelp bed is as large or larger now than it was before [the plant] began operating."

That is misleading, since the twin reactors started up at a time when kelp was suffering from natural factors, Dayton said.

Michael Hertel, Edison manager of environmental affairs, said the plant's impact could range from destruction of 56 acres down to zero acres.

As for talk of misrepresentation, Hertel said, the three scientists produced a report, and "all the commission has to do is read it and make up their own minds."

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[HUNTER] [SPEAK OUT] [BO. CAL. EXCISE] [SEARCH] [CONTENTS]
[ARCHIVES] [HELP] [HOME] [NEWS] [MARKETSPACE] [CLASSIFIEDS]
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Los Angeles, CA
(Los Angeles Co.)
Los Angeles Times
(Cir. D. 1,164,338)
(Cir. S. 1,531,527)

OCT - 7 1996

Kelp Plan at a Crossroads

■ **Environment:** Edison wants to roll back agreement to build artificial reef near San Onofre nuclear plant. Coastal Commission is to consider request Tuesday.

By DEBORAH SCHOCH
TIMES STAFF WRITER

They thrive unseen and silent off the California coast, these amber-toned kelp forests that teem with a rich bounty of marine life.

Among some ocean enthusiasts, giant kelp communities are viewed with the same reverence as ancient redwood forests.

So when a kelp bed off San Onofre seemed to be failing mysteriously, alarmed scientists sprang into action.

Their conclusion: Kelp was being killed by murky water from a nearby nuclear power plant. The solution: An unprecedented plan to build a 300-acre artificial kelp reef off Orange County's shores.

Now it appears that the reef may never materialize, as the state Coastal Commission is poised to vote Tuesday on a request from plant operator Southern California Edison to curtail one of the most comprehensive marine mitigation packages ever proposed in California—one that encompasses reef-building, wetlands restoration and monitoring.



Power plant worker checks for fish that might have been drawn through intake tubes.

The prospect of a rollback of the previously agreed-upon mitigation has triggered vociferous debate as Edison and environmentalists clash over complex issues ranging from fish counts to electricity rates.

The seaweed issue has even spawned a hearing today in Santa Monica by state Sen. Tom Hayden's Natural Resources Committee on what a news release labels as "Edison's broken environmental promises."

The kelp question is proving especially divisive—in part because of the difficulty of probing the health of these submarine forests, and of pinpointing changes that may be caused by natural phenomena or by the discharge from the twin

1,100-megawatt reactors known as the San Onofre nuclear plant.

Edison says its scientists have conducted sonar tests aboard boats above the San Onofre kelp bed, sending sound waves down through the water. The tests, Edison says, prove that the kelp bed has shrunk much less than earlier believed. So Edison is asking for cancellation of the project to create what experts say would have been the largest artificial kelp reef of its kind in the nation. In its place, Edison is proposing a far smaller 16.8-acre experimental reef off the coast of San Clemente.

"We stand behind our commitment to completely mitigate all known impacts, and we think the package we've proposed goes well beyond what reasonable people would find proportional to the impact," said Frank Melone, Edison's mitigation project manager.

But the Coastal Commission's staff calls Edison's proposal woefully inadequate.

"The mitigation they're proposing doesn't come anywhere near matching the impacts," said commission staff official Susan Hansch.

Environmental groups, distrustful of Edison's findings, accuse the plant operator of going back on its word. They contend that the power company is trying to maximize profits while sacrificing environmental values.

So deep do suspicions run that one Edison critic, marine biologist Rimmon Fay, planned to dive off his boat into the San Onofre kelp bed Friday to see

Please see **KELP, A21**

Continued from A3 ⁶⁰¹
how the kelp bed is faring.

"Edison agreed to the mitigation, and now they're trying to back away from it, and that's a pretty bitter disappointment," said Fay, one of three scientists who conducted a landmark study of how San Onofre may be altering the marine environment.

The study made headlines state-wide in 1989 when it concluded that the plant's cooling system was killing millions of fish, eggs and larvae—prompting the mitigation plan approved by the commission in 1991 with Edison's consent.

The scientists determined that turbidity stirred up by the cooling system had reduced underwater light and caused a 60% shrinkage in the San Onofre kelp bed. To offset that loss, plant owners were ordered to construct a 300-acre reef.

To date, however, nothing has been built.

In fact, Edison maintains that the San Onofre kelp bed is now as large or larger than it was before the plant began operating—and that a 16.8-acre experimental reef would more than make up for any damage.

In hopes of resolving the deadlock, the Coastal Commission staff and Edison agreed to have three scientists review the Edison data. Although they concluded that the kelp damage was less than once believed, they did not come forward with a hard and fast number of how many acres of kelp have been damaged.

Scientists working with the commission have calculated that a 122-acre reef is necessary. In addition to the 16.8-acre reef, they are proposing a 105-acre reef, to be constructed with the proceeds of a \$19.7-million trust fund that would be established by Edison.

All these years of scientific review have been consumed assessing the condition of a forest that the vast majority of Southern Californians will never see.

But people who work with kelp report that these fast-growing submarine plants are laden with both ecological and economic value. As many as 800 species of fish and other living things dwell in the so-called amber forest.

"Kelp beds are probably the single most important ecological habitat off the Southern California coastline," said Dennis Bedford, marine biologist with the state Department of Fish and Game. More kelp off the Orange County coast, he said, translates into more fish.

And kelp itself is more valuable than it might appear when it washes ashore as a wrinkled, brown mass attracting flies.

The nation's largest kelp harvester, Nutrasweet Kelco Co., trims the tops of kelp plants from San Diego to Monterey to extract algin, a thickening agent used in food products, cosmetics and pharmaceuticals.

But rarely has kelp generated as much tumult as it promises to do Tuesday, when dozens of people are expected to debate the fine points of kelp biology at the commission meeting in Los Angeles. Even sportfishers plan to attend, some to lobby for the construction of several smaller reefs to promote the growth of marine life.

Both Edison and the Coastal Commission staff say they're simply seeking fairness.

"Given the uncertainties surrounding kelp impacts, and their relative insignificance, this level of expenditure cannot be justified," Edison wrote in a response Friday to the staff proposal.

But coastal planners and environmentalists disagree.

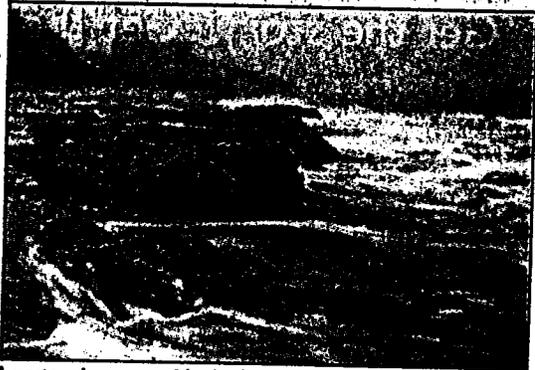
"There's kelp out there now, so it's hard for people to understand why everyone's worried," Hansch said.

"But it's not what you see, but what you don't see. The fact is, there would be more kelp there if not for the plant."

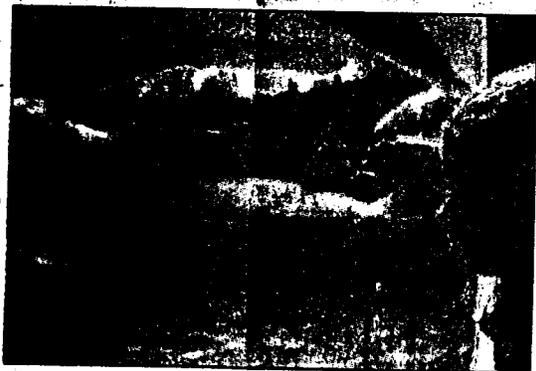


Photos by MARK BOSTER / Los Angeles Times

The control room of Southern California Edison's San Onofre nuclear generating station.



Large clumps of kelp have accumulated on the shoreline near the San Onofre nuclear plant.



Victoria Dove looks in on white sea bass at fish hatchery that was partially funded by Edison.



City of Del Mar

October 7, 1996

Received at Commission Meeting

Honorable Commissioners
California Coastal Commission
45 Fremont Street, Suite 2000
San Francisco, CA 94105-2219

OCT - 8 1996

From: _____

RE: Item 15a - Permit No. 6-81-330-A (SONGS, Southern Ca. Edison)

Dear Chairperson Calcagno and Commissioners:

The City of Del Mar supports many of the recommendations included in your staff report, but requests that you consider the following points in your discussion at today's meeting. We also ask that you not make your final decision on this matter until your November meeting in San Diego. We request convening in San Diego so that the many people who have been involved with this project may have the opportunity to attend the Coastal Commission meeting.

A large portion of the Edison project is located within the jurisdictional boundaries of the City of Del Mar. The City of Del Mar believes that the Southern California Edison project should be required to maximize the opportunities at the San Dieguito Lagoon prior to committing to work at other locations. The City of Del Mar also believes that the monitoring, remediation, management and maintenance programs should not place any unfunded responsibilities on the taxpaying public.

The City of Del Mar believes that the entire 150 acres of wetland restoration is feasible at San Dieguito. The City is of the opinion that it is premature for the Commission to approve any preliminary plans at Ormond Beach until the Environmental Impact Report (EIR)/Environmental Impact Statement (EIS) is completed for the San Dieguito project.

The City of Del Mar supports the concept of a trust fund for wetlands mitigation at San Dieguito if it can be assured that the funds will be adequate to cover all mitigation costs and will be spent to create and restore wetlands at San Dieguito.

It is the goal of our City and the San Dieguito River Valley Joint Powers Authority to achieve the best possible restoration project for the San Dieguito Lagoon. We are asking the Coastal Commission to help us achieve this by requiring Edison to fulfill the 150 acre wetland restoration requirement at San Dieguito through the pursuit of all feasible and appropriate restoration options as will be identified in the Final EIR/EIS. Thank you for your consideration.

Sincerely,

D. Elliot Parks
Mayor

cc: Del Mar City Councilmember
Diane Coombs, San Dieguito JPA

1050 Camino del Mar, California 92014-2698



October 8, 1996

Chairman Louis Calcagno and Members
California Coastal Commission
45 Fremont Street
San Francisco, CA 94105.

FAX 415 904-5400

Dear Chairman Calcagno:

I would like to extend my thanks to the California Coastal Commission for protecting the interest of the public regarding the environment and know that you will continue to do so. However, I would like to suggest you consider Southern California Edison's plan or at least a modified version of it with the commission and Edison working together to reach a mutually beneficial result.

From my knowledge Edison has had an admirable record of safety and concern for the environment as well as important impact upon the economy of the State of California. I would certainly hate to see California discourage business under the current circumstances, and in fact it would seem to go against the direction of Governor Pete Wilson.

The Edison plan as I know of it appears safe and adequate to ensure a co-extension between technology and environment.

Thank you for your consideration and I would encourage any response you feel would enlighten my perspective.

Sincerely,



Robert A. Frank



MAYWOOD CHAMBER OF COMMERCE

5906 Atlantic Blvd. • Maywood, California 90270-0220 • (213) 562-3373

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October 5, 1996

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Chairman Louis Calcagno and Members
California Coastal Commission
45 Fremont Street
San Francisco, CA 94105

Dear Chairman Calcagno and Commissioners:

We, the Board of Directors, are writing on behalf of Southern California Edison, which we know has an issue before your commission.

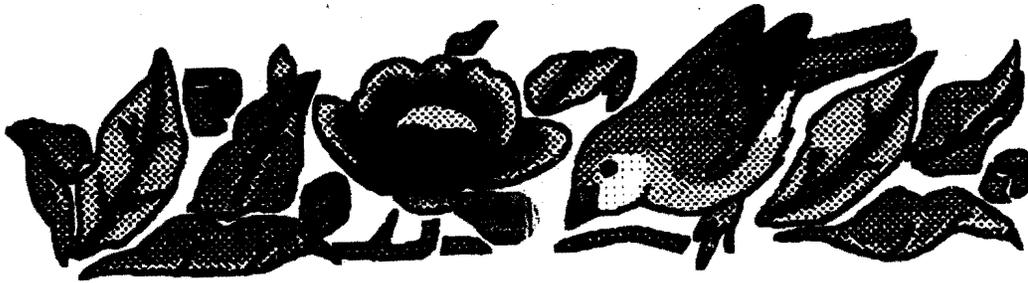
We are not an expert on the environment, but we want to see the beaches preserved and ocean animals and fish protected. If Southern California Edison runs their power plant at San Onofre in the same professional manner as they operate in our community, I trust their ability to do the right thing. Edison has been a big help in our community, supporting schools, the chamber of commerce and all the little things that make a community a good place to live. To our knowledge they have always maintained a positive relationship with the environment.

Please think about all the things Edison had done for our area and for this part of California when you make your decision.

Sincerely,

DAN FARRELL
President

DF/cb



MAYWOOD SENIOR'S CLUB

4747 East 56th Street
Maywood, California 90270

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CALIFORNIA
COASTAL COMMISSION

October 5, 1996

Chairman Louis Calcagno and Members
California Coastal Commission
45 Fremont Street
San Francisco, CA 94105

Dear Chairman Calcagno and Commissioners:

We the Maywood Senior's Club are writing on behalf of Southern California Edison, which we know has an issue before your commission.

We are not an expert on the environment, but we want to see the beaches preserved and ocean animals and fish protected. If Southern California Edison runs their power plant at San Onofre in the same professional manner as they operate in our community, I trust their ability to do the right thing. Edison has been a big help in our community, supporting schools, the chamber of commerce and all the little things that make a community a good place to live. To our knowledge they have always maintained a positive relationship with the environment.

Please think about all the things Edison had done for our area and for this part of California and vote Yes on their proposal.

Sincerely,

Dolores C. Stephens

DOLORES STEPHENS
President

Comments of Natural Resources Defense Council, Inc.

SONGS Coastal Development Permit No. 6-81-330

October 8, 1996

*Received at Commission
Meeting*

OCT - 8 1996

From: _____

Honorable Commissioners:

My name is David Beckman, and I am an attorney with the Natural Resources Defense Council, a non-profit environmental public interest group with over 300,000 members nationwide, over 50,000 of whom live in California.

NRDC opposes Southern California Edison's request to amend its coastal permit for its San Onofre Nuclear Generating Station Units 2 and 3 because that request is substantively inconsistent with the California Coastal Act and has been brought to hearing in a matter that also violates the Coastal Act. Similarly, the Staff report, while more faithful to the Coastal Act, suffers from the same "rush to

judgment" that characterizes Edison's proposal, and deserves additional evaluation and discussion.

This request by Edison and its partners -- first proposed little more than six weeks ago -- has been rushed through to hearing without sufficient time for the public to consider and evaluate the enormous technical and scientific data in Edison's three volume proposal. Last month, at the Commission's meeting in Eureka, NRDC asked the Commission not to schedule consideration of this issue in October, but the Commission refused. There are few if any more important or complex coastal issues than the impacts of a massive nuclear power plant on the California coast, and yet this Commission has seen fit to create a breakneck review schedule which virtually guarantees that the public cannot fully participate in this matter. The Staff's 160 page Staff Report was issued less than two weeks before the hearing. Edison's even longer rebuttal

was released to the public less than twenty four hours before the hearing. This is no way to protect the Coast or run a Commission, and the Commission's actions violate the Coastal Act which provides that "the Legislature finds and declares that the public has a right to fully participate in the decisions affecting coastal planning, conservation, development." The Coastal Act further provides that that "achievement of sound coastal conservation and development is dependent upon public understanding and support." Pub. Res. Code Section 30006. We can only wonder why the Commission is in such an apparent rush.

Second, the new information that Edison claims permits it to seek amendment of its permit concerns only one issue, kelp reforestation, but Edison seeks more lenient terms concerning a number of issues that have absolutely nothing to do with kelp. The Commission's regulations and commonsense do not permit Edison

to bootstrap a laundry list of proposed changes based on one new fact concerning kelp. Section 30626 permits reconsideration of the terms of terms of a coastal permit "solely for the purpose of correcting" information in those terms. Here, the only arguably new information which requires a correction to the permit regards kelp reforestation. If the Commission allows Edison to re-negotiate mitigation measures in this fashion, it is inviting a flood of similar tactics from every other coastal permittee who will similarly cling to one new fact in an attempt to re-visit its mitigation package. This Commission and its staff will do little else but consider permit amendments, and the Commission will have itself to blame.

Edison's proposal itself is inconsistent with the Coastal Act's requirement that the Company fully mitigate the damage its nuclear power plant causes to the coastal marine environment.

Indeed, a member of this Commission's Independent Technical Review Panel, Dr. Craig Osenberg, states in an October 2, 1996 letter to the Commission that Edison has misrepresented the Panel's report in seeking amendment. This is a serious charge, and coming as it does from a member of the Commission's Independent Panel, deserves this Commission's full attention.

Edison's proposed 94% reduction in kelp reef mitigation is unsupported by scientific data, as Staff and Dr. Osenberg concluded. Edison has evidently misapplied MRC and independent review panel data, and its calculation of a 16.8 acre proposed reef is arbitrary and inadequate. This issue deserves to be fully evaluated, and independent experts consulted, before any decision is made.

As the Staff report indicates, Edison has further failed to account for new information that indicates that fish kills caused by the plant may be twice or more previous estimates. This Commission must require that this data be fully evaluated before any re-evaluation of Edison's wetland mitigation commitments are considered.

Further, Edison provides no basis for its request to be relieved of independent monitoring requirements. Edison's environmental manager, Michael M. Hertel, himself stated in 1991 that Edison strongly supported the "innovative mitigation monitoring which will be completely independent and uninfluenced by S.C.A Edison and its partners." The same opportunity for creeping influence that Mr. Hertel himself noted in 1991 exists today, and the Commission should continue to follow Mr. Hertel's 1991 advice about this matter. Indeed, Edison's tireless attempts to reduce its mitigation requirements underscore why it should not be monitoring itself.

Comments of Natural Resources Defense Council, Inc.
SONGS Coastal Development Permit No. 6-81-330
October 8, 1996
Page 7

For all of these reasons, the Commission should reject Edison's proposed amendments, and direct staff to enforce the 1991 permit as issued to Edison and its partners.



September 7, 1996

Chairman Louis Calcagno and Members
 California Coastal Commission
 45 Fremont Street
 San Francisco, CA 94105

VIA FAX: (415) 904-5400

Re: Environmental Mitigation Plan

Dear Mr. Calagno and Commissioners:

As a concerned resident of this state, I understand the need to protect our citizens from the potential risks of the San Onofre plant. And as a small business owner in the highly competitive business of printing, I understand the need to control costs in order to survive. I understand the needs of my business. Whether spending for added equipment, personnel, or for ensuring environmental soundness. What I can not understand is your need for an expensive Environmental Mitigation Plan for a plant with an outstanding record of safety. The final price of which will ultimately be paid by all Edison customers.

The Southern California Edison Company has my full respect and admiration in how they have worked with me in saving energy, assigning me to the best rates and for the printing work I have done for it. I strongly oppose any plan to add to the cost of mitigation. Edison has protected the environment and has provided safe and clean energy at San Onofre. They have gone beyond what would be acceptable. Edison, in my view, has done its best at a reasonable cost.

Sincerely,

Fernando V. Bonada
 President

FBV/aic

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CALIFORNIA
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• • • • •
 6041 Triangle Drive
 Commerce, California 90040
 Fax 213/725-1257
 213/721-9654

Arlene & Richard Lighthall
429 Luzon Avenue
Del Mar, California 92014-2219

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CALIFORNIA
COASTAL COMMISSION

California Coastal Commission
45 Fremont Street, Suite 2000
San Francisco, CA 94105-2219

Dear Commissioners:

I am dismayed that you have not yet taken the necessary action to make Southern California Edison comply with the 1991 agreement to restore acreage in the San Dieguito Lagoon to mitigate for the enormous kill of fish at the San Onofre Nuclear Generating plants 2 and 3. It has been five years since that agreement was reached. This is no time to delay, to compromise, nor to listen to the erroneous figures of Southern California Edison regarding the amount of time the mouth of the lagoon is closed: **IT IS OPEN 70% OF THE TIME.**

Please, in making So. CA Edison honor their deal, make sure that the whole 150 acres are restored, both on the airfield and east of Interstate 5, and make the company do the necessary infrastructure improvements. Many people in this state rely upon you for ethical decisions and actions regarding environmental issues. Please do not let us down.

Sincerely,



Arlene and Richard Lighthall



AMERICAN GI FORUM OF CALIFORNIA

P.O. Box 1681 • Santa Maria, California 93456
(805) 928-4096 • Fax (805) 347-7697

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September 4, 1996

Chairman Louis Calcagno and Members
California Coastal Commission
45 Fremont Street
San Francisco, CA 94105

CALIFORNIA
COASTAL COMMISSION

RE: San Onofre Environmental Mitigation Plan

Dear Commissioners:

The GI Forum of California supports the San Onofre Environmental Mitigation Plan that Southern California Edison is proposing. This Plan will be on your Commission meeting agenda of October 8, 1996.

Based on our personal and professional dealings with Southern California Edison, we firmly believe this company has its customers and our communities in mind in everything they do.

Southern California Edison has been very active in a positive manner with the Latino and Veterans Communities throughout California.

The members of this Veterans & family organization firmly believe that Southern California Edison has done a tremendous job in the environmental area.

We urge you to vote in favor of their Plan. It is fair to all concerned.

Gilbert Guevara
State Executive Director



Associated Engineers

CONSULTING CIVIL ENGINEERS

3311 E. SHELBY STREET, ONTARIO, CA 91764

(909) 980-1982 FAX: (909) 941-0891

October 7, 1996

Chairman Louis Calcagno
Honorable Members of the California Coastal Commission
45 Fremont Street, Suite 2000
San Francisco, CA 94105

Dear Chairman Calcagno and Commissioners:

As a life long business and residential customer of Southern California Edison, I am writing this letter requesting your support of the permit application submitted by Edison to amend the coastal permit for San Onofre Nuclear Generating Station.

Throughout the years, my Company has worked closely with Edison on many multi-million dollar projects and have found them always to be community minded and totally reliable and responsible for work performed. I question the necessity of requiring Edison to place \$28 million into a fund that would basically pay for monitoring of mitigation programs associated with the power plant. It is very disturbing to read that the costs of mitigation have apparently increased dramatically while the evidence for a significant impact by SONGS has decreased.

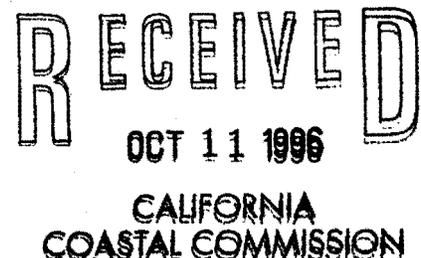
During your review of Edison's permit application, please consider the fairness and reasonableness of mitigation costs, and remember the long history of proven credibility and trustworthiness this company has established over the years.

Sincerely,

ASSOCIATED ENGINEERS, INC.

April M. Morris
President

AMM:dw



B.G.A. FINANCIAL SERVICES
2545 CRESTLINE TERRACE
ALHAMBRA, CALIFORNIA 91803

October 4, 1996

Chairman Louis Calcagno and Members
California Coastal Commission
45 Fremont Street
San Francisco, CA 94105

Dear Sirs:

I am writing to support Southern California Edison's plans for the nuclear plant in San Onofre. Edison has an admirable record of safety and concern for the environment not only in San Onofre but in the realm of electric cars, solar power and other important elements of the state.

Protecting the economic health of California means that regulators like the Coastal Commission should carefully consider the impact their decisions will have on companies. A case in point is now before you with the pending San Onofre power generation plan for restoring kelpbeds and protecting the fish population. I am not an expert on the environment, but I want to see the beaches preserved and ocean animals and fish protected. If Southern California Edison runs their power plant at San Onofre in the same professional manner as they operate in our community, supporting schools, the chamber of commerce and all the little things that make a community a good place to live. Southern California Edison has spent millions of dollars to protect fish and sea mammals near the plant. This good work should be taken into account as you make your decision.

The efforts of Edison in this realm made a real difference. Edison should be commended for its efforts in this manner. While the decision before you is not directly related to this, I believe you should consider all the good things Edison has done when you decide this.

Belia H. Arroyo
Belia Arroyo
President

BEARD CONSTRUCTION

JACK W. BEARD

3141 Broadway
Huntington Park, Ca. 90255

Phone # 589-1234
License No. 420024

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COASTAL COMMISSION



October 5, 1996

Chairman Louis Calcagno and Members
California Coastal Commission
45 Fremont Street
San Francisco, CA 94105

Dear Chairman Calcagno and Commissioners:

I am writing to urge your commission to adopt the plan for ocean protection that is being advocated by Southern California Edison.

We must balance the needs of the environment with the realities of the economy. Our California economy is still coming back from the recession of the early 1990's, and even companies as large as Edison need to recover.

I have been a customer of Edison for over forty years. In that time I have always known them to maintain a positive relationship with the environment.

Please vote for a plan that is fair to everyone.

Sincerely,

Jack W. Beard
JACK W. BEARD

BECNEL UNIFORMS
758 SOUTH SAN PEDRO STREET
LOS ANGELES, CALIFORNIA 90014
(213) 623-4522

October 7, 1996

Chairman Louis Calcagno
California Coastal Commission
45 Fremont Street Suite 2000
San Francisco, California 94105

Dear Chairman Calcagno:

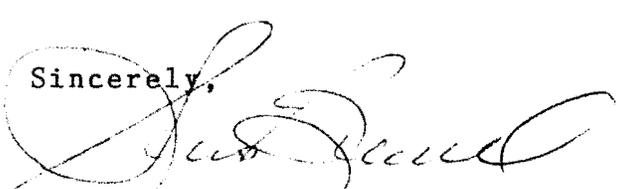
As a small business owner, I encourage you and your colleagues on the California Coastal Commission to support Southern California Edison's permit application to amend the coastal permit for the San Onofre Nuclear facility.

I am in full support of all efforts to protect our delicate environment, and most especially our oceans. Too often, corporate greed takes higher preference over the protection of all aspects of our environment.

Clearly, this has not been the case with Southern California Edison, which has proven to be highly sensitive to any and all environmental impacts associated with providing electricity to it's customers. On the contrary, Edison has been at the forefront of environmentally conscious corporations, working to promote and ensure that our environment is protected.

I believe the mitigation plan proposed by Edison, adequately meets the goals and objectives to protect the marine life at San Onofre. As such, I urge you to support Edison's application.

Sincerely,


Susan Becnel
President

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Energy

October 7, 1996

Chairman Louis Calcagno and Members
of the California Coastal Commission
45 Fremont Street, Suite 2000
San Francisco, CA. 94105

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CALIFORNIA
COASTAL COMMISSION

Dear Chairman Calcagno and Commissioners,

I am writing to you in support of the permit application submitted by Southern California Edition to amend the coastal permit for the San Onofre Nuclear Generating Station (SONGS).

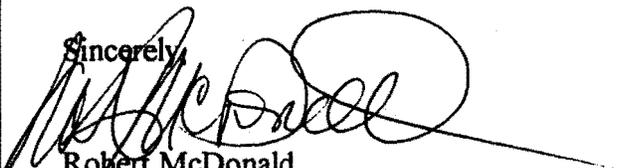
The Black Chamber of Orange County, specifically the Business Development group, has followed this issue with increasing concern, particularly in light of the recent report released by your staff.

A huge degree of concern and cause for question is that the Commission would condone a staff recommendation to expend another \$80 million on marine mitigation, given what is known about the extent of the impacts caused by San Onofre. Another concern questions whether all of the analysis and cost comparisons have been exhausted.

How does the staff justify an \$80 million expenditure when the plant is not affecting rare and endangered species and the economic value of the impact on the Southern California region is placed at only about \$15 million? What's most ludicrous, the Commission staff wants \$28 million for monitoring of the mitigation program. As I stated earlier, we have concerns that the staff hasn't thought this all the way through yet.

I would hope that when the Coastal Commission meets on October 8th that you would insist upon accountability and responsibility from your staff. No one likes to be taken advantage of, and as part of the business community, when jobs and the economy are at stake, hopefully fairness will prevail.

Sincerely,



Robert McDonald
President
Black Chamber of Commerce of Orange County





**CONSOLIDATED
DISPOSAL SERVICE, INC.**

~~RECYCLE TODAY!~~

October 7, 1996

Chairman Louis Calcagno and Members
California Coastal Commission
45 Fremont Street
San Francisco, CA 94105

Dear Chairman Calcagno:

I am writing on behalf of Southern California Edison, which I know has an issue before your commission.

I am not an expert on the environment, but I want to see the beaches preserved and ocean animals and fish protected. If Southern California Edison runs their power plant at San Onofre in the same professional manner as they operate in our community, I trust their ability to do the right thing. Edison has been a big help to our community, supporting schools, the chamber of commerce, and all the little things that make a community a good place to live.

Please think about all the things Edison has done for our area and for this part of California when you make your decision.

Sincerely,

B.J. Rankin
Area Representative

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TOTAL P. 01



Consumers Coalition of California
(a non-profit corporation)

1

**CONSUMERS COALITION
BEFORE THE CALIFORNIA COASTAL COMMISSION
OCTOBER 8, 1996**

WHO IS CONSUMERS COALITION?

WE ARE MEMBERS OF CONSUMERS COALITION OF CALIFORNIA. CONSUMERS COALITION HAS BEEN ACTIVE SINCE 1982 WE HAVE TESTIFIED BEFORE THE CALIFORNIA SENATE AND ASSEMBLY AS WELL AS INTERVENING BEFORE THE PUBLIC UTILITIES COMMISSION AND THE DEPARTMENT OF INSURANCE. CCC HAS ALSO BEEN INVOLVED IN TASK FORCES AND AUDITS INVOLVING THE OFFICE OF APPROPRIATE TECHNOLOGY, DEPARTMENT OF ENERGY, PACIFIC BELL AND GENERAL TELEPHONE, AS WELL AS INTER-EXCHANGE CARRIERS WHO ARE RE-SELLERS OF TELEPHONE SERVICES. IN DECEMBER 1990, CCC TESTIFIED BEFORE THE SENATE COMMITTEE ON ENERGY AND PUBLIC UTILITIES. AT THIS TIME WE ADDRESSED THE PROBLEM OF THE PEOPLE WHO WERE BEING SERVED BY TELECOMMUNICATIONS.

Received at Commission
Meeting

OCT - 8 1996

From: _____

COASTAL COMMISSION DECISIONS

OUR MEMBERS AND THE CONSUMERS WE REPRESENT IN SMALL BUSINESS AND THE RESIDENTIAL SECTOR DO NOT WANT ANY MORE DEALS. IN THEIR COMMENTS TO US, THE UTILITY CUSTOMERS, THE RATEPAYERS, HAVE LOST PATIENCE WITH A SYSTEM WHICH ALWAYS SEEMS TO PENALIZE THEM.

THE RATEPAYERS NOW HAVE IMBEDDED IN THEIR COSTS, THE STRANDED COSTS FOR SONGS 1, 2 AND 3. YET, THE BUILDING OF THESE NUCLEAR STATIONS WAS DONE BY A CPUC MANDATE AND WITHOUT THE RATEPAYER'S CONSENT OR INFORMED KNOWLEDGE.

CCC WANTS THE CALIFORNIA COASTAL COMMISSION TO BE AWARE OF THE ANGER OUT THERE. CALIFORNIA HAS SEEN A MIGRATION OF SMALL BUSINESS FROM OUR STATE DUE TO OVER-REGULATION.

CCC ASKS THE MARINE REVIEW COMMITTEE WHY, IN THEIR INFINITE WISDOM, IT IS MANDATORY TO PRESERVE KELP BEDS ABOVE PEOPLE? WHY IS THE STUDY BY EDISON BEING IGNORED? WHY IS THE AMENDED PLAN TO ESTABLISH A 17-ACRE EXPERIMENTAL REEF NOT ACCEPTABLE? WHEN DOES SAVING THE ENVIRONMENT IN ITS PRISTINE STATE BECOME PUNITIVE? WE BELIEVE IN COASTAL PROTECTION. WE DO NOT BELIEVE THIS CAN BE ACHIEVED IN OUR ADVERSARIAL ATMOSPHERE.

WHY IS THE SAN DIEGUITO LAGOON RESTORATION PROJECT INSUFFICIENT TO PROTECT THE WETLANDS?

WHY IS THE WETLANDS RESTORATION AT ORMOND BEACH IN OXNARD NOT SUFFICIENT TO RESTORE 386 ACRES OF DEGRADED COASTAL WETLANDS? LET'S RE-ESTABLISH A REASONABLE RELATIONSHIP BETWEEN IMPACT AND MITIGATION.

WHAT ABOUT THE PEOPLE?

WHAT WILL HAPPEN TO THE CONSUMER DEPENDENT ON NUCLEAR POWER TO KEEP THEIR HOMES AND BUSINESSES RUNNING?

CCC ASKS "WHAT ARE WE PROTECTING?" THE SAN ONOFRE KELP BED CONSTITUTES 1.4% OF THE KELP IN SOUTHERN CALIFORNIA. THE SONGS MARINE MITIGATION PROGRAM WAS A CONSIDERATION IN THE CPUC SONGS DECISION. WHO WILL END UP ABSORBING THE \$165 MILLION LOSS IN EARNINGS? THE SETTLEMENT GIVES NO GUARANTEES OF EARNINGS TO COVER ALL OPERATING COSTS. SO, WHO WILL PAY IN THE LONG RUN? THE CONSUMER AND CALIFORNIA WILL SEE A DIFFERENT MIGRATION, OF PEOPLE, NOT FISH.

COASTAL COMMISSION DECISION

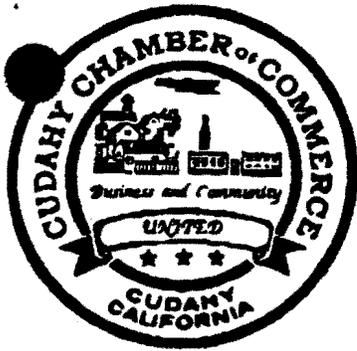
CCC IS ASKING THE COMMISSION TO END THIS STRANGLEHOOD ON THE CAPTIVE CONSUMER AND KEEP OUR ELECTRIC SYSTEMS OPERABLE, AT LEAST UNTIL DE-REGULATION IS FULLY IMPLEMENTED. THE CONSUMER HAS PAID ENOUGH FOR FEDERALLY MANDATED BOONDOOGLES IN SUCH VENTURES AS ALTERNATE ENERGY. CONSIDER THE UNSIGHTLY WINDMILLS OUTSIDE PALM SPRINGS.

THERE IS NO CIVILIZATION WITHOUT LIGHT, HEAT, TELEPHONE OR SOFTWARE. CALIFORNIA JUST EXPERIENCED THE SHUTDOWN OF SERVICES WHEN A TREE INTERFERED WITH POWER LINES IN OREGON LAST MONTH. ELECTRIC SERVICES WERE SHUT DOWN FROM CANADA AND MEXICO. IN THE BEST OF ALL WORLDS, THIS WOULD NOT HAPPEN. THE UTILITIES, DURING DE-REGULATION, AND AFTER MUST REMAIN VIABLE IN ORDER TO CONTINUE TO OFFER US THE SERVICES ON WHICH WE ARE DEPENDENT.

OUR WORLD RUNS ON ELECTRICITY. MAKE NO MISTAKES!

CCC ASKS THIS COMMISSION, FOR THE SAKE OF THE RATEPAYER AND THE 5 MILLION CUSTOMERS SERVED BY SONGS 2 AND 3 TO ACCEPT THE PLAN NOW PROPOSED WHICH ESTABLISHED A BALANCE BETWEEN THE ENVIRONMENTAL NEEDS AND THE NEEDS OF THE CONSUMER.

WE THANK YOU FOR THIS OPPORTUNITY TO PRESENT OUR VIEWS.



RECEIVED

OCT - 8 1996

CALIFORNIA
COASTAL COMMISSION

October 5, 1996

OFFICERS AND DIRECTORS

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Martin Andara
Businessman

Chairman Louis Calcagno and Members
California Coastal Commission
45 Fremont Street
San Francisco, CA 94105

Dear Chairman Calcagno and Commissioners:

Protecting the economic health of California means that regulators like the Coastal Commission should carefully consider the impact their decisions will have on companies. A case in point is now before you with the pending San Onofre power generation plan for restoring kelpbeds and protecting the fish population.

The proposal advanced by Southern California Edison is reasonable and should be adopted. It makes sense to spend money wisely and thoughtfully. Based on the actions taken to date by SCE, they are committed to the spirit of the decision you made earlier protecting the environment from the effects of the nuclear plant's warm water discharge. Now it seems that the impacts are less than expected, so the plan should be amended to reflect that.

Edison has always worked to maintain a positive relation with the environment. Vote yes in support of their proposal.

Sincerely,

RONALD V. GARCIA
President



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October 5, 1996

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OCT - 8 1996

CALIFORNIA
COASTAL COMMISSION

Chairman Louis Calcagno and Members
California Coastal Commission
45 Fremont Street
San Francisco, CA 94105

Dear Chairman Calcagno and Commissioners:

I am writing to urge your commission to adopt the plan for ocean protection that is being advocated by Southern California Edison.

We must balance the needs of the environment with the realities of the economy. Our California economy is still coming back from the recession of the early 1990's, and even companies as large as Edison need to recover.

I have been a customer of Edison for over forty years. In that time I have always known them to maintain a positive relationship with the environment.

Please vote for a plan that is fair to everyone.

Sincerely,


MARIA DANNA

DANNY'S UNOCAL 76 SERVICE
684 S. GLASSELL
ORANGE, CA 92866

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OCT - 7 1996
CALIFORNIA
COASTAL COMMISSION

Chairman Louis Calcagno and members
of the California Coastal Commission
45 Fremont Street, Suite 2000
San Francisco, CA 94105

Dear Chairman Calcagno and Commissioners:

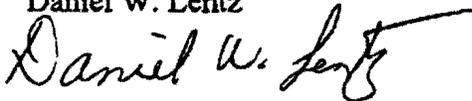
I am writing to you in support of the permit application submitted by Southern California Edison to amend the coastal permit for the San Onofre Nuclear Generating Station (SONGS).

I AM A BUSINESS PERSON IN Orange County and am particularly concerned about what I see as the escalating cost of the mitigation program associated with the power plant. It disturbs me that the costs of mitigation have apparently increased dramatically while the evidence for a significant impact by SONGS has decreased.

In seeking to foster a positive economic climate in California, I think it is especially important for regulatory bodies such as the Coastal Commission to guard against an overzealous effort to unduly hamper the business activities of companies in this state.

I believe that laws and regulations should be enforced, but I also believe they should be enforced fairly and evenhandedly. I urge you to carefully examine the staff report to assure the business community in this state that the Coastal Commission intends to act responsibly in reviewing the cases which come before it.

Sincerely,
Daniel W. Lentz



Corporate Offices

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October 4, 1996

**Chairman Louis Calcaagno and Members of
the California Coastal Commission
45 Fremont Street, Suite 2000
San Francisco, CA 94105**

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UCI - 9 1996

CALIFORNIA
COASTAL COMMISSION

Dear Chairman Calcaagno and Commissioners:

I believe the permit before you amending the San Onofre ocean protection plan should be approved by your commission. Much effort has been put into this plan by Southern California Edison. They have spent millions of dollars to protect fish and sea mammals near the plant. This good work should be taken into account as you make your decision.

The existing oversight process, the variety of interested parties, and Edison's track record clearly sustains the need for the staff proposed \$28 million monitoring program is clearly not justified with the existing oversight process, the variety of interested parties, and Edison's track record for fulfilling their commitment.

I believe we can have energy and be sensitive to the needs of the environment, but we also have to acknowledge economic realities. Please vote yes on the Edison plan for San Onofre.

My long term business and community relationship with Southern California Edison and its managers clearly supports their record for dealing honestly with environmental issues.

I would hope that when the Coastal Commission meets on October 8 that you would insist upon accountability and responsibility from your staff. It is simply intolerable that well meaning companies should be subject to the kind of shakedown that appears to be shaping up in this case.

Sincerely,

MILTON W. JONES
President

Duarte Chamber of Commerce



October 7, 1996

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- Bill Wadham
GT Auto Detailers

Chairman Louis Calcagno and Members
California Coastal Commission
45 Fremont Street
San Francisco, California 94105

FAX 415-904-5400

Dear Chairman Calcagno:

Please vote in favor of the San Onofre environmental mitigation plan as supported by Southern California Edison when it comes before your commission on October 8, at your meeting in Los Angeles.

Based on my personal and professional dealings with Southern California Edison, I believe it is a company that has the best interests of its customers and our region in mind in everything that it does.

Edison has been very active, in a positive way, with a wide variety of community and business efforts to make California a better place to live and work. I endorse the plan for San Onofre they have submitted to your commission and urge you to do the same.

Sincerely,

Janet Wight
Executive Director

cc: Vince Haydel

1634 Third Street • P.O. Box 1438 • Duarte • CA • 91009 • (818)357-3333 • Fax (818)357-3645

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OCT - 7 1996
CALIFORNIA
COASTAL COMMISSION



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October 7, 1996

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COASTAL COMMISSION

Chairman Louis Calcagno and Members
California Coastal Commission
45 Fremont Street
San Francisco, CA 94105

Dear Chairman Calcagno and Commissioners:

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Edison has been very active, in a positive way, with a wide variety of community and business efforts to make California a better place to live and work. I endorse the plan for San Onofre they have submitted to your commission and urge you to do the same.

Sincerely,

SUSANNE SUNDBERG
Executive Director



OCT 07 '96 15:57

LAS FLORES ESCROW

7700 E. Imerial Highway #A
Downey, CA 90242
(310) 940-6440 FAX (310) 940-6443

October 4, 1996

Chairman Louis Calcagno and Members
California Coastal Commission
45 Fremont Street
San Francisco, CA 94105

Dear Sirs:

I am writing on behalf of Southern California Edison, which I know has an issue before your commission.

Please vote in favor of the San Onofre environmental mitigation plan as supported by Southern California Edison when it comes before your commission on October 8 at your meeting in Los Angeles.

Based on my personal and professional dealings with Southern California Edison, I believe it is a company that has the best interests of its customers and our region in mind in everything that they do.

Edison has been very active, in a positive way, with a wide variety of community and business efforts to make California a better place to live and work. The proposal advanced by Southern California Edison is reasonable and should be adopted. It makes sense to spend money wisely and thoughtfully. Based on the actions taken to date by SCE, they are committed to the spirit of the decision you made earlier - protecting the environment from the effects of the nuclear plant's warm water discharge. Now it seems that the impacts are less than expected, so the plan should be amended to reflect that.

I endorse the plan for San Onofre they have submitted to your commission and urge you to do the same.


Marina Flores
President

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Louis Calcagno, Chairman
California Coastal Commission
45 Fremont St., #2000
San Francisco, California

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OCT 11 1996

CALIFORNIA
COASTAL COMMISSION

Dear Chairman Calcagno

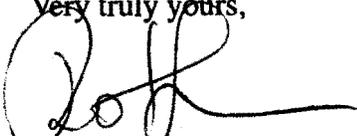
As an owner of a printing company in Monterey Park, California, I am aware of the increasing costs of doing business. As a small business owner I often feel the direct results of local or state governmental fees. I also feel the burdens of undue expenses imposed on suppliers of some of our critical services such as electricity.

I understand that the Coastal Commission is about to hold a hearing to review Southern California Edison's permit application regarding mitigation efforts at it's nuclear power plant at San Onofre. I have read through Edison's mitigation plan and feel that it is sound and in the best interest for all concerned, including the environment.

SCE has a history of being sensitive to the environment. It has strived to reduce air pollution and to develop alternate sources of energy that are friendly to the environment.

I urge you and your fellow commissioners to give strong considerations to the SCE's application in amending the coastal permit for San Onofre. After your review, I feel that you will recognize their plan as being sound and prudent - beneficial to all parties concerned.

Very truly yours,



Robert Lee

JOHN K. MIRAU*
MARK C. EDWARDS
ROBERT W. CANNON*
STANLEY A. HARTER*
MICHAEL J. LEWIN

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telephone: (909)888-0200
facsimile: (909)384-0203

*Certified Specialist, Taxation
Law, The State Bar of California
Board of Legal Specialization
†Certified Specialist, Estate
Planning, Trust and Probate
Law, The State Bar of California
Board of Legal Specialization

222 E. Olive Ave., Suite 1
Redlands, CA 92373
telephone: (909)793-0200
facsimile: (909)792-2359

October 4, 1996

99900-MCE

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OCT 08 1996

Chairman Louis Calcagno and Members
California Coastal Commission
45 Fremont St., Ste 2000
San Francisco CA 94105

CALIFORNIA
COASTAL COMMISSION

Re: Souther California Edison; San Onofre Environmental
Mitigation Plan

Dear Chairman Calcagno and Honorable Commissioners:

As a citizen and business owner in California, I recognize and appreciate the efforts of the Coastal Commission to protect California's valuable beaches and marine environment. In that regard, I am writing in support of Southern California Edison's San Onofre environmental mitigation plan which will soon come before your commission for consideration.

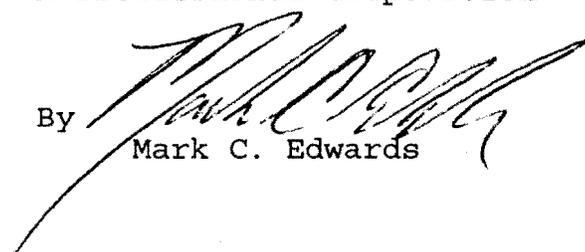
While not an expert on environmental issues, my personal and professional dealings with Southern California Edison and it's management convince me that it is a company which is sensitive to environmental and the other concerns of the larger community, and that it is a company which honors its commitments. I have personally worked with Edison and its management on matters which provided great benefit to the local community and environment, at significant cost to Edison.

Please give serious consideration to Edison's mitigation proposal.

Very truly yours,

MIRAU, EDWARDS, CANNON & HARTER
A Professional Corporation

By


Mark C. Edwards

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OCT - 7 1996

CALIFORNIA
COASTAL COMMISSION

HENRY M. MORGAN
Covina, California

October 8, 1996

Chairman Louis Calcagno and Members
California Coastal Commission
45 Fremont Street
San Francisco, CA 94105

FAX: 415-904-5400

Dear Chairman Calcagno,

At your hearing today, please vote in favor of the San Onofre environmental mitigation plan as supported by Southern California Edison.

As a former board member of the South Coast Air Quality Management District and The Regional Water Quality Control Board, I have found the Edison Co. to be most enlightened and creative in their solution of problems.

In my experience, once defined and agreed upon, industry will find the most practical and cost effective way to fix a problem.

Edison is a good corporate citizen, maintaining the quality of life in California with a proper concern for the environment, rate payers and stock holders.

I support the Edison San Onofre plan and trust you will do the same.

Sincerely,


Henry M. Morgan

FAX: 818-915-0665

**THE OCCUPATIONAL
MEDICINE CENTER**

AT WHITE MEMORIAL MEDICAL PLAZA

1701 Cesar E. Chavez Avenue
Suite 354
Los Angeles, California
90033
213 222 9875
fax: 213 343 1313

October 8, 1996

Chairman Louis Calcagno and Members
California Coastal Commission
45 Fremont Street
San Francisco, Ca. 94105

VIA FAX: (415) 904-5400

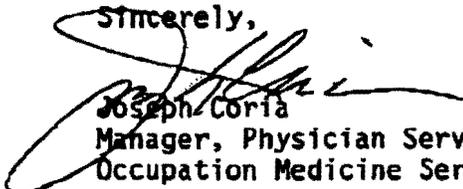
Dear Mr. Chairman:

I am writing to urge your commission to adopt the plan for protection that is being advocated by Southern California Edison.

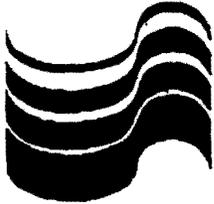
I am a life long resident of California and have enjoyed our beautiful coastal areas from San Diego to San Francisco and I have always advocated for a strong coastal environment policy. Last year I toured the San Onofre plant and was very impressed with the professional manner and high priority on safety and security. Edison has been very active on many of the Chambers of Commerce that I have been involved for many years. They are a strong supporter of many businesses, schools and the total community.

Please take into consideration of all the many contributions the Edison has given to our cities in Southern California.

Sincerely,



Joseph Coria
Manager, Physician Services
Occupation Medicine Services



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(Founded 1964)

*A Charitable and Educational Foundation
Serving the Needs of Senior Citizens.*

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Chairman Louis Calcagno and Members
California Coastal Commission
45 Fremont Street
San Francisco, CA 94105

CALIFORNIA
COASTAL COMMISSION

Dear Chairman Calcagno and Commissioners:

Protecting the economic health of California means that regulators like the Coastal Commission should carefully consider the impact their decisions will have on companies. A case in point is now before you with the pending San Onofre power generation plan for restoring kelpbeds and protecting the fish population.

The proposal advanced by Southern California Edison is reasonable and should be adopted. It makes sense to spend money wisely and thoughtfully. Based on the actions taken to date by SCE, they are committed to the spirit of the decision you made earlier, protecting the environment from the effects of the nuclear plant's warm water discharge. Now it seems that the impacts are less than expected, so the plan should be amended to reflect that.

I am impressed with the dedication of SCE to everything they do, and believe they can be trusted to fulfill their obligations. The plan before you that they advocate seems to me to be wholly adequate to insure that the nuclear plant and the ocean environment can co-exist.

Thank you for your YES vote on Southern California Edison's proposal.

Sincerely,

Standra Stanko.

STANDRA STANKO
Executive Director



Received at Commission
Meeting

October 7, 1996

OCT - 8 1996

From: _____

Board of Directors

George Lauterbach, Chairman
Lauterbach & Associates, Architects

Michael Montoya, Treasurer
Southern California Edison

Marc Charney
Nordman, Cormany, Hair & Compton

Andres Herrera
City of Oxnard Mayor Pro Tem

Dr. Thomas E. Holden
City of Oxnard Councilmember

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Michael A. Plisky
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Channel Islands Properties

Stephen D. Woodworth
Channel Islands Equities

Steven L. Kinney
President

Gordon House
at Heritage Square
South A Street
Oxnard, California 93030
(800) 422-6332
(805) 385-7444
FAX (805) 385-7452

Chairman Louis Calcagno,
Members of California Coastal Commission
45 Fremont Street
San Francisco, CA 94105

Dear Chairman Calcagno and Members,

The Greater Oxnard Economic Development Corporation wishes to express their support and urge your approval for Southern California Edison's land use proposal and mitigation plan for their property at Ormond Beach.

We have reviewed the plan and feel the proposed uses will create an economic benefit to our community while providing for the enhancement and protection of the Ormond Beach Wetlands. We support the Edison plan, with its balance of economic development/job creation and restoration of the wetlands. The plan would place a reasonable buffer between the existing industrial uses along Hueneme Road and the fragile ecosystem near the waters edge.

The Economic Development Corporation has actively participated Ormond Beach Task Force, a broad based group representing public, private and environmental organizations. The Edison plan is consistent with the "Consensus Plan" adopted by the Task Force for their property.

We believe that approval of the Edison plan will provide the imputus necessary to complete a specific plan for the area that will provide for enhanced economic vitality of south Oxnard through eco-tourism and ancillary commercial opportunities.

Sincerely,

A. Patrick Sweeney
Director of Business Development



October 8, 1996

Mr. Louis Calcagno, Chairman
Commission Members
California Coastal Commission
45 Fremont Street
San Francisco, CA 94105

Received at Commission
Meeting

OCT - 8 1996

From: _____

Dear Chairman Calcagno and
Members of the Commission;

The Oxnard Area Chamber of Commerce submits this correspondence in support of the Southern California Edison Company's San Onofre environmental mitigation plan. This is one of those highly technical issues which touch mainstream southern California and, in our estimation, our State's march back to economic recovery.

We ask your support for several reasons. First, the San Onofre plan can and will impact the very heart of Ventura County's efforts to deal with projects that encourage balance between environmental sensitivity and economic vitality. Second, the Edison Company has demonstrated a keen responsibility to environmental issues in our region and we believe that such concern is also demonstrated within this Plan.

The approval of the proposal will be a significant step for SCE, the City of Oxnard and Ventura County to move into the 21st Century on the foundation of sound environmental management while pursuing economic diversity. Your Commission is to be commended for the professional manner in which it deals with a meriad of complex issues. We thank you in advance for your consideration of our recommendation and the opportunity to submit this correspondence.

Sincerely,

A handwritten signature in dark ink, appearing to read "D. Yavarian", written in a cursive style.

Douglas A. Yavarian
Executive Director

OXNARD CHAMBER OF COMMERCE
POST OFFICE BOX 867
OXNARD CALIFORNIA • 9303
(805) 385-8860 • FAX (805) 487-1763

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October 7, 1996

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OCT - 7 1996

CALIFORNIA
COASTAL COMMISSION

Chairman Louis Calcagno and Members
of the California Coastal Commissions
45 Fremont Street, Suite 2000
San Francisco, CA 94105

Dear Chairman Calcagno and Commissioners:

I am writing to you in support of the permit applications submitted by Southern California Edison to amend the coastal permit for the San Onofre Generating Station which was issued in 1991.

I believe Edison and the other owners of the San Onofre Nuclear Generating Station (SONGS) remain committed to mitigating the adverse effects to the marine environment caused by the operation of the plant. However, what has changed since 1991 is that the predicted adverse impact of SONGS on the marine environment has not taken place. The Coastal Commission must act on the obligation to evaluate new information and re-establish a reasonable relationship between impact and mitigation.

I urge you to recognize the important achievements to protect the marine environment. The operation of a White Seabass hatchery and fish behavioral barriers will more than compensate for the SONGS fish loss which is equivalent to the annual catch of two commercial bait boats. Two wetland restoration projects will result in the restoration of 386 acres of degraded coastal wetlands at San Diequito River Valley and Ormond Beach. I agree with Edison that these projects are more than sufficient to comply with the intent of the SONGS coastal permit to fully mitigate adverse impacts to the marine environment.

The issue at hand is reasonable, sensible and balanced regulation. To date, Edison has spent nearly \$50 million on Coastal Commission imposed studies, plus another \$22 million on the SONGS mitigation program. Because of the way the Coastal Commission chooses to interpret the current permit conditions, SONGS owners believe the mitigation program could cost five times the original estimates - including a staggering \$28 million for monitoring, remediation and Commission oversight.

I urge the Commissioners to act responsibly at the October 8th hearing. The impact from the operation of the San Onofre Nuclear Generating Station is much smaller than what was predicted in 1991. Edison's proposed permit amendments will result in full mitigation at substantially less cost.

Sincerely,



2

Sheraton
Gateway Hotel
LOS ANGELES AIRPORT



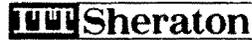
As the Chief Executive Officer of an economic development corporation I am concerned that the increased costs contained in the proposal will be passed through to the consumer in the form of rate increases.

We all know about the struggle of Southern California businesses to remain competitive. We are constantly competing with other regions, states and nations to retain and grow our small businesses. Staff's proposal goes against all of the good work and progress of the past few years to improve the business environment and decrease the cost



3

**Sheraton
Gateway Hotel**
LOS ANGELES AIRPORT



of doing business in Southern
California.

We have a regional stake
in ensuring our business
base remains competitive,
healthy and strong

On behalf of Edison, I urge
you to support the permit
application by Southern
California Edison.

Submitted by
Blanca Arellano

6101 WEST CENTURY BOULEVARD, LOS ANGELES, CA 90045
PHONE: (310) 642-1111 FAX: (310) 410-1852



(909) 623-1946
(800) 327-3277
FAX (909) 622-4217

Blanca I. Arellano
Chief Executive Officer

Pomona Economic Development Corporation
363 South Park Ave., Suite 104 • P.O. Box 1073 • Pomona, CA 91769
<http://www.cyberg8t.com/pedcorp> • pedcorp@cyberg8t.com

ROBERT H.

Peterson co.

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OCT - 9 1996

530 BALDWIN PARK BLVD.
CITY OF INDUSTRY, CALIFORNIA 91746
(818) 369-5085
FAX (818) 369-5979

CALIFORNIA
COASTAL COMMISSION

WILLIAM S. WHITE
PRESIDENT

October 7, 1996

Chairman Louis Calgano and Members
California Coastal Commission
45 Fremont Street
San Francisco, CA 94105

Dear Chairman Calgano:

I am writing to urge you to support Southern California Edison's plans for the San Onofre nuclear plant at your commission meeting on October 8, 1996.

My niece, Tracey White Gesiriech - wife of Steven Gesiriech, a long term employee of Edison International at Santa Onofre, has personally assured me that the working conditions, including concerns for Safety and Health at the nuclear plant are maintained to the highest possible standards. Further proof of Edison's admirable record is that Mr. and Mrs. Gesiriech have established their home residence at San Clemente, California near the San Onofre plant to raise their three young children in a clean and healthy environment.

I am impressed with the dedication of Southern California Edison and their employees who conduct themselves with a high degree of personal responsibility and can be trusted to fulfill their obligations. The plan before you that they advocate, seems to me to be wholly adequate to insure that the nuclear plant and the ocean environment can co-exist.

Should you have any questions or if I can be of any further assistance, please do not hesitate to call.

Sincerely,



William S. White
President

WSW:nb

RIO HONDO BOYS' & GIRLS' CLUB



7104 PERRY ROAD
BELL GARDENS, CALIFORNIA 90201-0710
(310) 927-2677



A Positive Place for Kids!

October 7, 1996

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OCT - 8 1996

CALIFORNIA
COASTAL COMMISSION

**Chairman Louis Calcagno and Members
of the California Coastal Commission
45 Fremont Street, Suite 2000
San Francisco, Ca 94105**

Dear Chairman Calcagno and Commissioners:

I am writing on behalf of Southern California Edison, which I know has an issue before your commission.

I am not an expert on the environment, but I want to see the beaches preserved and ocean animals and fish protected. If Southern California runs their power plant at San Onofre in the same professional manner as they operate in our community, I trust their ability to do the right thing. Edison has been a big help to our community, strengthening the Rio Hondo Boys & Girls Club efforts, supporting schools, the Chamber of Commerce and all the little things that make a community a good place to live.

Please think about all the things Edison has done for our area and for this part of California when you make your decision.

Sincerely,

Robert A. Rubio

**Robert A. Rubio
Executive Director**

RECEIVED

OCT - 8 1996

CALIFORNIA
COASTAL COMMISSION**Scott Peterson, ASLA • Landscape Architect**

P.O. Box 2157, Lake Arrowhead, CA 92352

(909) 337-9895

October 3, 1996

Chairman Louis Calcagno and Members
of the California Coastal Commission
45 Fremont Street, Suite 2000
San Francisco, CA 94105

Dear Chairman Calcagno and Commissioners:

I am writing to you in support of the permit application submitted by Southern California Edison to amend the coastal permit for the San Onofre Nuclear Generating Station (SONGS).

I am a businessman involved in the architectural industry and am particularly concerned about what I see as the escalating cost of the mitigation program associated with the power plant. It disturbs me that the costs of mitigation have apparently increased dramatically while the evidence for a significant impact by SONGS has decreased. Curiously, based on what I know of the recent staff report on the amendment application, it seems as if Edison is being treated as though all the original impact predictions have turned out to be right. Yet, we now know those predictions are incorrect, by a wide margin.

In seeking to foster a positive economic climate in California, I think it is especially important for regulatory bodies such as the Coastal Commission to guard against an overzealous effort to unduly hamper the business activities of companies in this state.

I believe that laws and regulations should be enforced, but I also believe they should be enforced fairly and evenhandedly. That does not appear to be the direction in which Edison's amendment application is heading. I urge you to carefully examine the staff report to assure the business community in this state that the Coastal Commission intends to act responsibly in reviewing the cases which come before

it.

Sincerely,

October 7, 1996

Chairman Louis Calcagno and Members of the California Coastal
Commission

45 Fremont St., Suite 2000
San Francisco, CA 94105



Dear Chairman Calcagno and Commissioners:

I am writing to you in support of the permit application submitted by Southern California Edison to amend the coastal permit for the San Onofre Nuclear Generating Station (SONGS).

I am a businessman involved in the credit union industry and am particularly concerned about what I see as the escalating cost of the mitigation program associated with the power plant. It disturbs me that the costs of mitigation have apparently increased dramatically while the evidence for a significant impact by SONGS has decreased. Curiously, based on what I know of the recent staff report on the amendment application, it seems as if Edison is being treated as though all the original impact predictions have turned out to be right. Yet, we know those predictions are incorrect, by a wide margin.

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Sincerely,

A handwritten signature in cursive script that reads "Maurice A. Calderon".

Maurice A. Calderon
Senior Vice President
Marketing and Community Development

MAC/kh

Post Office Box 735
San Bernardino, CA 92402
(909) 881-3355

Sharp HOA Management, Inc.

Chairman Louis Calcagno and Members
of the California Coastal Commissions
45 Fremont Street, Suite 2000
San Francisco, CA 94105

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OCT 10 1996

CALIFORNIA
COASTAL COMMISSION

Dear Chairman Calcagno and Commissioners:

I am writing to you in support of the permit applications submitted by Southern California Edison to amend the coastal permit for the San Onofre Generating Station which was issued in 1991.

I believe Edison and the other owners of the San Onofre Nuclear Generating Station (SONGS) remain committed to mitigating the adverse effects to the marine environment caused by the operation of the plant. However, what has changed since 1991 is that the predicted adverse impact of SONGS on the marine environment has not taken place. The Coastal Commission must act on the obligation to evaluate new information and re-establish a reasonable relationship between impact and mitigation.

I urge you to recognize the important achievements to protect the marine environment. The operation of a White Seabass hatchery and fish behavioral barriers will more than compensate for the SONGS fish loss which is equivalent to the annual catch of two commercial bait boats. Two wetland restoration projects will result in the restoration of 386 acres of degraded coastal wetlands at San Dieguito River Valley and Ormond Beach. I agree with Edison that these projects are more than sufficient to comply with the intent of the SONGS coastal permit to fully mitigate adverse impacts to the marine environment.

The issue at hand is reasonable, sensible and balanced regulation. To date, Edison has spent nearly \$50 million on Coastal Commission imposed studies, plus another \$22 million on the SONGS mitigation program. Because of the way the Coastal Commission chooses to interpret the current permit conditions, SONGS owners believe the mitigation program could cost five times the original estimates - including a staggering \$28 million for monitoring, remediation and Commission oversight.

I urge the Commissioners to act responsibly at the October 8th hearing. The impact from the operation of the San Onofre Nuclear Generating Station is much smaller than what was predicted in 1991. Edison's proposed permit amendments will result in full mitigation at substantially less cost.

Sincerely,



October 4, 1996

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OCT 08 1996

CALIFORNIA
COASTAL COMMISSION

Chairman Louis Calcagno and Members
of the California Coastal Commission
45 Fremont Street, Suite 2000
San Francisco, CA 94105

Dear Chairman Calcagno and Commissioners:

We are writing to you in support of the permit application submitted by Southern California Edison to amend the coastal permit for the San Onofre Nuclear Generating Station (SONGS).

As business people we have followed this issue with increasing concern, particularly in light of the recent report released by your staff.

We are appalled to think that this Commission would condone a staff recommendation to expend another \$80 million on marine mitigation, especially knowing what you do about the extent of the impacts caused by San Onofre.

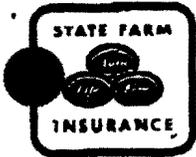
Why hasn't your staff undertaken a cost/benefit analysis? It seems to us that the staff has simply compared the cost of its proposed mitigation program to the cost of the power plant or to other forms of mitigation.

We would like to know how your staff justifies an \$80 million expenditure, when the plant is not affecting rare and endangered species, and the economic value of the impact on the Southern California region is placed at only about \$15 million? It is ridiculous to us that the Commission staff wants \$28 million for monitoring of the mitigation program.

We are asking you to insist upon accountability and responsibility from your staff when the Coastal Commission meets on October 8. Well meaning companies should never be subject to the kind of shakedown that appears to be shaping up in this case.

Sincerely,

Joan Thomas
Executive Director



SCOTT K. WHITLOCK, Agent
Auto - Life - Health - Home and Business
716 Deep Valley Drive
Rolling Hills Estates, CA 90274
Phone: Bus. (310) 377-6886 Res. (310) 318-5841

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OCT - 8 1996

CALIFORNIA
COASTAL COMMISSION

October 7, 1996

California Coastal Commission
45 Fremont Street, #2000
San Francisco, CA 94105

Dear Chairman and Commissioners:

I am writing this letter on behalf of Southern California Edison, which has a pending issue before your commission.

I am not an expert on the environment, but I want to see the beaches preserved and the ocean animals and fish protected. If Southern California Edison runs their power plant at the San Onofre in the same professional manner as they operate in our community, I trust their ability to do the right thing. Edison has been a big help to our community, supporting schools, the chamber of commerce, and doing all the little things that make Palos Verdes a great place for business and a great place to live.

Please think about all the things Edison has done for our area and for this part of California when you make your decision.

Sincerely,

Scott K Whitlock,
Agent

INSURANCE

State Power and Finance Plan

SUSAN M. FOSTER (License # 0609515)

Auto-Life-Health-Home and Business

1108 Fremont Avenue

South Pasadena, CA 91030 Phone (818) 441-1163 Fax (818) 441-1437

October 8, 1996

Chairman Louis Calgano and Members
California Coastal Commission
45 Fremont Street
San Francisco, CA. 94105

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OCT - 8 1996

CALIFORNIA
COASTAL COMMISSION

FAX 415 904-5400

Dear Chairman Calgano:

Please vote in favor of the San Onofre environmental mitigation plan as supported by S.C.E. when it comes before your Commission today in Los Angeles.

Based on my personal and professional dealings with Southern California Edison, I believe it is a company that has the best interests of its customers and our region in mind in everything that it does.

Edison is very active in a positive way with a wide variety of community and business efforts to make California a better place to live and work. I endorse this plan for San Onofre that is submitted to your commission and urge you to do the same.

Sincerely,



Susan Foster, Agent.



Squieri Interiors Design Studio

Mailing Address:
6492 South Street #237
Lakewood, CA 90715
(714) 523-4760

Shipping Address:
6635 E. Florence Ave. #345
Bell Gardens, CA 90201
(310) 927-0332

October 5, 1996

Chairman Louis Calcagno and Members
California Coastal Commission
45 Fremont Street
San Francisco, CA 94105

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CALIFORNIA
COASTAL COMMISSION

Dear Chairman Calcagno and Commissioners:

I am writing to support Southern California Edison's plans for the nuclear plant at San Onofre.

Edison has an admirable record of safety and concern for the environment not only at San Onofre but in the realm of electric cars, solar power and other important elements of the state.

I am impressed with the dedication of Southern California Edison to everything they do, and believe they can be trusted to fulfill their obligations. The plan before you that they advocate seems to me to be wholly adequate to insure that the nuclear plant and the ocean environment can co-exist.

Thank you for your Yes vote.


TINAMARIE SQUIERI
Owner

SQUIERI PASQUALE, INC.



PASQUALE SQUIERI

October 5, 1996

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OCT - 8 1996
CALIFORNIA
COASTAL COMMISSION

Chairman Louis Calcagno and Members
California Coastal Commission
45 Fremont Street
San Francisco, CA 94105

Dear Chairman Louis Calcagno and Members:

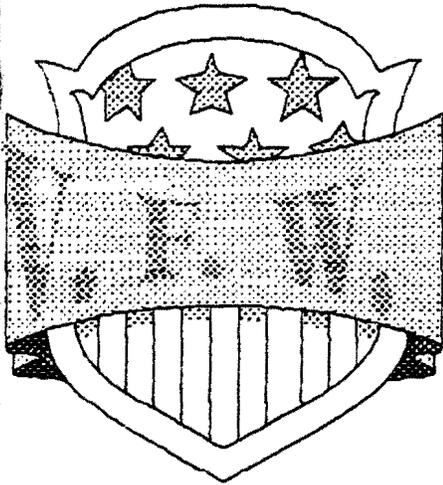
I believe the permit before you amending the San Onofre ocean protection plan should be approved by your commission.

Much effort has been put into this plan by Southern California Edison. They have spent millions of dollars to protect fish and sea mammals near the plant. This good work should be taken into account as you make your decision.

I believe we can have clean energy and be sensitive to the needs of the environment, but we also have to acknowledge economic realities. Please vote yes on the Edison plan for San Onofre.

Sincerely,

PASQUALE SQUIERI
Owner/President



Veterans of Foreign Wars
4621 E. Blauson Ave.
Maywood, Ca. 90270
(213) 773-7706

Dean Larson

or
(213) 773-8127

October 5, 1996

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OCT - 8 1996
CALIFORNIA
COASTAL COMMISSION

Chairman Louis Calcagno and Members
California Coastal Commission
45 Fremont Street
San Francisco, CA 94105

Dear Chairman Louis Calcagno and Members:

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Much effort has been put into this plan by Southern California Edison. They have spent millions of dollars to protect fish and sea mammals near the plant. This good work should be taken into account as you make your decision.

I believe we can have clean energy and be sensitive to the needs of the environment, but we also have to acknowledge economic realities. Please vote yes on the Edison plan for San Onofre.

Sincerely,

A handwritten signature in cursive script, appearing to read "Dean Larson", is positioned above the typed name.

DEAN LARSON
State Membership Director



Received at Commission Meeting

OCT - 8 1996

From: _____

Executive Board

- President
Mario de los Cobos
The Gas Company
- President-Elect / V.P. Community Partnerships
Mitchel Kahn
England, Whitfield, Schroeder, Tredway
- V.P. Finance
Michael R. Barrows
Soares, Sandall, Bernacchi, Petrovich
- V.P. Communications
Susanne M. Chadwick
Santa Barbara Bank & Trust
- V.P. Government Affairs
Marc L. Charney
Nordman, Comany, Hair & Compton
- V.P. Public Policy
Fred J. Ferro
Capital Commercial Real Estate
- V.P. Human Resources
Carolyn Leavens
Leavens Ranches
- V.P. Advocacy
Stacy A. Roscoe
Procter & Gamble
- V.P. Membership
William R. Simmons
Intelligent Systems International
- Immediate Past President
Pierre Tada
Linoneira Company
- Executive Director
Nancy M. Williams
- Directors**
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Oxnard Harbor District
- Elaine Freeman
Urban Strategies
- Ed Garnett
Angen
- Ronald Hagler
California Lutheran University
- Susan Hersberger
CalResource LLC
- W. John Kulwiler, A.I.A.
Kulwiler Group/Architects
- Il Edwin Lyon
Oaviota Maintenance Services
- Barry McMahan
Seneca Resources
- Robert Michels
3M Company
- Michael Montoya
Southern California Edison
- Salini Merr
BMW of North America
- Vernon Olson
GAH Technology
- Charles Padilla
Mercy Healthcare Ventura County
- Jeff Paul
American Commercial Bank
- Michael S. Raydo
QTE California, Inc.
- Ed Summers
Bank of America
- Thomas Unenhofer
Sierra-Pacific Environmental

October 7, 1996

Luis Calcagno, Chair
California Coastal Commission
45 Fremont Street
San Francisco, CA 94105

RE: San Onofre Nuclear Generating Stations (SONGS) 2 & 3 Marine Mitigation Program

Dear Commissioners,

The Ventura County Economic Development Association is a private, non-profit organization of 400 members, representing about 30,000 employees, most of whom live in Ventura County. VCEDA has been dedicated since 1949 to enhancing and preserving a dynamic, diverse economy and quality of life.

VCEDA supports the Ormond Beach restoration component of Southern California Edison's proposed permit amendment of the SONGS 2 & 3 Marine Mitigation Program.

The Ormond Beach wetlands are in a degraded condition that warrants the attention of the Coastal Commission. Restoring the Ormond Beach wetlands would provide substantial benefit to at least four known endangered species. Restoration would also provide substantial benefit to coastal resources dependent on wetlands and coastal dunes found at Ormond Beach by significantly expanding the wetland-coastal dune complex northward from Mugu Lagoon.

Edison has been working with the community and numerous public agencies in an effort to assure that the resources at Ormond Beach are not only protected, but restored. This restoration program is based on a plan carefully prepared by the City of Oxnard with the help of the Coastal Conservancy and others.

The restored wetlands will constitute a source of economic vitality for the Ventura County region. The wetlands will attract nature lovers as well as provide commercial opportunities related to tourism and educational experiences for our children and future generations.

This may be Ventura County's only opportunity for wetland restoration, and could be a cornerstone of enhanced economic opportunities for the region.

Sincerely,

Mario de los Cobos
President



VENTURA COUNTY TAXPAYERS ASSOCIATION

5156 McGRATH STREET
VENTURA, CA 93003

(805) 644-3291
(805) 644-9208 FAX

POST OFFICE BOX 3878
VENTURA, CA 93006

EXECUTIVE COMMITTEE

October 4, 1996

Kay Runnion
Chair

William Kearney
1st Vice Chair

Fred Buenger
2nd Vice Chair

Gary Wolfe
Secretary / Treasurer

John Katch
Immediate Past Chair

Steve Zimmer
Director

Marcia Secord
Director

DIRECTORS

Donald Brackenbush
Richard Cupp
Curtis Davison
Bill Fedde
Robert Hammer
Ken High
Bill Kiefer
Lori LeSuer
Sean McGrath
Ted Off
Mike Raydo
Stacy Roscoe
Bill Wilson
Tim Wolfe

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Ronald L. Rose
Keith Barnard
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Robert B. Lamb
Ernest R. Nichols
Frank McGrath
Walter Hoffman
Fritz Huntsinger

PRESIDENT

Michael L. Saliba

Chairman Louis Calcagno and Members
California Coastal Commission
45 Fremont Street
San Francisco, CA 94105

Re: Southern California Edison
Hearing Date: October 8, 1996

Dear Chairman Calcagno and Members:

This letter is in support of Southern California Edison when it comes before your commission meeting in Los Angeles on October 8, 1996.

We support Edison's Ormand Beach Restoration proposal. The restored wetlands would be a central component of a broader badly needed restoration of a wetland area that is presently is a degraded condition. The Ormand Beach wetland area is in need of restoration and Edison's proposed plans for the area would be an essential element of that much needed restoration. Restoring the wetland area in Ormand Beach would be a key element of Ventura County coastal resources.

Edison has proved itself to be a good corporate neighbor and a very environmentally conscious member of the Ventura County community. Edison has worked very hard to see that the resources at Ormand Beach are protected and restored.

The Ormand Beach restoration program has broad based Ventura County support and we urge your support of Edison's project.

Sincerely,

Mike Saliba,
President

RECEIVED
OCT 11 1996
CALIFORNIA
COASTAL COMMISSION



VON HAGEN INVESTMENT CO.

ISA
SONGS

P.O. Box 1086
Palos Verdes Estates
California 90274-1086
Phone/Fax 310/377-0881

October 4, 1996

Chairman Louis Calcagno
California Coastal Commission
45 Fremont Street
San Francisco, Ca. 94105

Received at Commission
Meeting

OCT - 8 1996

From: _____

Dear Mr. Calcagno,

I am writing this letter to urge you and the balance of the commission to support, with enthusiasm, the application by Southern California Edison to amend the coastal permit for the San Onofre Nuclear Generating Station.

Southern California Edison has an enviable record of safety at all of their facilities, including this one, and, based upon their record of dedicated service to the communities they serve, they deserve the support of all Californians in their efforts to deliver superior service at the lowest cost to their customers.

Sincerely,

Peter K. Von Hagen
President



VON HAGEN INVESTMENT CO.

Received at Commission
Meeting

OCT - 8 1996

P.O. Box 1086
Palos Verdes Estates
California 90274-1086
Phone/Fax 310/377-0881

From: _____

8 Oct 96

Dear Commissioners,

I had hoped to address the Commission on several points in the Staff Report concerning the Agenda Item on the San Onofre Power Generating Station this morning. However, it appears, as of 11:00 AM, that this item will not come up until late this afternoon, and we must be present at another Public Hearing this evening concerning one of our residential properties. Should you continue this item to a future date, I would like to make my presentation then.

Sincerely,

Allen K. Von Hagen



VON HAGEN DEVELOPMENT CO.
INDUSTRIAL / COMMERCIAL DEVELOPMENT

15a
SONGS

715 Silver Spur Road
Suite 101
Rolling Hills Estates, CA 90274
213 / 377-5517

Received at Commission
Meeting

OCT - 8 1996

Chairman Louis Calcagno
California Coastal Commission
45 Fremont Street
San Francisco, CA 94105

October 4, 1996

Dear Chairman Calagno,

As Secretary-Treasurer of Von Hagen Development Co., an industrial and commercial development company in Southern California, I am deeply appreciative of all the efforts made by the Southern California Edison Company to deliver adequate service at low cost to it's customers.

I believe that the application before you now will greatly help Edison hold down the costs of delivering power to its customers, while adequately protecting the surrounding land and marine environments.

I strongly urge you all to support the application as submitted by Southern California Edison to amend the coastal permit for its San Onofore Generating Station as it is in the best interests of all the residents of Southern California.

Sincerely,

Jacqueline A. Mathis

Jacqueline A. Mathis
Secretary-Treasurer



VON HAGEN INVESTMENT CO.

Received at Commission Meeting

10/8/96 OCT - 8 1996

10:45 A.M.

From:

P.O. Box 1086

Palos Verdes Estates

California 90274-1086

Phone/Fax 310/377-0881

Dear Commissioners:

Please find my opinions on the issue at hand:

Items of Disagreements:

1. no real evidence of Kelp beds dying or being reduced.
2. Governmental control over the companies like S.C.E. that try to provide the necessities of life without reducing environmental values.
3. micro/managing business expansion by setting up staffs and commissions to evaluate PIE IN THE SKY - Maybe's that MAY effect the environment.
4. the increase in costs to S.C.E. and others that end up paying high salaries to overstaffed commission Benefits to Majority of People outweigh the Might/MAYbe's of overpaid, overstaffed governmental controlling commissions.
 - 1) 30 Million people households with electricity
 - 2) new fish hatchery
 - 3) Kelp beds (not diminished)
 - 4) wetlands increased adding to public educational value and enjoyment.

Thank you, Jacqueline A. Mathis



Woodbridge Village Association

October 7, 1996

Chairman Louis Calcagno and Members
of the California Coastal Commission
45 Fremont Street, Suite 2000
San Francisco, CA 94105

RECEIVED
OCT 10 1996
CALIFORNIA
COASTAL COMMISSION

Dear Chairman Calcagno and Commissioners:

I am writing to you in support of the permit application submitted by Southern California Edison to amend the coastal permit for the San Onofre Nuclear Generating Station (SONGS).

As Executive Director for the Woodbridge Village Association, a 9,400 unit homeowners association in Irvine, I am concerned about what I see as the escalating cost of the mitigation program associated with this power plant. It is disturbing that the costs of mitigation have apparently increased dramatically while there is no evidence for this increase. Based on my understanding of the recent staff report on the amendment application, it appears Edison is being treated as though all original impact predictions have turned out to be true and we now know those predictions are not true.

In seeking a positive economic climate in California, I think it is important for regulatory bodies such as the Coastal Commission to guard against an overzealous effort to impede the business activities of companies in this state.

Laws and regulations should be enforced fairly, yet this does not appear to be the direction in which Edison's amendment application is heading. I urge you to carefully examine the staff report to assure the business community in this state that the Coastal Commission intends to act responsibly in reviewing the cases which come before it.

Sincerely,

Robert N. Pigeira, CCAM, PCAM
Executive Director/Secretary
Woodbridge Village Association

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...Achievements

1991
Published in
*Ninety-nine
Best
Communities
in
America*

1990
Community
Association Institute
National
Association
Of The Year

1990
Featured in
*Landscape Architect
Magazine,
May Issue*

1989
Recipient
Southern California
Water Committee
Orange County
Water Awareness
Award

1989
Featured in
*Sunset Magazine,
November Issue*

1985
Featured in
*Parent's Magazine,
May Issue*

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OCT 10 1996

CALIFORNIA
COASTAL COMMISSION

October 4, 1996

Chairman Louis Calcagno and
Members of the California Coastal Commission
45 Fremont Street, Suite 2000
San Francisco CA 94105

Dear Chairman Calcagno and Commissioners,

This letter is sent in support of the permit application submitted by Southern California Edison which seeks to amend the coastal permit for the San Onofre Nuclear Generating Station (SONGS). By approving the permit, you will send a powerful message that common sense can sometimes prevail in government; despite overblown rhetoric from anti-business extremists.

In 1973, many zealots claimed that a "marine desert" would be the result of operations at the power plant at San Onofre. They claimed that the warm water being discharged at the plant would decimate the kelp forest and other vegetation.

In an effort to assuage these concerns, Edison spent a quarter billion dollars on a "diffuser system" to cool the water and alleviate the threat to plant life. A quarter billion "ratepayer dollars" in Southern California, including my modest contribution. Now, these \$250 million scientists have decided that warm water is not the problem--- it's "murky" water! What should concern all of us is the continued economic damage caused by "murky science". Twenty-three years have passed since the dire predictions about a "marine desert" were made, we now know that the increased water temperatures near the plant have had some effect but nothing resembling the picture that those extremists painted. Please do not repeat history and perpetuate the waste of millions of dollars to fix a problem that will, over time, reveal itself as something that was not a problem after all.

The Coastal Commission staff recently labeled the Edison proposal "woefully inadequate". This indicates to me that they have been taken in by the inflated claims of those who think that "price is no object", that multi-million dollar unfunded mandates based on "murky science" are justifiable and that we can afford such expensive knee-jerk reactions. In your deliberations at the October 8 hearing, I would hope that you and the other commissioners can bring some sanity to what is becoming an exercise in extremism in defense of the environment.

Very truly yours,

Bruce W. Whitaker

Bruce W. Whitaker
Chief Spokesman for the Committees of Correspondence, Orange County