

CALIFORNIA COASTAL COMMISSION

45 FREMONT STREET, SUITE 2000
SAN FRANCISCO, CA 94105-2219
VOICE AND TDD (415) 904-5200



F 3c

Prepared December 12, 2007 (for December 14, 2007, hearing)

To: Coastal Commissioners and Interested Persons

From: Peter M. Douglas, Executive Director
Mark Delaplaine, Manager, Energy, Ocean Resources and Federal Consistency Division
Sara Townsend, Coastal Program Analyst II

Subject: **STAFF REPORT ADDENDUM for Item F 3c**
Consistency Determination CC-061-07 (Peter Dupuy), Exempted Fishing Permit (EFP) for longline fishing in the EEZ

The staff's initial recommendation was that the Commission object, based on the fact that it had inadequate information with which to determine whether the proposed project was consistent with the marine resources policy of the California Coastal Management Program (CCMP) (i.e., Section 30230 of the Coastal Act). Since the initial recommendation was published, NMFS has submitted the following:

- 1) NMFS Environmental Assessment including response to comments:
http://swr.nmfs.noaa.gov/fmd/longline/Final_SLL_EA.pdf
- 2) NMFS Biological Opinion
http://swr.nmfs.noaa.gov/fmd/longline/ESA_BO.pdf
- 3) NMFS December 4, 2007, letter addressing two of the Commission's questions, concerning use of lightsticks and seabird impact minimization measures (Attachment 1).

Based on the additional information, the staff is modifying its recommendation. The modifications consist of: (1) a revised motion and resolution to object both on the merits and due to lack of information; and (2) additional analysis in support of the recommendation that the project is inconsistent with the marine resource policy (Section 30230). This addendum also contains: (3) copies of additional correspondence; (4) staff response to comments submitted by John LaGrange on the Commission's findings for NMFS' previous consistency determination for this matter CD-041-07; and (5) NMFS' Environmental Assessment, Leatherback sea turtle analysis (pp. 83-87).

[Proposed new language is shown in underline text; language to be deleted is shown in ~~strikeout~~ text.]

Revised Project Description, page 1:

PROJECT

DESCRIPTION:

Exempted Fishing Permit (EFP) from the National Marine Fisheries Service (NMFS), which would authorize Mr. Dupuy to conduct longline fishing from September 15, 2007~~8~~, through December 2007~~8~~

Revised Executive Summary, page 2

NMFS ~~has now~~ ~~is near~~ ~~completion~~ of its review and analysis, and Mr. Dupuy has submitted the matter to the Commission in the proper form, a consistency certification, for the EFP (Exhibit 15). Because Mr. Dupuy relies heavily on NMFS' draft environmental analysis of the activity and its consistency with the Coastal Act, most of the discussion in this report is a Commission analysis of statements, data, analysis, and conclusions submitted by NMFS as contained in the Commission's previous findings on CD-041-07. Newer information received since the time of the Commission's previous action is discussed on pages 34-39 of this report. This discussion ~~now does not~~ ~~includes~~ ~~analysis of information contained in~~ NMFS' subsequent Final Environmental Assessment and Biological Opinion, ~~because that information has not yet been submitted.~~

This permit would allow up to four fishing trips targeting swordfish, using up to 100-kilometer (km) long main lines, with hooks set at an approximately 40 meter depth, using 14 sets per trip, and with up to 1200 hooks per set, for a total of up to 67,200 hooks for the total effort.

~~Assuming the same time period as previously submitted,~~ ~~the~~ four trips would occur from September 15, 2007~~8~~, through December 2007~~8~~. The use of longline gear within the west coast EEZ is currently prohibited, although drift gill net fishing is allowed within the EEZ, subject to seasonal restrictions. NMFS states the purpose of the EFP is to assist NMFS in determining whether longline fishing, subject to gear restrictions and continuous monitoring, represents an economically and environmentally superior alternative to either drift gillnet or harpoon gear for swordfish fishing within the west coast EEZ.

Revised Executive Summary, page 4

~~To date, the Commission has not received the specific information outlined above. If it is received prior to the hearing, the Commission staff will prepare an addendum.~~ Given the information currently available, the Commission does not believe Mr. Dupuy and NMFS have made a compelling case that to further transition from one destructive fishery (drift gillnet) to one arguably less destructive fishery (longline), in an area which is currently closed to longlining and seasonally closed to gill netting (due to leatherback takes), is consistent with the goals and requirements of Section 30230 to maintain healthy populations and protect areas and species of special biological significance. Nor has NMFS made the case that the same information it seeks to gather in conducting this experiment cannot be accomplished by conducting the activity outside the Pacific Leatherback Conservation Area. Conducting the EFP in the same geographic area and time period that drift gillnetting *is* allowed would appear to provide more useful comparisons of the two fisheries, which was one of the originally ~~is the~~ stated reasons for conducting the EFP (although the Commission notes that NMFS currently appears to be

stressing the economic benefits, rather than fishery comparisons benefits, in its most recently described project purposes).¹ ~~The Commission has concerns over the fundamental ability of the study design to provide useful results for comparisons of the two fisheries, and the Commission therefore questions the statistical validity of the approach proposed (and notes that NMFS itself denied an EFP in August 2007 due to concerns it had over the statistical validity of an EFP for longline fishing in the Atlantic).~~ Along with the Pacific Fishery Management Council's Scientific and Statistical Advisory Committee, NMFS has acknowledged the proposed EFP would not generate sufficient data to compare the two fisheries. The Commission further notes that NMFS itself is in the process of promulgating regulations that will establish an expedited, uniform, and regionally-based process for issuance of EFPs. A proposed rule is expected by the end of ~~Dec~~November. Based on all these concerns, the Commission finds questions whether the project would not adequately protect important marine resources, would not provide special protection to areas and species of special biological or economic significance, and would not be carried out in a manner that will sustain the biological productivity of coastal waters and maintain healthy populations of all species of marine organisms. At a minimum, absent the information needed discussed in the previous paragraph above, The Commission is therefore objecting, based on the project's inconsistency with Section 30230.

~~The Commission can only conclude~~ also continues to find that information is still lacking in several areas that would enable the Commission to determine the project's consistency with the marine resources policy (Section 30230) of the Coastal Act, in particular: (a) whether the activity could be restricted to be outside the seasonal Pacific Leatherback Conservation Area; (b) how this EFP would fit into an overall strategy for take reductions of listed species, including alternative strategies for swordfish fishing that might result in fewer takes than longline or drift gill net fishing; and (c) how NMFS plans to transition fishermen from the drift gillnet fishery to a less damaging fishery. The Commission's is therefore objectioning to Mr. Dupuy's NMFS' consistency determincertification; is therefore based both on the project's inconsistency with, as well as lack of adequate information to determine the project's consistency with, the enforceable policies of the California Coastal Management Program (CCMP) (i.e., Section 30230 of the Coastal Act).

Revised Project Description, page 6:

Proposed EFP. The EFP would authorize Mr. Dupuy to operate a single longline vessel off the coasts of California and Oregon. Most of the area would be between 40 and 200 nautical miles offshore of the mainland, with the exclusion of and the Southern California Bight (as depicted in Exhibit 2,) ~~would be excluded~~ (to avoid competition with existing recreational fishing). However the authorized area in at least one location is directly adjacent to the coastal

¹ The Commission has concerns over the fundamental ability of the study design to provide useful results for comparisons of the two fisheries, and the Commission therefore questions the statistical validity of the approach proposed (and notes that NMFS itself denied an EFP in August 2007 for longline fishing in the Atlantic due to concerns it had over the statistical validity of an EFP).

zone (coastal waters within the 3 mile limit around San Nicolas Island). Each trip will consist of 14 sets, with each set containing no more than 1,200 hooks. Four trips are proposed, for a total of 67,200 hooks, during the period September-December 2008⁷. A range of mitigation and management measures are included to reduce anticipated bycatch. The proposed EFP would include:

Revised Resolution, page 9:

The Commission hereby **objects to** the consistency certification by Peter Dupuy, on the grounds that: (1) the project described therein is not consistent with the California Coastal Management Program; and (2) the project described therein lacks information necessary to evaluate the project's consistency with the enforceable policies of the CCMP.

Revised Procedures, page 10:

B. Procedure if the Commission finds that the proposed activity is inconsistent with the CCMP.

1. Alternative Measures

Section 930.63 (a) of the federal consistency regulations (15 CFR § 930.63(a)) requires that, if the Commission's objection is based on a finding that the proposed activity is inconsistent with the CCMP, the Commission may identify measures, if they exist, that would bring the project into conformance with the CCMP. That section states that:

§ 930.63 State agency objection to a consistency certification.

(a) If the State agency objects to the applicant's consistency certification within six months following commencement of review, it shall notify the applicant, Federal agency and Director of the objection. A State agency may assert alternative bases for its objection, as described in paragraphs (b) and (c) of this section.

(b) State agency objections that are based on sufficient information to evaluate the applicant's consistency certification shall describe how the proposed activity is inconsistent with specific enforceable policies of the management program. The objection may describe alternative measures (if they exist) which, if adopted by the applicant, may permit the proposed activity to be conducted in a manner consistent with the enforceable policies of the management program.

As described in the Marine Resource Section of this report below, the proposed project is not consistent with Section 30230 of the CCMP. Pursuant to the requirements of Section 930.63 of the federal regulations implementing the CZMA, the Commission may identify measures, if they exist, that would bring the project into compliance with the CCMP. Assuming the informational deficiencies identified in the following procedural discussion in Section 2 below (and elaborated on in the Marine Resource Section of this report) can be resolved, the Commission believes that it would be possible to bring this project into compliance with the CCMP if the project were redesigned to comply with the following criteria:

- 1) Prohibit longline fishing within the Pacific Leatherback Conservation area between August 15-November 15;
- 2) Eliminate the use of light sticks;
- 3) Redesign the experiment to be located entirely within the area and time period that drift gillnet fishing is currently allowed, such that the experiment is designed to provide sufficient statistical validity to be scientifically robust (i.e., providing information to support valid comparisons of the environmental effects of the two fisheries), and assure that the overall effort (longline plus drift gillnet fishing effort) would not exceed the existing level of drift gillnet effort (i.e., no overall increase in total fishing effort), and would not exceed existing ITS take levels currently authorized for the HMS FMP;
- 4) A cap of one animal for all ESA-listed species known to occur in such a revised project area

B2.

Revised List of Necessary Information, page 10:

In order to determine the project's consistency with the CCMP, the Commission has requested that Peter Dupuy/NMFS provide it with the following necessary information:

- (1) Analysis of whether the activity could be restricted to be outside the seasonal Leatherback Conservation Area;
- ~~(2) Basic project information such as the nature and effect of the caps (which, if reached, would cause the EFP to cease);~~
- ~~(3) Responses to comments NMFS received on its Draft Environmental Assessment;~~
- ~~(4) Results of further coordination with other resources agencies;~~
- ~~(25) Response to questions about how this EFP would fit into an overall strategy for take reductions, including alternative strategies for swordfish fishing that might result in fewer takes than longline or drift gill net fishing; and~~
- (3) An analysis of how NMFS plans to transition fishermen from the drift gillnet fishery to a less damaging fishery, in the event it determines that such transition would benefit marine resources.
- ~~(6) An analysis of why NMFS could not eliminate the lightsticks from the longlines, due to concerns over the fact that sea turtles are attracted to lightsticks from the longlines; and~~
- ~~(7) Analysis of whether seabird minimization measures could be included that have been recommended by Birdlife International (Exhibit 13).~~

Revised Additional Information, page 39 (Add the following, prior to "Commission Conclusion" paragraph):

NMFS Final Environmental Assessment (EA) and Biological Opinion (BO). NMFS recently submitted its Final EA and BO. The Biological Opinion states:

NMFS has determined that ESA listed leatherback sea turtles are likely to be adversely affected by the proposed action.

The Final EA states:

NMFS anticipates that up to five leatherbacks will be taken under fishing operations authorized by the proposed EFP and that of these five, one turtle is likely to die, post-hooking due to its injuries.

The proposed action is likely to result in leatherback takes and mortalities that exceed the existing ITS for the HMS FMP.

The Commission is greatly concerned over this level of take, concern which is heightened by NMFS' statement that take of up to five leatherbacks is an amount that would exceed the Incidental Take Statement (ITS) for the Highly Migratory Species Fishery Management Plan (HMS FMP). The ITS authorized by NMFS in 2004 stipulated that the maximum number of leatherbacks that can be taken by fisheries in the HMS FMP is three. The proposed EFP would more than double this existing ITS take limit and would raise the total allowed take to up to eight leatherbacks. The Commission notes that when NMFS wrote the BO for the drift gillnet fishery in 2000 it stated:

Therefore, any additional impacts to the western Pacific leatherback stocks are likely to maintain or exacerbate the decline in these populations.

Given the current status of Pacific leatherback populations as judged by trends in the abundance of females nesting annually at well-monitored nesting beaches, the cumulative human-caused mortality of leatherbacks known or reasonably surmised to occur appears to be more than the populations can sustain. This is likely to be true even without the incidental mortality estimated to be caused by the CA/OR drift gillnet fishery. Thus, given the total mortality from other human activities, and assuming such mortality rates persist, additional leatherback mortalities caused by the CA/OR drift gillnet fishery are probably not sustainable. Unless the cumulative human-caused mortality of leatherbacks is reduced, the populations probably will continue to decline.

This NMFS analysis from 2000 supports the Commission's conclusion that the take of five additional leatherbacks would not serve to maintain a healthy population of leatherbacks, which are in critical condition and facing serious threats of extinction.

Concerning previous comments regarding the EFP's statistical validity, NMFS previously stated:

NMFS recognizes that collecting statistically valid information as part of this EFP is not a realistic option at this time given, among other things, the large number of vessels and the logistical requirements needed to conduct such an experiment. Until NMFS believes it has collected sufficient preliminary information under this proposed EFP, it is not prepared to design a comprehensive experiment or propose a potential management framework for development of this particular fishery.

In the Final EA NMFS elaborated on this issue, in its response to comments on the Draft EA:

[The project's purpose] ... is to issue an EFP to allow one vessel to explore the commercial viability of fishing with new and innovative longline gear in the EEZ off of Oregon and California during the 2007 fishing season. ... The proposed action is not designed to conduct a formal experimental test that would produce statistically significant results to compare bycatch rates of protected species among gear types. To achieve that goal would require, among other things, a larger sample size of sets/vessels spread out over an appropriate spatial/temporal scale, along with control groups fishing with other swordfish gear including DGN and pelagic longline gear of earlier vintage (e.g., J-hooks with squid bait). NMFS recognizes that conducting a large scale experiment which randomizes over vessels and fishing areas is not a realistic option at this time given, among other things, the large number of vessels and the logistical requirements needed to conduct such an experiment. Evaluating the success of the proposed EFP could be measured in two ways. First, success may be evaluated in terms of the degree and condition of unmarketable bycatch discarded during the EFP as well as the degree of interactions with marine mammals, sea turtles, seabirds, and other marine resources relative to the amount of swordfish landed. Second, success could be evaluated by examining the difference between the applicant's operating costs and the ex-vessel revenues of his landed catch. Success will also be measured based on the willingness of the applicant to reapply for an EFP in 2008. NMFS would consider the collection of any new fisheries-dependent information as a successful first step towards providing much needed data to address the uncertainties and risk involved. NMFS is also aware of the highly controversial and charged nature that this EFP and previous discussions ... have created in California. NMFS also realizes that any effort to develop an experiment that would require several vessels, more sets and a larger spatial/temporal scale is likely not politically acceptable in California at this time. Consequently, NMFS believes that by taking this first step to gather preliminary information in a very limited and controlled fishery trial, NMFS may obtain some information to better inform members of the public.

Concerning NMFS' response over the use of light sticks, the Commission disputes NMFS' conclusion that the available evidence does not support prohibition of lightsticks and that only by conducting what NMFS deems to be "cost prohibitive" studies could such a prohibition be warranted. Laboratory studies have already established that leatherback turtles are attracted to light sticks. NMFS (Attachment 1) cites the laboratory studies showing such attraction, but then dismisses the results by stating "However, this has not been confirmed in natural populations of sea turtles in the open ocean." The Commission finds this response inadequate; again, given the worldwide significance of the area for leatherback foraging, to allow use of material known to attract sea turtles could not reasonably be found consistent with the requirement of Section 30230 to provide special protection to areas of special biological significance.

Revised Conclusion, page 39-40:

Commission Conclusion. Given the information currently available, including that contained in NMFS' recently completed Final Environmental Assessment and Biological Opinion the Commission concludes that the specified goal that the EFP is intended to further, namely, the replacement of ~~does not believe Mr. Dupuy and NMFS have made a compelling case that to~~ further transition from one destructive fishery (drift gillnet) ~~by an to one~~ arguably less destructive fishery (longline), in an area which is currently closed to longlining and seasonally closed to gill netting (due to leatherback takes), is not consistent with the goals and requirements of Section 30230 to maintain healthy populations and protect areas of special biological significance.

The Commission finds that adverse impacts to leatherbacks, through takes of up to five, including up to one mortality, would not maintain, enhance, restore, or maintain healthy populations of leatherbacks. Furthermore, the Commission finds that leatherbacks are a species of special biological significance, due to their highly endangered status, and that the Pacific Leatherback Conservation Area is an area of special biological significance. The Commission does not believe the proposed EFP provides the "special protection" required under Section 30230.

Despite NMFS' characterization of this proposal as a "first step," the Commission finds it has not been designed in a manner sufficiently protective of marine species of special biological significance. The Commission further finds that ~~Not has~~ Mr. Dupuy and NMFS have not made the case that the same information it seeks to gather in conducting this experiment cannot be accomplished by conducting the activity outside the seasonal Pacific Leatherback Conservation Area, from September 15- November 15. Conducting the EFP in the same waters and period drift gillnet fishing *is* allowed would appear to provide ~~more a more~~ useful comparisons of the two fisheries.² ~~The Commission also has concerns over the fundamental ability of the study design to provide useful results for comparisons of the two fisheries, and the Commission therefore questions the statistical validity of the approach proposed (and notes that NMFS itself denied an EFP in August 2007 due to concerns it had over statistical validity of an EFP for longline fishing in the Atlantic).~~ The Commission further notes that NMFS itself is in the process of promulgating regulations that will establish an expedited, uniform, and regionally-based process for issuance of EFPs. A proposed rule is expected by the end of ~~Decemb~~ November. Lastly, the Commission notes that very little information was provided regarding the harpoon fishery, despite the stated purpose of comparing EFP data with the harpoon fishery. Based on all the ~~above~~ concerns, the Commission finds that the project would not ~~questions whether the project could be found to~~ adequately protect important marine resources, ~~to would not~~ provide special protection to areas and species of special biological or economic significance, and would not ~~to be~~ carried out in a manner that would sustain the biological productivity of coastal waters and maintain healthy populations of all species of

² The Commission has concerns over the fundamental ability of the study design to provide useful results for comparisons of the two fisheries, and the Commission therefore questions the statistical validity of the approach proposed (and notes that NMFS itself denied an EFP in August 2007 for longline fishing in the Atlantic).

marine organisms. The Commission therefore concludes that the project is inconsistent. At a minimum, the Commission needs further information to determine the project's consistency with the requirements of the marine resource protection policy (Section 30230) of the Coastal Act.

The Commission further finds that an appropriate way to gather the information NMFS seeks, and to do so in a manner that would be consistent with Section 30230, would be to design it within an area and time frame that currently receives fishing effort by the arguably more destructive gillnet fishery, and design it to include resource-protective constraints, including:

- 1) Prohibit longline fishing within the Pacific Leatherback Conservation area between August 15-November 15;
- 2) Eliminate the use of light sticks;
- 3) Redesign the experiment to be located entirely within the area and time period that drift gillnet fishing is currently allowed, such that the experiment is designed to provide sufficient statistical validity to be scientifically robust, (i.e., providing information to support valid comparisons of the environmental effects of the two fisheries) and assure that the overall effort (longline plus drift gillnet fishing effort) does not exceed the existing level of drift gillnet effort (i.e., no overall increase in total fishing effort), and would not exceed existing ITS take levels currently authorized for the HMS FMP;
- 4) Imposing a cap of one animal for all ESA-listed species known to occur in such a revised project area.

Finally, the Commission also finds that in addition to the above-described inconsistency with Section 30230, information is still lacking in several areas that would enable the Commission to determine the project's consistency with the marine resources policy (Section 30230) of the Coastal Act. To adequately consider this proposal and determine its consistency with Section 30230, the Commission is has sought seeking responses to a number questions. The Commission does not believe NMFS' responses reflect adequate consideration, including: (1) of whether the activity could be restricted to be outside the seasonal Pacific Leatherback Conservation Area. NMFS' response has been: "Restricting the proposed EFP from the Leatherback Conservation Area would severely hamper the applicant from harvesting a potentially productive area for swordfish and certainly curtail any economic incentive to continue the EFP." NMFS has not supported this statement with any analysis or data that explain why the activity could not be conducted outside the Conservation Area. The Commission therefore finds this response unpersuasive and inadequate, particularly given the worldwide significance of the area for leatherback foraging; (2) basic project information such as the nature and effect of the caps; (3) responses to comments NMFS received on its Draft Environmental Assessment; (4) results of further coordination with other resources agencies; (5) the effect of an unexpected but potential El Niño event during the EFP period; (6) questions about how this EFP would fit into an overall strategy for take reductions, including alternative strategies for swordfish fishing that might result in fewer takes than longline or drift gill net fishing; (7) the logistics behind how NMFS plans to transition fishermen from the drift gillnet fishery to a less damaging fishery; and (8) whether seabird minimization measures could be included that have been recommended by Birdlife International (Exhibit 13).

Without this information, in addition to the necessary project modifications described above, the Commission is unable to determine whether even a so-modified ~~the proposed project~~ would be fully consistent with the marine resources policy (Section 30230) of the Coastal Act. The Commission therefore objects to Mr. Dupuy's consistency certification, based on lack of adequate information to determine the project's consistency with the enforceable policies of the CCMP/Coastal Act.

Attachments: (1) Additional correspondence; (2) staff response to comments submitted by John LaGrange on the Commission's previous findings for NMFS' previous consistency determination for this matter CD-041-07; and (3) NMFS' EA, Leatherback sea turtle analysis (pp. 83-87 of the EA).



UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
Southwest Region
501 West Ocean Boulevard, Suite 4200
Long Beach, California 90802- 4213

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DEC - 4 2007

Mark Delaplaine
Manager, Energy, Ocean Resources
And Federal Consistency Division
California Coastal Commission
45 Fremont Street, Suite 2000
San Francisco, California 94105

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DEC 07 2007

CALIFORNIA
COMMISSION

Re: CC-061071, Consistency Certification for Exempted Fishing Permit (EEP) for longline fishing in the U.S. Exclusive Economic Zone (EEZ) off the California coast.

Dear Mr. Delaplaine:

NOAA's National Marine Fisheries Service (NMFS) is in receipt of your letter sent to Mr. Peter Dupuy sent on November 27, 2007 and copied to NMFS. In the letter, you request seven items of information. I believe that the first five items listed are addressed in the environmental documents¹ that we forwarded to you on December 3, 2007. The last two items were not specifically addressed in those documents and I am including responses to them below:

Item 1) An analysis of why NMFS could not eliminate the lightsicks from the longlines, due to concerns over the fact that sea turtles are attracted to lightsticks from the longlines: There remains great uncertainty about the role lightsticks play regarding the incidental capture of sea turtles in longline fisheries. Data from experimental fisheries in the Atlantic and Pacific Oceans have not implicated lightstick use as an important factor affecting rates of capture of either leatherback or loggerhead turtles. Studies indicating that loggerhead sea turtles are attracted to lightsticks used by commercial longliners were conducted in a laboratory setting (indoor tanks) and tested captive-reared turtles. These studies found that commercial lightsticks - both chemiluminescent and battery powered-- attracted turtles toward the light². However, this has not been confirmed in natural populations of sea turtles in the open ocean.

¹ National Marine Fisheries Service and Pacific Fishery Management Council. 2007. Issuance of an Exempted Fishing Permit to Fish with Longline Gear in the West Coast Exclusive Economic Zone, Environmental Assessment. NMFS, Long Beach, CA 90802. pp 143; and Endangered Species Act Section 7 Consultation, Biological Opinion: Issuance of a Shallow-set Longline Exempted Fishing Permit Under the Fishery Management Plan for U. S. West Coast Highly Migratory Species Fisheries. NMFS, Long Beach, CA 90802, pp 92.

² Wang, JH, Boles, LC, Higgins, B, Lohmann, KJ. 2007. Behavioral responses of sea turtles to lightsticks used in longline fisheries. Animal Conservation 10 (2), 176-182.



The question of resolving the effects of lightstick use regarding sea turtle bycatch rates is a priority for NMFS. However, studies have been deemed cost-prohibitive given that commercial operations demand that vessels owners/captains be compensated for the fish loss associated with experimental fishing methods that would eliminate an artificial light source. NMFS and collaborating researchers at the Inter-American Tropical Tuna Commission have discussed the potential to conduct such a study in Ecuador where use of light sticks is uncommon in a shallow-set fishery, and therefore fishers may be more willing to add lightsticks to their gear in order to conduct such experiments. These planned experiments are in the early stages and results from this and other data-mining of older data sets may shed light on this issue within the next several years.

Item 2) Analysis of whether seabird minimization measures could be included that have been adopted by Birdlife International.

Seabird mitigation measures required in consultations between NMFS and the U.S. Fish and Wildlife Service (USFWS), and which are part of the terms and conditions of the proposed shallow-set longline EFP, include: 1) observers record all sightings of short-tailed, black-footed and laysan albatross; 2) NMFS will report to FWS all sightings and interactions of short-tailed, black-footed and laysan albatross within 60 days of the end of the EFP; 3) NMFS will report all short-tailed albatross interactions to USFWS within 48 hours of the interaction; 4) any interaction (contact) between the vessel or gear and short-tailed albatross will result in immediate cessation of activities and immediate notification to the USFWS.

With regard to fishing operations, the following are required: 5) longline deployment must begin at least one hour after local sunset and be completed no later than local sunrise; 6) use of completely thawed bait to fish for Pacific pelagic management unit species; 7) retention of sufficient quantities of offal for the purpose of discharging the offal strategically in an appropriate manner; 8) remove all hooks from offal prior to discharging the offal; 9) discharge fish, fish parts (i.e., offal), or spent bait while setting or hauling longline gear on the opposite side of the vessel from where the longline is being set or hauled; and 10) attach a weight of at least 45 g to each branch line within 1 m of the hook.

The list above is very similar to that recommended by Birdlife International (BI) with the major exception being BI recommends the use of a streamer line. However, because the EFP will be conducted at night (which also happens to be a mitigation measure recommended by BI), there is no added benefit to using streamer lines in the EFP.

Please feel free to contact me at (562) 980-4040 if you have any questions regarding the information.

Sincerely,


for Mark Helvey
Assistant Regional Administrator
for Sustainable Fisheries

cc: Peter Dupuy

Agenda # F 3c
Dec. 04, 2007 Hearing
Application # CC-061-07
Save Our Leatherbacks Operation
Larry McKenna, Founding Director
In OPPOSITION TO the NMFS Request

**SAVE OUR LEATHERBACKS OPERATION
(S.O.L.O.)**

Organized Pursuant to IRS Code 501(c)(3) and Texas Article 3.02, Non-Profit Corporation Act
**4582 East Kingwood Drive, Suite # 143
Kingwood, Texas 77345
Ph/FAX: 281-361-4492
E-Mail: saveourleatherbacks@earthlink.net
Web Site: www.leatherbackturtles.org**

**Directors: Bo Esrey; Larry McKenna; Tony Moats
Of Counsel: Eileen Escudero Wisor**

December 7, 2007

The Honorable COMMISSIONERS
CALIFORNIA COSTAL COMMISSION
45 Fremont Street
Suite 2000
San Francisco, CA. 94105-2219

Via Commission Staff Member, **Mark Delaplaine** (in 22 copies for distribution to Each Commissioner)

Dear California Costal Commission Commissioners:

As compared to the lobbyists and political voices which will speak and write in favor of this agenda item, the opposing side, the Marine Creatures as the Leatherback Turtles, who live in the EEC protected zones off the California Coast...**Have NO voices** to speak in opposition to those who want to invade the protected marine sanctuaries to kill or damage them in search of commercial gain. Our non profit, all volunteer Foundation and others with the same motivations must speak out FOR these Leatherback Turtles. We are their voices **IN OPPOSITION TO** the certification/exempted fishing permit requested by NMFS/ and their supporters; the commercial long line fishing lobby.

We firmly and strongly **OPPOSE** any admission of ANY long line fishing boat(s) into the protected waters within the California EEC under ANY pretext of science or “economic viability”. In June, 2007, Your Costal commission denied a permit request from the fishing industry. Now they reappear under a mantle of the Secretary of Commerce to strong arm your Commission into submission on the very same issue; but with a different suit of clothes (sic. to gather information, etc.) Simply, these powerful money and political allies wish to get your permissions to open up these protected areas to commercial exploitation. WE, with respect **OPPOSE!** Reasons:

1) The Leatherback Turtle swims all the way from its nesting beaches in remote East Indonesia to forage on jelly fish annually. They are present in California EEC waters for up to 4 months each year. This Leatherback Turtle exclusively controls the jelly fish populations from exploding as did occur off North Ireland in November, 2007 (see Press Release). The reasons this occurred off Ireland are a longer term effect of Leatherbacks being destroyed in the Atlantic and Mediterranean seas.

2) The Leatherback Turtle has been listed on the Endangered Species list and is the MOST endangered sea turtle in the oceans. The listing has done nothing to stop the long line-at sea slaughters (politely called...”by-catches”) from happening. About 25 years ago, there were an estimated 10 million Leatherbacks in the Pacific Ocean. This population, based on our tracking of nesting events since 2005, indicates this specie is **now depleted to between 400 to 600 adult females remaining, and declining rapidly**. The major killer? long line fishing boats!!!

3) It is these Leatherback Turtles which migrate to the California protected sanctuaries within the EEC zones. **Today ANY killing or damage to even one (1) Leatherback Turtle becomes a most serious issue because of the spiraling decrease in the population**. The long line boats hang about 1,000 cruel circle hooks from each boat which are reset 4 times 24/7. These vessels when on a hunt for large tuna and swordfish can deploy in numbers, wing and wing; expending the “curtain of death: over several miles of ocean. Marine creatures, including the Leatherback Turtle which are swimming in the area, can become impaled on the hooks and **DROWN**. They do not eat the bait. There should not be even one (1) long line boat allowed in the marine sanctuaries. **NONE!!!** --- under any excuse of research is nothing but a “smoke screen” to go fishing.

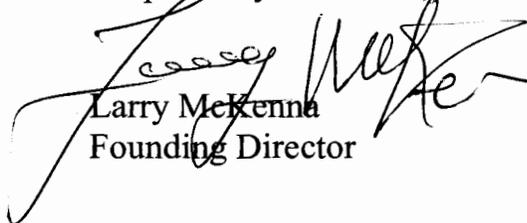
4) A stated reason in the permit application is ...”economic viability and environmental effects”. The cabal of NMFS and commercial fishing has long been allowed, unchecked or monitored, to abuse the dictates of

Magnusson- Stevens Act and other Laws designed to **PROTECT our marine life** in favor of the commercial interests. It has been only through establishing protected sanctuaries which exclude commercial fishing have our oceans been able to regain a balance of its 150 million old symbiotic relationships in these areas. Now because the protected areas are again thriving, the moneyed interests want to enter and pillage under any excuse they can fabricate --- and destroy that which has been husbanded so effectively by California and its environmentally conscious citizens. The damages to our oceans are so severe that our children and their children will be denied the fruits of and enjoyment of healthy seas, if this policy of destruction for commercial gain is allowed over the interests of the citizens. The permit requested **MUST** be denied and in the Costal Commission denial, a message should delivered to all who want to capitalize on pillaging of our sensitive marine environment to **NOT** reapply.

We implore The Costal Commission and each Commissioner to act wisely to protect the California EEC areas, especially those which have been protected as a **STATES RIGHTS** issue. These are California waters; **NOT** Federal waters. California, on behalf of its citizens (and the world peoples as well) should decide the destiny and uses of its protected waters and costal habitats. The Leatherback Turtle which spends more time foraging in California and Oregon waters than in any location in its life cycle is directly responsible for maintaing the symbiotic balance of the areas. Allow them (The Leatherbacks) to be destroyed at the expense of commercialization by long liners, would be tragic. Further if the "control" (this Leatherback Turtle) on jelly fish is removed, the uncontrolled swarms of killing jelly fish may not be long behind these damaging actions. **This process, once allowed is irreversible.**

Please **DENY** the requested permits and in so doing help **PROTECT** the California marine sanctuaries and this Leatherback Turtle we speak for.

Respectfully submitted,

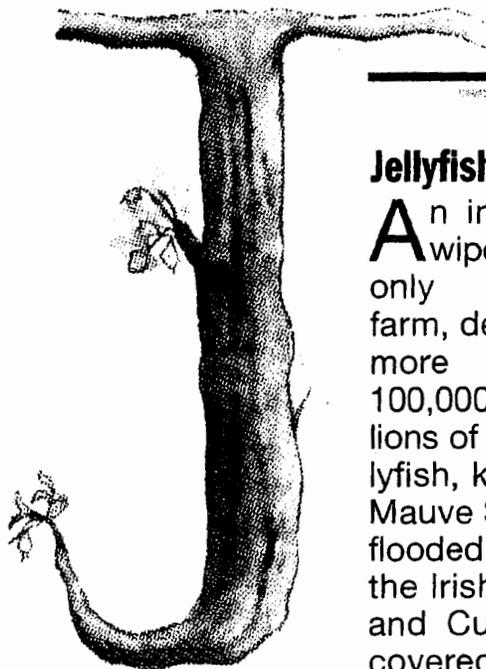


Larry McKenna
Founding Director

Attachments (4)
Press Release of Jelly Fish Swarms
Leatherback Turtle Photo & Dimensions
Painting of Leatherback Foraging
An Example of Leatherback Destruction

The Himalayan
Nov. 24, 2007

THE WORLD THIS WEEK



Jellyfish wipe out salmon farm

An invasion of jellyfish has wiped out Northern Ireland's only salmon farm, destroying more than 100,000 fish. Billions of small jellyfish, known as Mauve Stingers, flooded into the fishes' cages in the Irish Sea, off Glenarm Bay and Cushendun. The jellyfish covered an area of about 16

square km and down to nearly 11m, which made it impossible for rescuers to reach the salmon

cages. A fish farm spokesman said the attack could cost more than £1m. Managing director John Russell



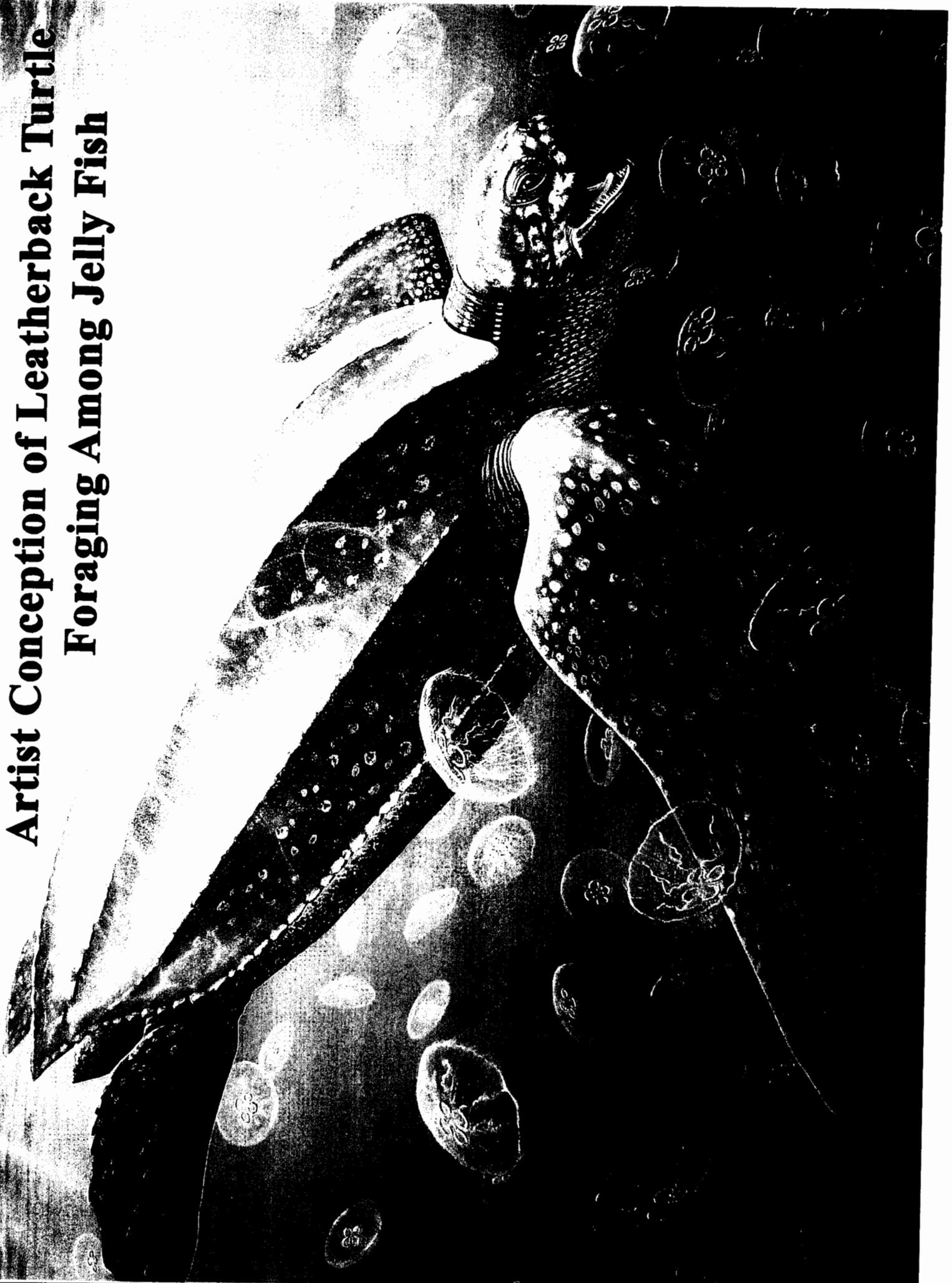
said he had never seen anything like this in 30 years in the business. "The sea was red with these jellyfish." — Agencies

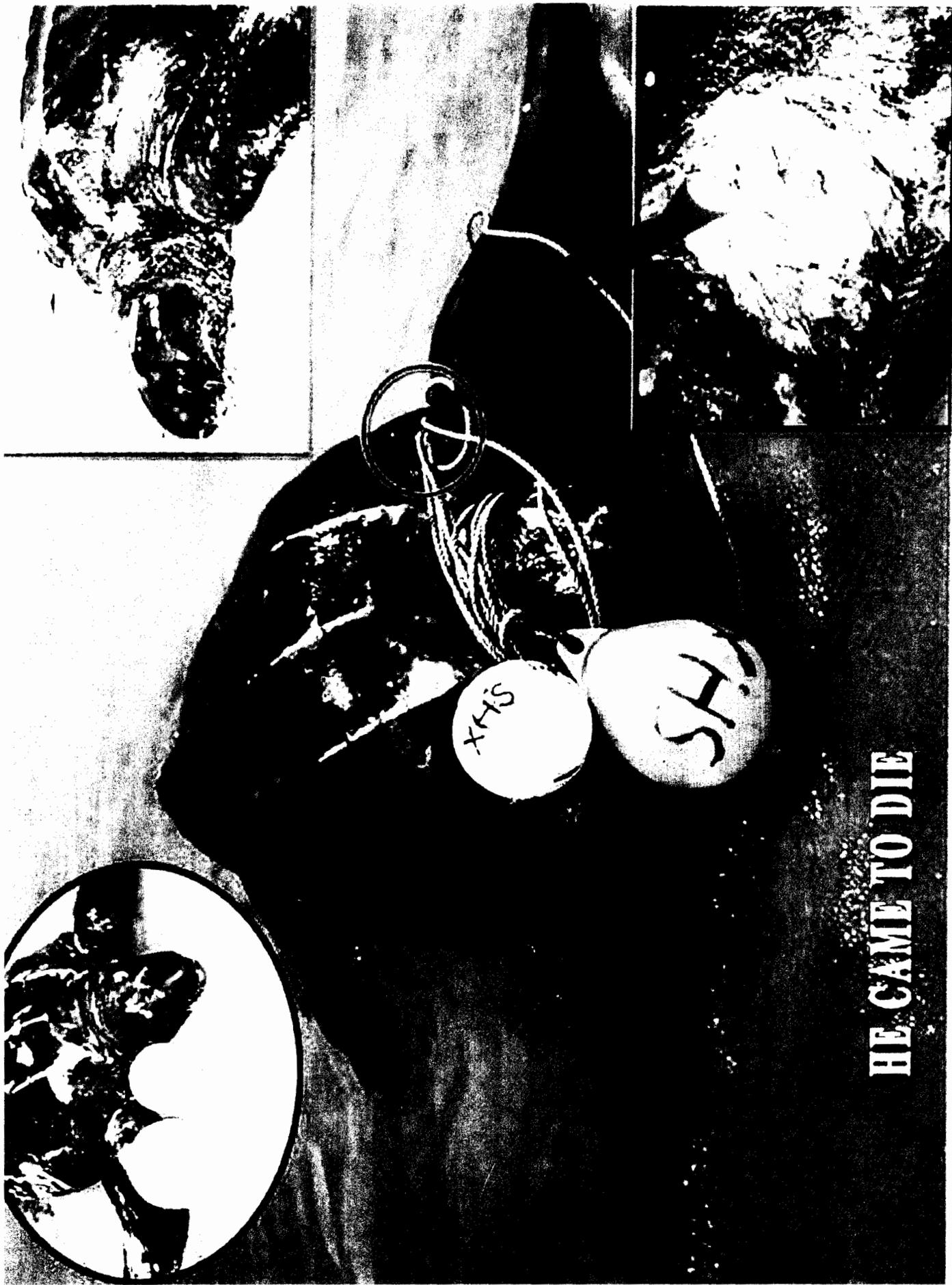
News Report on Nov. 24, 2007 of a
Massive Jelly Fish Swarm in Irish Sea
Which Destroyed Northern Ireland Salmon
Absent Leatherback Turtles which Eat Their
Weight, Daily in Jelly Fish, Similar Swarms
CAN do the same Off California Coasts



Leatherback Turtle. --- Largest Turtle in the Seas
THE MOST ENDANGERED OF ALL SEA TURTLES
Weigh over 3,000 lbs.; Females over 2,000 lbs
Dimensions: Front Flipper Tips (extended) 9 ft.
Length Nose to Tail 7 ft.
Body Thickness 3 ft.

Artist Conception of Leatherback Turtle Foraging Among Jelly Fish





HE CAME TO DIE

Impaled by Circle Hook and Strangled by Long Line Floats.
Photos by David Donnelly & Laura Clark - Composited by Larry McKenna (c)



*Conserving Ocean Fish and Their Environment
Since 1973*

**Agenda Item F 3c
CC-061-07
National Coalition for
Marine Conservation
Opposed**

December 4, 2007

California Coastal Commission
45 Fremont, Suite 2000
San Francisco, CA 94105

To Whom It May Concern:

The National Coalition for Marine Conservation is a national non-profit organization dedicated to conserving marine fisheries and their environment. We are writing in opposition to a consistency certification for an exempted fishing permit application submitted by Peter Dupuy/Ocean Pacific Seafood to fish for swordfish with longline gear in the West Coast EEZ.

I am enclosing, for the record, a copy of NCMC's testimony on the EFP application previously submitted to the National Marine Fisheries Service.

Thank you for your consideration.

Sincerely,

Ken Hinman
President

Enclosure

RECEIVED

DEC 05 2007

CALIFORNIA
COASTAL COMMISSION



NATIONAL COALITION FOR MARINE CONSERVATION
4 Royal Street, S.E., Leesburg, VA 20175

July 5, 2007

Rodney R. McInnis
Regional Administrator
Southwest Region
National Marine Fisheries Service
501 West Ocean Boulevard, Suite 4200
Long Beach, CA 90802

RE: Longline EFP

Dear Mr. McInnis,

The National Coalition for Marine Conservation (NCMC), representing the interests of conservation-minded fishermen on the west coast and throughout the country, opposes the application for an Exempted Fishing Permit (EFP) submitted by a California-based commercial fishermen wanting to test the viability of developing a longline fishery for highly migratory species in the U.S. EEZ off the west coast. We opposed the application when it was first submitted to the Pacific Fishery Management Council and discussed at the March 2006 meeting, because we do *not* believe it is consistent with the goals and objectives of the Council's Fishery Management Plan for U.S. West Coast Fisheries for Highly Migratory Species. In our view, the development of a pelagic longline fishery will undermine the conservation measures in that FMP, the prohibition on the use of longlines being just one.

Much is made of the fact that the permit would only apply to a single vessel. But the applicant has stated the intent of this "exploratory" fishery is to "affirm the economic viability of HMS drift gillnet gear substitution with pelagic longline gear." The Council's decision in April to recommend approval of the EFP, and the NOAA *Federal Register* notice of June 13th, confirm this intent. Therefore, the application and permit must be reviewed and considered with respect to the potential impact of a longline *fishery*, not a single vessel, on swordfish (target species) as well as protected species and non-target species. To date, 71 drift gillnet (DGN) permit holders have expressed an interest in making the switch to longline gear; however, over 130 vessels would be eligible.

In this regard, the EFP sets extremely low standards for judging a successful experiment; namely, (a) proving that a longline fishery is economically viable, and (b) demonstrating that bycatch is less than in the DGN fishery. For example, under the proposed terms and conditions of the EFP, the vessel would be allowed an "interaction cap" of 12 striped marlin a year. A per vessel allowance of 12 billfish could, if a longline fishery with 71 vessels were to develop, result in an annual longline bycatch of 852 striped marlin. If a full-scale, 130-plus vessel fishery developed, that total could add up to over 1,560 marlin.

These numbers are not hypothetical. The potential EFP bycatch is based on experience with the Hawaiian longline fishery, which operates in a manner similar to the conditions laid out in the proposed west coast EFP (e.g., offset circle hooks and mackerel-type baits). Using these numbers, the longline bycatch of striped marlin, dorado and oceanic sharks, including blue and shortfin mako – both considered near-threatened by the IUCN – is likely to be substantial. (Longline EFP Environmental Assessment, March 2007, p. 80)

In addition, commercially-important albacore and bigeye tunas are projected to be caught in significant numbers. These species are experiencing overfishing, and the Pacific Council is required to prevent any increase in fishing mortality. The introduction of a new longline fishery would greatly increase the catch of these overfished tuna species and compete with traditional U.S. fisheries, in particular commercial troll gear and recreational fisheries for albacore.

We share the Council's and NOAA's concerns about the destructive nature of drift gillnets, especially interactions with endangered leatherback turtles. That's why we supported keeping the Pacific Leatherback Conservation Area off limits to drift gillnets. Nonetheless, we cannot support substituting one indiscriminate gear with another. As the DGN fishery is phased out, replacing it with a longline fishery would likely reduce interactions with sea turtles and marine mammals, while increasing bycatch of billfish and sharks. Moreover, longlines set for swordfish are notorious for catching a high proportion of immature fish, a situation that led to overfishing of Atlantic swordfish and the closure of large coastal areas to longlining to minimize capture of small fish.

Finally, the troubled history of pelagic longlining targeting swordfish (and tunas) is re-written by this application. As we told the Pacific Council, portraying longlines as an "environmentally-safe" alternative to drift gillnets does not accurately depict the impact of longline gear on HMS fisheries, nor does it reflect the true history of U.S. longline management in the Atlantic EEZ. That history has been replete with bycatch problems, leading to strict regulations, extensive closures, and a difficult and costly management program that challenges the viability of the gear itself to prosecute a sustainable fishery.

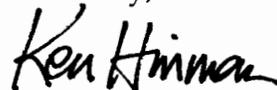
The 10 deg. offset circle hook/mackerel-type bait requirements in the proposed EFP were designed to minimize interactions with sea turtles. They have not proven to be effective in reducing bycatch of numerous finfish species. As we pointed out in our recent comments on an EFP application in the Atlantic (copy enclosed), *bona fide* longline bycatch reduction research must test short set lengths/soak times; studies with circle hooks show mortality increases dramatically the longer the fish are on the hook. The proposed EFP would set a maximize set length of 60 miles!

The Pacific Council and NOAA should be using their limited resources to investigate and promote more selective fishing methods for swordfish, such as the traditional hand-gear fisheries. The harpoon used to be the primary gear for targeting swordfish. That is, until it was displaced by the advent of the drift gillnet fishery in the 1980s. Harpooning is proven highly-effective and sustainable, with no bycatch.

In sum, we urge NOAA to disapprove the longline EFP now under consideration, and to do the U.S. fishing industry, the resource and the public a favor by developing a truly sustainable, environmentally-safe and economically beneficial (defined as returns to industry less management costs) swordfish fishery off the west coast.

Thank you for considering our views.

Sincerely,

A handwritten signature in black ink that reads "Ken Hinman". The signature is written in a cursive, slightly slanted style.

Ken Hinman
President

Enclosure

Melvyn L. Wright
194 Central Ave.
P.O. Box 785
Woodacre, CA 94973

RECEIVED
DEC 12 2007
CALIFORNIA
COASTAL COMMISSION

December 11, 2007

VIA FACSIMILE TO 415-904-5400
California Coastal Commission
45 Fremont, Suite 2000
San Francisco, CA 94105-2219

Attention: Mark Delaplane

Subject: Consistency Certification CC-061-07
Item F-3s

Dear Commissioners:

I write to you with no particular expertise but as an ordinary citizen concerned about our environment. I oppose the granting of any exception to the existing bans of long-line fishing – whether for swordfish or any other use – along the California and Oregon coast.

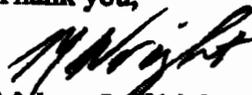
I have read accounts and seen film describing the effects of long-line fishing, and I find very little one could say in its defense. It is an indiscriminate method that results in the deaths of many species that were not targeted by the fishermen. Among others these include turtles, dolphins, seals, and birds such as albatross. Many of these animals are endangered or threatened and all should be protected from this wasteful form of harvest.

I also feel that long-line fishing is unfair competition to local, small fishing operations that use more sustainable techniques. Long lines that are many miles in length save labor costs for the corporations that operate them and put small operations out of business.

With all the conservation measures we have in place along the California and Oregon coasts, to allow long-line fishing would be counterproductive. We have worked hard to protect our wonderfully diverse marine environment along the West Coast. I believe that allowing longline fishing would seriously undermine all that has been accomplished.

I implore the Coastal Commissioners to deny the issuance of the swordfish longline fishing permit.

Thank you,


Melvyn L. Wright

RESPONSE TO COMMENTS BY JOHN LA GRANGE on the Coastal Commission OCRM Letter (wording help is needed).

1. *The first paragraph of the background states that “California state law has never allowed longlining for swordfish within it’s EEZ.” In fact, California allowed experimental swordfish longline fishing during the 1980s as well as an extensive experimental shallow set shark fishery in the Southern California Bight.*

According to the California Department of Fish & Game (“CDFG”), which managed the swordfish fishery until 2004, there are no records of an experimental swordfish longline fishery in the 1980s or other decades.¹ In addition, the Draft Environmental Assessment (“DEA”) submitted by NMFS for the proposed EFP states repeatedly that there has never been a longline fishery within California’s EEZ, as does the Consistency Determination submitted by NMFS. The Commission cited the DEA in its staff report. Two examples from the DEA include the following:

Second, because pelagic longline fishing has never been permitted within the EEZ waters adjacent to California, there are no longline fishery dependent records to draw upon to estimate the effects of the proposed action².

Pelagic longline fishing has never been permitted within the California or Washington EEZ.....³

The Commission staff therefore maintains the accuracy of the statement: “California state law has never allowed longlining for swordfish within it’s EEZ.” This statement was written based on personal communication with CDFG and it received CDFG staff’s concurrence. CDFG made it clear to the Commission that the position of the State of California has always been, and continues to be, to not allow longlining. CDFG is also on record as having voted against the proposed EFP when it was before the Pacific Fishery Management Council for a vote because the State’s position is to not allow longlining.⁴

¹ Personal communication between Commission staff and Steve Wertz, Senior Marine Biologist, California Department of Fish & Game, November 21, 2007. There is no record of an EFP ever being issued for swordfish, but Wertz did find a reference to one longline trip made in 1987 that targeted swordfish. He was unable to locate any additional information nor confirm that an EFP was issued for it.

² National Marine Fisheries Service and Pacific Fishery Management Council, Issuance of an Exempted Fishing Permit to Fish with Longline Gear in the West Coast EEZ, Draft Environmental Assessment, April 2007 at 24.

³ Id at 25.

⁴ Personal communication between Commission staff and Marija Vojkovich, Regional Manager, California Department of Fish & Game, August 2007.

There was an experimental longline fishery authorized for mako and blue sharks from 1988-1991. This experimental fishery was precautionary in approach as only between 6-10 permits were issued each year and quotas were set. The primary species landed during these four years was blue sharks for which there was no market. The California Fish and Game Commission decided to cancel the experimental fishery because of a lack of a market and the associated waste of blue sharks. CDFG does not characterize this experimental shark fishery as extensive, but rather as small, tightly regulated, and short-lived.⁵

2. *The next sentence states, "A small number of California-based longline vessels used to legally target swordfish outside the EEZ and legally land their catch in California." In fact there were about 30 boats involved in the fishery and, prior to 2004, it was the second largest HMS fishery on the west coast, larger than the drift gillnet fishery, and exceeded only by the albacore fishery.*

The Commission staff changed the language in the staff report from "small" to "a varying sized fleet" to accommodate this comment. However it should be noted that the Commission characterized the now defunct California-based shallow set longline ("SSLL") fishery as small because it was small compared to the drift gillnet fishery and the harpoon fishery. According to the DEA, there were on average 29 vessels with west coast commercial highly migratory species ("HMS") landings that used pelagic longline gear from 1981-2005. This includes both swordfish and tuna fishermen. This number ranged from a high of 70 vessels in both 2000 and 1998 to a low of 4 vessels in 1989.⁶ According to the Pacific Fishery Management Council's 2006 Stock Assessment and Fishery Evaluation ("SAFE Report"), the average number of active vessels participating in the drift gillnet fishery from 1980-2005 was 123. This number ranged from a high of 228 vessels in 1985 to a low of 40 vessels in 2004.⁷ According to federal and state agency researchers, the number of California harpoon fishing vessels landing swordfish during 1969-1993 ranged from a high of 309 vessels in 1978 to a low of 32 in 1991.⁸ As compared to the two other most frequently used gear types in the west coast commercial swordfish fishery, the number of vessels from the now defunct California-based SSLL fishery was small.

It is unclear if Mr. La Grange relied on the number of vessels or the amount of swordfish landed as the basis for the claim that the now defunct California-based SSLL fishery was the second largest HMS fishery prior to 2004. As noted above,

⁵ See Footnote 1.

⁶ See Footnote 2 at 10.

⁷ Pacific Fishery Management Council, *Status of the US West Coast Fisheries for Highly Migratory Species Through 2005, Stock Assessment and Fishery Evaluation*, September 2006 at 10.

⁸ Coan, et al. *The California Harpoon Fishery for Swordfish, Xiphias gladius*, In Barrett, et al. 1998. *Biology and fisheries of swordfish (Xiphias gladius)*. Papers from the International Symposium on Pacific Swordfish, Ensenada, Mexico, 11-14 December 1994. US Dept Commerce., NOAA Tech. Rep. NMFS 142, 276 p.

the number of vessels was smaller than the number of vessels in both the drift gillnet fishery and the harpoon fishery. Also, according to the SAFE Report, west coast commercial swordfish landings were dominated by the drift gillnet fishery and the harpoon fishery for 19 years from 1981 until 1999. It was for only six years, from 1999-2004, that the pelagic longline fishery took the lead and landed the most swordfish.⁹ Therefore based on the amount landed, the entire pelagic longline fishery (of which the now defunct California-based SSSL fishery was one component) was the second largest HMS fishery on the west coast for only six years at best. Even when all gear types are combined, a comparison of the total amount of swordfish landed (which includes pelagic longline, drift gillnet, harpoon, purse seine, and hook-and-line) to other HMS species shows that swordfish was the second largest HMS fishery only for five years, from 2000-2004. During this time period, swordfish averaged only 13% of the total HMS species landed. Prior to this, from 1981-1999, swordfish accounted for only 6% of the total. Since 1981, swordfish have made up only a very small percentage (from <1%- 18%) of the total amount of HMS species landed.¹⁰ The Commission staff therefore does not agree with Mr. La Grange's comment.

- 3. The last sentence of the paragraph states, "Today fishermen are prohibited from targeting swordfish using SSSL gear both inside and outside of the west coast EEZ." This is not true. Fishermen fishing under Hawaiian permits and regulations can legally fish right up to the EEZ line and land their fish on the West Coast. Longline boats from Mexico, China, and Japan also fish just outside our EEZ without restriction. Only West Coast fishermen are prohibited from fishing both inside and outside the EEZ.*

The context of this paragraph and the entire letter was in reference to west coast regulations and west coast fishermen. Fishermen from other states or nations are not reviewed in this letter as the Coastal Commission only implements the Coastal Zone Management Act provisions to the degree proposed activities affect coastal resources of the State of California. It therefore seemed redundant to specify that these regulations apply to west coast fishermen, but it can be reiterated that the regulations for the west coast HMS FMP pertain to the west coast fishermen permitted for the west coast HMS FMP.

- 4. It perhaps should be noted in the second paragraph that Mr. Dupuy proposes not to use the gear that was rejected in the 2004 BO, but gear that has been accepted in BOs and is being used successfully inside and outside the EEZ in both Hawaii and on the US East Coast.*

The gear type proposed for the EFP is discussed in the "Conclusion" section of the OCRM letter. For the "Background" section of the OCRM letter, the

⁹ See Footnote 7 at 75.

¹⁰ Id at 45.

Commission used the language provided in the documents submitted by NMFS. Specifically, the “Proposed Action” section of the DEA and the “Background” section of the consistency document were used to write the paragraph in question, and neither included any discussion of gear type. However, the Commission did include the phrase, “a range of mitigation and management measures are included to reduce anticipated bycatch” within this paragraph.

It is important to note that the purpose of the OCRM letter was not to analyze the amount of bycatch, but rather to analyze if sea turtles and other coastal marine resources are likely to be affected by the EFP. This is a threshold question (i.e., a question as to *whether* the proposed EFP is reasonably likely to affect coastal resources, rather than one necessitating a lengthy discussion of the amount of bycatch).

5. *On page 4 a 2001 BO finding jeopardy for leatherbacks from the Hawaii SLL fishery is listed. There is no mention that it was superceded by a 2004 BO that found no jeopardy for the current Hawaii SLL.*

The 2004 BO for the fishery in Hawaii was not mentioned here because this was a list of fisheries that created concerns and/or jeopardy findings for leatherbacks.

6. *It is also stated that the 2004 BO for the West Coast found it necessary to close all shallow longlining outside the EEZ to conserve leatherbacks. The finding of the BO was that the “fishery as proposed” would cause jeopardy, not that “any” surface longlining would cause jeopardy. Indeed, the same agency at the same time, found no jeopardy for the Hawaiian fishery, potentially fishing the same waters with modified gear.*

The Commission used language (emphasized below) from the Final Rule published in the Federal Register which did not make this distinction.¹¹ The BO only made findings for the “fishery as proposed,” as that was all that was submitted for review. The Commission’s purpose in mentioning the BO was to indicate that NMFS was sufficiently concerned about the impacts to leatherbacks from the HMS FMP that it prohibited all shallow set longlining outside the EEZ for west coast fishermen in order to protect leatherbacks. NMFS stated:

NMFS is issuing a final rule to prohibit shallow longline sets of the type normally targeting swordfish on the high seas in the Pacific Ocean east of 150° W long. by vessels managed under the Fishery Management Plan for US West Coast Fisheries for Highly Migratory Species (FMP). This action is intended to protect endangered and threatened sea turtles from the adverse impacts of shallow longline fishing by US longline fishing vessels in the Pacific Ocean and operation out of the west coast. This rule supplements the regulations that implement the FMP that prohibit shallow

¹¹ Federal Register/Vol. 69, No. 48/ Thursday, March 11, 2004/ Rules and Regulations at 11540.

*longline sets on the high seas in the Pacific Ocean west of 150° W long. by vessels managed under that FMP. The FMP was partially approved by NMFS on February 4, 2004. Together these two regulations are expected to conserve leatherback and loggerhead sea turtles as required under the Endangered Species Act (emphasis added).*¹²

The BO for the fishery in Hawaii was not mentioned here because this was a list of fisheries that created concerns and/or jeopardy findings for leatherbacks.

7. *The whole discussion of turtle catch in the drift gillnet fishery compared to the longline fishery is very misleading. While the letter discusses turtle "takes" and turtle "bycatch" it never mentions turtle mortality. For instance on page 5 we see reference to 61 sea turtle "takes" in the last 4 years in the Hawaii SSSL fishery. This is compared to the number of "takes" in the drift gillnet fishery and it is concluded that there is a "far greater rate of bycatch" in the SSSL fishery. It never mentions that all 61 turtles "taken" in the SSSL fishery were released alive, for an average observed mortality of zero turtles over the last four years. Unfortunately, the same is not true of the drift gillnet fishery.*

The discussion of turtle takes pertains to the standard the Commission must meet, which is merely that the proposed EFP is likely to affect sea turtles. Whether they are alive, dead, or die later is moot- the Commission staff must only demonstrate sea turtles will be affected and become hooked on a longline to qualify as an effect.

The Commission staff compared turtle takes from the Hawaii SSSL and the drift gillnet fishery because that is how NMFS addressed the issue of takes in its DEA. Since California has never allowed longlining within its EEZ, there are no California data to draw from. Hence NMFS had to rely on comparisons between fisheries that use the same gear (Hawaii SSSL) and operate in the same region (drift gillnet) as the proposed EFP. NMFS asserted that SSSL generates less bycatch than drift gillnet but did not provide any data to support this statement. The Commission simply followed NMFS' lead and actually compared the observer data from the two fisheries because NMFS did not have that level of analysis in its DEA. The results indicate the Hawaii SSSL has more turtle takes.

8. *On page 5 there is a discussion of the short-finned pilot whale. Here again statements given as fact are simply not true. The last paragraph on page 5 starts, "In the Hawaiian SSSL fishery that uses identical gear to that proposed by the EFP, short-finned pilot whales have been observed entangled." The observer data from that fishery is available on the NMFS Pacific Islands Regional Office website and clearly shows no such observation. Unencumbered by facts, the letter begins page 6, "Given that short-finned pilot whales are found in the same area as the proposed EFT and that they are routinely taken in both the West*

¹² Id.

Coast DGN and the Hawaiian SSLL fisheries, a high potential exists for the proposed EFP to take short-finned pilot whales." How about if we are instead given the actual fact that short-finned pilot whales have never been taken in the current Hawaiian SSLL fishery?

The facts are that short-finned pilot whales have been taken in the Hawaiian SSLL fishery prior to the new regulations instituted in 2004. Every year NMFS publishes the List of Fisheries that shows which marine mammal species are taken in each fishery in the United States. The 2008 List of Fisheries reveals that the Hawaii pelagic longline fishery is a Category I fishery and the short-finned pilot whale is one of eight marine mammal species listed as interacting with the fishery. The Commission staff contacted the NMFS authors of the 2008 List of Fisheries and learned that short-finned pilot whales continue to be listed as taken in this fishery, although none have been taken in the SSLL swordfish fishery since the new 2004 regulations. These authors indicated that once a marine mammal has an interaction with a fishery, they stay on the list for a minimum of five years and sometimes longer. The list is generated from stock assessment reports that lag two years behind. Therefore, the short-finned pilot whale will not be removed from the list for 2008 or any time in the near future because its stock assessment reports are current only to 2005.

Short-finned pilot whales are found in the same area as the proposed EFP and they are taken by the drift gillnet fishery. In fact, using the draft 2007 Pacific Marine Mammal Stock Assessment Report data, their annual mean mortality is higher than their Potential Biological Removal Rate, meaning that this fishery is in violation of the Marine Mammal Protection Act. Short-finned pilot whales are included in the group of mammals currently managed by the NMFS Take Reduction Team, a group designed to ensure bycatch rates do not continue to increase.

Given these facts, the Commission staff would rephrase the words "high potential" to just "potential."

9. *Page 7 discusses humpback and sperm whales and again presents false and misleading information. "In the Hawaiian SSLL fishery that uses identical gear to that proposed by the EFP, humpbacks and sperm whales have been observed entangled. The most recent humpback entanglement occurred last year in 2006." In fact the 2006 incident was the only humpback interaction ever observed. No sperm whale has ever been observed entangled.*

The fact that the only humpback entanglement that has occurred with longline gear occurred with the new gear remains cause for concern, because the proposed EFP would use the same gear types that were used during the 2006 entanglement. The Commission staff believes that interaction is evidence of the potential for

California's humpbacks to become similarly entangled. According to NMFS, sperm whale interactions also occurred in Hawaii in 1999 and 2002.

NMFS EA

commonly caught in SSSL gear (NMFS Hawaii observer program; NMFS observer program; Watson, *et al.* 2005). Based upon observer records, leatherback sea turtles were the most commonly observed sea turtle entangled and killed in the DGN fishery and the CPUE of leatherbacks was substantially higher north of Point Conception than south of the point (Carretta, *et al.* 2005). This is likely due to the oceanographic differences between the two areas. Loggerheads are the second most commonly observed sea turtle species taken in the DGN fishery with all takes occurring south of Point Conception, usually within the SCB, and all but one during declared El Niño years. Table 3–15 provides the number of observed takes of sea turtles in the DGN fishery between 1990 and 2005 with 20 percent observer coverage.

Table 3–15. Number of observed takes of sea turtles in the DGN fishery, 1990-2005.

Species	Number Taken
Turtle, Green/Black	1
Turtle, Leatherback	23
Turtle, Loggerhead	15*
Turtle, Olive Ridley	1

*All but one of the takes occurred during El Niño years and none occurred within the proposed action area.

Leatherback Sea Turtles

Of all the sea turtle species within the action area, the leatherbacks are the most likely to be affected by the proposed action. As noted above, there is a much higher leatherback CPUE north of Point Conception than south and this is consistent with the biology and emerging information about the distribution and foraging patterns of Pacific leatherbacks. Aerial surveys conducted during the late summer and fall months reveal that leatherbacks forage off central California, generally at the end of the summer, when upwelling relaxes and sea surface temperatures increase. Leatherbacks were most often spotted off Point Reyes, south of Point Arena, in the Gulf of the Farallon, and in Monterey Bay. These areas are upwelling “shadows,” regions where larval fish, crabs, and jellyfish are retained in the upper water column during relaxation of upwelling. Researchers estimated an average of 170 leatherbacks (95 percent CI = 130–222) were present between the coast and roughly the 50 fathom isobath off California. Abundance over the study period, 1990–2003, was variable between years, ranging from an estimated 20 leatherbacks in 1995 to 366 leatherbacks in 1990 (Benson, *et al.* 2007).

Initially, genetic analyses of stranded leatherbacks found along the West Coast determined that the turtles had originated from Western Pacific nesting beaches. Furthermore, genetic analysis of samples from leatherback turtles taken off California and Oregon by the DGN fishery and in the Northern Pacific, taken by the California-based longline fishery, revealed that all originated from Western Pacific nesting beaches (i.e., Indonesia/Solomon Islands/Malaysia; Dutton 2003).

In the last five years, researchers have documented movements of leatherback turtles between nesting beaches in the Western Pacific and the U.S. West Coast. Observations of tracked leatherbacks captured and tagged off the West Coast have revealed an important migratory corridor from central California, to the south of the Hawaiian Islands, leading to Western Pacific nesting beaches. Researchers have also begun to track female leatherbacks tagged on Western Pacific nesting beaches, both from Jamursba-Medi and War-mon, Papua, Indonesia, and from the Morobe coast of Papua New Guinea. Most of the females that have been tagged in Jamursba-Medi, Papua, which primarily nest during the late spring and summer, have been tracked heading on an easterly pathway, towards the West Coast or heading north toward foraging areas off the Philippines and Japan. In addition, one female that was captured in central California in 2005 still had a tracking device that had been attached to her on Jamursba-Medi, confirming

this trans-Pacific migration (Dutton 2005). Research and tagging of leatherbacks is part of ongoing work by the SWFSC.

For a full description of the status of leatherback sea turtles and all sea turtle species that may be found in the proposed action area, see the draft EA written for the DGN EFP (NMFS and PFMC 2006), the 2006 biological opinion written for the DGN EFP (NMFS 2006c), or the biological opinion written for this SSSL EFP (NMFS 2007). The following is a very brief review of the basic status of leatherbacks in the Pacific.

Based on published estimates of nesting female abundance, leatherback populations are declining at all major Pacific basin nesting beaches, particularly in the last two decades (NMFS and USFWS 1998; Spotila, *et al.* 1996; Spotila, *et al.* 2000). Declines in nesting populations have been documented through systematic beach counts or surveys in Malaysia (Rantau Abang, Terengganu), Mexico, and Costa Rica. In other leatherback nesting areas, such as Papua New Guinea, Indonesia, and the Solomon Islands, there have been no systematic consistent nesting surveys, so it is difficult to assess the status and trends of leatherback turtles at these beaches. In all areas where leatherback nesting has been documented, however, current nesting populations are reported by scientists, government officials, and local observers to be well below abundance levels of several decades ago. The collapse of these nesting populations was most likely precipitated by a tremendous overharvest of eggs coupled with incidental mortality from fishing (Eckert 1997; Sarti, *et al.* 1996).

In both the Eastern Pacific and Western Pacific, leatherbacks are threatened by poaching of eggs, killing of nesting females, human encroachment on nesting beaches, incidental capture in fishing gear, beach erosion, and egg predation by animals. In May 2004, researchers, managers, and tribal community members with extensive knowledge of local leatherback nesting beach populations and activities in Papua (Indonesia), Papua New Guinea, the Solomon Islands, and Vanuatu assembled in Honolulu, Hawaii, to identify nesting beach sites, and share abundance information based on monitoring and research, as well as anecdotal reports. Dutton, *et al.* (2007) estimate that there are between 2,700 and 4,500 breeding females in the Western Pacific population. Information on trends in abundance is not available, making it difficult to assess the health of the population.

Based upon the level of take in the historic DGN fishery and the known distribution of leatherbacks within the proposed action area, it is likely that leatherbacks will be affected by the proposed SSSL EFP. Determining the number of individual leatherback taken and associated mortalities is difficult because there has not been a SSSL fishery in the proposed action area, so there are no observer records from fisheries that can be utilized to make projections. During internal review of the draft EA, a more comprehensive review of other SSSL fisheries was undertaken to characterize the level of anticipated takes in the proposed action. As was done for other species, the DGN observer records were reviewed to indicate presence of the species in the proposed action area. As described previously, comparing one set of DGN gear to one set of SSSL gear is not considered reasonable given the differences in the gear and the lack of evidence to support the assumption that the gear types are comparable. If the sets were comparable, then applying the CPUEs for leatherbacks to anticipated SSSL effort would yield an anticipated take of less than one leatherback. This approach was not considered the best available.

The Hawaii-based SSSL, which re-opened in April 2004 was considered as a possible proxy. CPUEs of leatherbacks in this fishery were highly variable over the past three years, ranging from 0.0027 to 0.013 turtles captured per 1,000 hooks, reflective of the dynamic nature of interactions between sea turtles and fishing gear. Using CPUEs from Hawaii may not be appropriate to the West Coast EEZ given the differences in leatherback behavior in the two areas (the waters off Hawaii have been identified as migratory and perhaps feeding areas, whereas the West Coast EEZ has been identified as a foraging area for Western Pacific leatherbacks). However, if the leatherback CPUE used in the 2004 biological opinion

for the Hawaii pelagics FMP (NMFS 2004c) is applied to the level of effort proposed in the SSSL EFP, the anticipated rate of take is extremely low, approximately one leatherback. As with the DGN fishery, this estimate of take likely does not accurately reflect the area and likely interactions.

Recent work from the East Coast suggests that leatherbacks of the northeast coast of the United States and southeast coast of Canada utilize shelf and slope waters during the summer as foraging areas. Two areas in particular, the Northeast Coast (NEC) and Mid-Atlantic Bight (MAB), may most closely resemble some of the foraging areas on the U.S. West Coast, particularly central California. Leatherbacks were satellite tagged ($n=38$) between 1999 and 2003 off Nova Scotia, Canada within the NEC. Tracks from the tags indicate that leatherbacks travel extensively in the shelf and slope waters (James, *et al.* 2005). On the water observations of "prey handling" at the surface of the water and dive patterns suggest that the NEC and MAB are high use foraging areas for Western Atlantic leatherbacks (James and Herman 2001). Recent work by the SWFSC and their colleagues indicate that the U.S. West Coast in some areas is utilized by leatherbacks in a similar manner as in the Atlantic, that is, leatherbacks migrate into the area seasonally to forage on abundant gelatinous plankton and jellyfish, the primary prey of leatherbacks in these areas. If it is assumed that the range of leatherback CPUEs, per area and per quarter, in the Atlantic-based SSSL fishery reflects the range of CPUEs that may be observed in the SSSL EFP and apply these to the anticipated maximum number of hooks (67,200), the resulting range of anticipated takes is zero to ten leatherbacks. Alternatively, if we calculate a simple CPUE based upon total number of observer leatherback takes over the total number of observed hooks for the two years and two areas and apply this to the anticipated maximum 67,200 hooks in the SSSL EFP, the estimated total take would be four leatherbacks.

Similar to other SSSL fisheries that were considered as possible proxies for the SSSL EFP, there are a number of problems with using the Atlantic bycatch data and applying it to the Pacific. One of the key problems is the differences in scale in terms of leatherback populations and fishing effort. Satellite tracking work done by James, *et al.* (2005) indicates that leatherbacks moving into the NEC and MAB foraging areas are from Western Atlantic nesting beaches. The most recent population estimate for adult females from these populations, not including nesting beaches in Africa, is 10,000 to 31,000 (TEWG 2007). In 2005, the logbook reported level of effort in the third and fourth quarters in the MAB and NEC was 945,700 hooks; in 2006 the effort was 1,158,100 hooks. The most recent population estimate of the entire Western Pacific leatherback adult females is 2,700 to 4,500 (Dutton, *et al.* 2007). Of these adult females, satellite tracks suggest that females from a specific region, Jamursba-Medi, Papua, Indonesia, travel across the Pacific and forage in the West Coast EEZ (Benson, *et al.* 2007), whereas females from other nesting beaches forage in other parts of the Pacific and along the coasts of Asian countries. Thus the number of leatherbacks likely to be exposed to the SSSL in the CA/OR waters is likely a sub-set of the entire Western Pacific population. As noted previously, the total number of hooks anticipated to be set in the SSSL EFP is 67,200 (compared to around one million set in the Atlantic-based SSSL fishery in just two regions in six months).

Finally, observer data from the SSSL outside the West Coast EEZ was examined, along with estimated CPUEs developed by the SWFSC for the Council in 2003. In order to best approximate the areas likely to be fished under the SSSL EFP, data from east of 130° W. longitude was reviewed. This area is closest to the West Coast EEZ and included sets made by California- (2001-03) and Hawaii- (1997-2001) based vessels. Utilizing the CPUE developed for the SSSL fisheries operating in this area and applying it to the anticipated hooks in the SSSL EFP yields an anticipated take of four leatherbacks. However, the SWFSC's report also calculated anticipated takes if gear and bait modifications similar to those tested in the NED experiments were applied to the SSSL fishery CPUEs. Assuming an approximately 65 percent decline in leatherbacks takes, yields an anticipated take in the SSSL EFP of three turtles (with a range of two to four). If most fishing effort in the SSSL EFP occurs between 33° N. and 38° N. latitude and offshore, then this estimate may be the most reasonable approximation on what may occur in the SSSL

EFP. However, there is insufficient refinement on the proposed area that will be fished to determine how closely it will follow the historical SSLL effort off the West Coast EEZ. Reviewing these records and using them to calculate a range of anticipated takes in the SSLL EFP does again suggest that the levels of take are likely to be quite low, if records from a nearby area can be reliably used to project takes.

Based upon a review of relevant other SSLL fisheries and the known distributions and abundance on leatherbacks exposed to these fisheries, it is reasonable to assume that rates of take in the SSLL EFP may be higher than rates of take in the Hawaii-based SSLL, but lower than the Atlantic-based SSLL fishery. The historic SSLL just off the West Coast EEZ may serve as the best approximation of likely takes, although the rate may slightly underestimate the anticipated takes within the proposed action area, as leatherbacks may be more densely aggregated in the EEZ as they move out of nearshore feeding areas. It is not known which areas of the EEZ, beyond the neritic zone, are utilized by leatherbacks. The limited tracks from satellite tagged leatherbacks suggest that the animals move southwest as they leave one known feeding area in the central California, which may place them south of the area traditionally fished by the West Coast-based SSLL fishery. It is therefore estimated that approximately five leatherbacks may be taken in the SSLL EFP. This is slightly higher than the high range of takes estimated using the observed leatherback CPUE of the SSLL east of 130° W. longitude and consistent with the rate estimated using the Atlantic-based SSLL fishery data for 2006 (which is a more complete data set than the 2005 data). This number may over-estimate the actual amount of leatherback take observed, but is the best estimate that could be made with the available information. As described previously, take rates of sea turtles in fisheries is highly variable among years, seasons, and areas, thus any projection of takes based upon observer data from the past is difficult to make with accuracy. In light of this, a conservative approach was taken in the development of the anticipated take in the SSLL EFP in which there is no observer data and there has been no historic fishery.

In order to estimate likely mortality associated with the incidental take of five leatherbacks, observer records from other SSLL fisheries were again reviewed. In the Hawaii-based and Atlantic-based fisheries, there were 0 percent and less than 1 percent immediate mortality rates, respectively. Based upon these rates, it is very unlikely that any leatherbacks taken in the SSLL EFP will be killed immediately. However, post-hooking mortality is a concern and the NMFS post-hooking mortality matrix (Ryder, *et al.* 2006) was used in this assessment. The Hawaii-based SSLL fishery records did not provide sufficient detail to estimate post-hooking mortalities with the matrix. All leatherbacks were recorded as "lightly hooked" but there was no detail on whether these animals were hooked externally (e.g., flipper, shoulder, or shell) or hooked in the mouth or jaw. Also, the precise amount of gear left on the animal was not recorded. Without these types of information, only a broad assessment of likely post-hooking mortalities can be made.

In previous biological opinions, post-hooking mortality estimates have been done based upon estimates from the NED experiment. In the experiment, with high levels of observer coverage, the leatherback post-hooking mortality rate was estimated to be 15 percent. This is due in part to the nature of the hookings (externally hooked) and removal of trailing gear. It is reasonable to assume that a similar situation will occur in the SSLL EFP; therefore, anticipated post-hooking mortality associated with the five takes is one leatherback.

Any estimate of leatherback takes must be considered with caution, particularly given the high inter-annual variability of take. The reasons for the variability and possible correlations between turtle distribution and oceanographic conditions are a topic of on-going studies by NMFS. A recently published paper described the positive relationship between years with positive Northern Oscillation Index (NOI) and higher abundance within the neritic zone off California, north of Point Conception (Benson, *et al.* 2007). A similar pattern could not be found between NOI conditions and leatherback takes in the DGN fishery, but work in this area will continue.

Based upon the distribution of leatherbacks within the proposed action area, the observed takes in the DGN fishery, and rates of observed takes in the Hawaii-based SSSL and Atlantic-based SSSL fishery, it is possible that a small number of leatherbacks may be taken as a result of fishing under the SSSL EFP. Based upon the differences in the leatherback populations and distribution in the two regions and differences in fishing effort, it is likely that the level of take in the EFP is a number between the two estimates from the Hawaii- and Atlantic-based SSSL fishery. The final ITS developed for this action is five leatherbacks, of which a post-hooking mortality rate of 15 percent, or one leatherback, is anticipated.

As explained above in section 3.4.1.1, the exposure analysis provided here has relied primarily upon observer records from the DGN fishery operating primarily off the coast of California, with limited effort off the coast of Oregon and a ban on DGN gear in waters off of Washington State. Records from the experimental thresher shark DGN fishery in the EEZ off Washington were examined for rates of impacts on sea turtles. While no sea turtles were observed in 1986 and 1987, the first two years of the experiment, with very low levels of observer coverage (less than 6 percent per year), logbook entries from the fishery indicate one leatherback taken in 1986. Perhaps most striking is the level of observed leatherback takes was in 1988: 13 leatherbacks taken in 68 observed sets, yielding a CPUE of 191.2 leatherbacks per 1,000 sets (the estimated leatherback CPUE, north of Point Conception, is 7.7 turtles per 1,000 sets). The reason for the high CPUE cannot be explained with the limited data available at the time of this writing, but high densities of leatherbacks are suspected to exist around the Columbia River plume (between Washington and Oregon). As described in section 3.2.1.1 for marine mammals, if SSSL sets are made in the waters off Washington, anticipated effects on sea turtles, particularly leatherbacks, may be different than those presented in this analysis. The preferred alternative restricts fishing to south of 45° N. latitude.

Loggerhead Sea Turtles

In order to determine whether or not loggerhead sea turtles may be affected by the proposed action, observer records were reviewed along with an extensive review of the literature on loggerhead distribution within the North Pacific. Loggerhead sea turtles have not been observed incidentally taken in the DGN fishery north of Point Conception. All but one observed takes of loggerheads occurred during years in which an El Niño had been declared and all but two occurred with the SCB, as described in the proposed action, there will be no SSSL fishing in the SCB under this EFP. The observed takes in the DGN fishery are likely related to oceanographic conditions and its effects on the distribution of loggerheads. The waters off Baja California, Mexico, have been identified as a key feeding area for juvenile and sub-adult loggerheads that feed on their primary prey, red crab, which are found in high concentrations in coastal warm waters off Baja. Observer records from the DGN fishery strongly suggest that juvenile loggerheads only move into the waters off California during El Niño years and are generally found within the SCB, where SSSL fishing will not occur under the proposed action. However, to better understand the distribution of loggerheads throughout the Pacific and particularly differences in the likelihood of exposure in the proposed SSSL fishery and the Hawaii-based SSSL fishery, a review of the recent literature was done.

Recently, satellite tracking of loggerheads has provided insights into their behavior and distribution in the Pacific. Loggerheads exhibit shallow dive patterns with more than 90 percent of their dives within the top 40 meters of water (Polovina, *et al.* 2004), which is similar to the hook depth range of the proposed fishing gear (hook depths of 40–45 meters below the water's surface). Genetic analysis of loggerheads that may be exposed to the longline gear indicate that they are likely to be from nesting beaches in Japan (95 percent) and Australia (five percent) and forage off Baja California (Bowen, *et al.* 1995) and the Central North Pacific. Satellite tracking of loggerheads indicates that loggerheads occupy a wide range of SST from 15–25 degrees C while in the Central North Pacific, although tracks of turtles within narrowly defined temperature bounds were also observed (Polovina, *et al.* 2004). The published temperature range