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MEETING SUMMARY

**Highly Migratory Species Management Team**  
**Highly Migratory Species Advisory Subpanel**  
**Pacific Fishery Management Council**

United States Tuna Foundation  
Conference Room  
1 Tuna Lane  
San Diego, California 92101  
**August 3-5, 2005**

HMSMT Members Present

Steve Crooke, CDFG  
Michele Culver, WDFW  
Suzy Kohin, NMFS SWFSC  
Jean McCrae, ODFW  
Liz Petras, NMFS SWR

HMSAS Members Present

Lillo Augello, Southern Processor  
Pete Dupuy, Commercial At-large  
August Felando, Commercial Purse Seine  
Steve Fosmark, Gillnet Fisheries  
Representative  
Wayne Heikkila, Commercial Troller  
Russell Nelson, Recreational At-large  
Bob Osborn, Private Recreational  
Bill Sutton, Commercial At-large

Others

Gary Burke, Commercial Fisherman  
Jim Carretta, NMFS SWFSC  
Donna Dealy, NMFS SWFSC  
Tomo Eguchi, NMFS SWFSC  
Lyle Enriquez, NMFS SWR  
Tina Fahy, NMFS SWR  
Peter Flournoy, AFRF  
Svein Fougner, HLA  
Rich Hamilton, Recreational Fishing  
Alliance  
Craig Heberer, NMFS, SWR  
Ken Hinman, National Coalition for  
Marine Conservation  
Chuck Janisse, FISH  
John LaGrange, Commercial Fisherman  
Keith Longman, Commercial Fisherman  
Mike McCorkle, Commercial Fisherman  
Lia Protopapadakis, NMFS SWR  
Erika Robins, NMFS SWR  
Carlo Sanfilippo  
Petro Sanfilippo  
Annie Sartur, Oceana  
Stephen Stohs, NMFS SWFSC  
Emanuel Terzoli  
Marija Vojkovich, CDFG  
Peter Volauz

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WEDNESDAY, AUGUST 3, 2005 – 1 P.M.

## HIGHLY MIGRATORY SPECIES MANAGEMENT TEAM MEETING

### **A. Call to Order**

1. Introductions
2. Approval of the Agenda

The agenda was approved as presented.

### **B. Modification of the Drift Gillnet Closure Area – Identify Possible Options for Presentation to Highly Migratory Species Advisory Subpanel**

Jim Carretta and Liz Petras provided a brief overview of the protected resources related work to date, focusing on the June 2, 2005, paper by Jim Carretta discussing leatherback sea turtle incidental take CPUE. Jim emphasized the need to avoid over-stratifying the data because it is so limited: 23 takes in more than 7,000 sets. The choice of geographic stratification will be somewhat subjective, but should rely on what knowledge there is about the biology of the animal and how it interacts with oceanographic conditions. He decided that Point Conception is a reasonable latitude reference for stratifying the data for these reasons. The CPUE south of Point Conception is much lower than north of that line.

Chuck Janisse ran through historical data on leatherback takes and number of sets by year and month.

It was noted that the briefing paper indicated there was a lot of variability in terms of potential takes, reflected by the 95% CI values. Jim Carretta also noted that CPUEs by themselves are not the only factor; how oceanographic and biological factors can change over time should also be considered.

Steve Stohs asked if the difference between CPUEs north and south of Point Conception was due to different fishing methods. Jim Carretta said that there was nothing in the available data to suggest that. Steve Crooke asked if water temperature was a discernable factor and Jim responded that it would be useful to consider if the data were available. So would the distribution of prey.

Chuck Janisse cited the Barlow paper,<sup>\*</sup> which showed different CPUEs by latitude.

Jim Carretta said that Barlow (as cited in Gallaway) used a general additive model that basically fit the take rates to latitude. However, the samples on which this is based—the number of leatherback takes within each of the latitude zones—were very small. Also, the model treats latitude as a continuous variable, with the highest CPUE values observed in the range of latitudes between 36.5 and 38 degrees. Jim Carretta pointed out that this was in the very area that is being considered for reopening of the current closure.

Michele Culver brought up the issue of unobserved or unobservable vessels, questioning whether the sample was truly random. Jim replied that there was no reason to think it was not a random sample, although a statistical comparison of logbook versus observer data could be done to explore this issue. Michele followed up by asking if a different CPUE is applied to unobserved boats. Jim reiterated that given the available data and the assumption that observed sets are statistically representative, there is not

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<sup>\*</sup> Barlow, J. [2001]. *Analysis of turtle bycatch rates in response to recommendations made at the 2001 Pacific Offshore Cetacean Take Reduction Team meeting*; Appendix 3 in Gallaway, B.J. 2001. *Leatherback sea turtles and the California/Oregon drift gillnet fishery*. Buellton (CA): California Seafood Council. November 2001.

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much more you can do than assign an average CPUE value to all vessels. He went on to note that the Gallaway report suggests a higher leatherback CPUE west of 125° W longitude. There was some discussion of the possible reasons that might support such a difference.

The discussion then turned to the area closure proposal put forward by Steve Fosmark. This led to a discussion of recent satellite tagging data showing the movements of tagged leatherbacks from the Monterey, California area. These data suggest leatherback turtles migrate between nesting areas in the Western Pacific and foraging areas off of Monterey. Tagged leatherbacks generally moved southwest from the Monterey area. There was discussion of what causes satellite tags to stop working and whether it indicates the turtle died.

In response to a question about sea turtles killed in other parts of the Pacific, Tina Fahy said that the environmental baseline in the Biological Opinion (BiOp) would incorporate information on takes for the population as a whole. She briefly reviewed current sources of mortality Pacific-wide and noted ongoing conservation efforts. She also described the current stock status of Western Pacific versus Eastern Pacific leatherback populations. Eastern Pacific stocks are in much worse shape, showing severe decline, while the Western Pacific population is stable or increasing. Available data suggest about a 40:1 ratio of Western versus Eastern Pacific stocks in the drift gillnet (DGN) fishing area. This would be considered in the BiOp.

Chuck Janisse asked what the range of allowable incidental take is likely to be for this action. Liz Petras said a definite number can't be given, but it is likely to be similar to the levels provided in past BiOps. The 2000 BiOp for the DGN fishery had six leatherback mortalities over three years. Also, a 61% mortality rate is assumed. She discussed population viability analysis, another tool that would be used in the evaluation.

Pete Dupuy said the task was to find way of increasing fishing opportunity within the constraints of existing U.S. laws and regulations. This may not seem fair considering that most sources of mortality are not due to U.S. fishermen, but it's the situation that has to be dealt with.

The discussion then turned to developing alternatives involving an overall limit on the number of sets that could be made in the northern closed area. One question was how many sets could be supported given the average CPUE north of Point Conception and the likely acceptable level of sea turtle takes.

Chuck Janisse expressed some frustration concerning the difficulty in developing alternatives when there was no definitive take limit for leatherbacks. He also asked if there is anything the DGN fishery can do to reduce the mortality rate used from 61%. Janisse noted that the mortality rate for leatherbacks externally hooked with longline gear is 10% (if all gear is removed, for externally hooked leatherbacks with gear attached, mortality rates vary from 15% to 30%) and wondered why the Council did not act to allow testing of this gear as an alternative to the DGN fishery.

Liz Petras indicated that the DGN fishery has likely declined, perhaps to a level of 750 sets annually in the currently closed area, which with the CPUEs being used could result in around five leatherback mortalities.

August Felando asked some questions about the difference in the incidental take statement (ITS) in the 1997 versus the 2000 BiOps and why there were so much lower in the latter, and whether the 2000 numbers were valid. The annual ITS established in the 2000 BiOp was two leatherback mortalities (of three takes) in the southern DGN fishery and this was considered no jeopardy in the 2000 and 2004 HMS BiOp. It was suggested that when considering alternatives for opening the northern DGN fishery expected take levels should be consistent with other no jeopardy BiOps.

There was further discussion of possible approaches to structuring the alternatives using closed areas, set limits, or leatherback incidental take limits. These alternatives could be prosecuted under an exempted fishing permit (EFP), which would limit the number of boats that could participate (i.e., fish in the closed

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area under these limits). Ranges of values for these different approaches were discussed. Chuck Janisse suggested the alternatives break down to two approaches: establishing take or effort limits (similar to the situation in the Hawaii longline fishery) with increased observer coverage for fishing inside the current closed area or modifying the current closed area and continue with the current observer coverage level (about 20%) for fishing outside of it.

There was further discussion of the viability of considering area closure alternatives.

The discussion then turned to observer coverage. It was recognized that a fishery in the current closed area would probably have to have 100% observer coverage. If the program costs for this are prohibitive that could preclude this approach. Michelle Culver also asked whether observer data could be compiled close enough to real time to allow any kind of take limit alternative (under which the fishery would close when the limit is reached). The possibility of electronic monitoring (i.e., video monitoring) was put forward as a lower cost alternative to observers.

Michele Culver outlined eight alternatives, including no action, which included variations on closed area modifications, leatherback take limits, and set limits.

Steve Crooke said these alternatives should be looked at to see if they could be reduced to a fewer number.

Craig Heberer said the alternatives shouldn't be limited arbitrarily as that risks problems in any litigation.

Suzy Kohin suggested including some other closed area alternatives, such as modifying the southern boundary so it goes due west from Point Sur and bringing the northern boundary down to 40° N latitude. This led into a further discussion of closed area alternatives. However, there was a lukewarm reception because of the previous discussion about how the limited stratification of CPUEs means that closed area variations would show limited positive results in any analysis of projected take.

Tomo Eguchi discussed his recent work modeling fishery-leatherback interactions based on telemetry and logbook data.

Pete Dupuy discussed limiting set duration as a way of limiting sea turtle mortality.

The meeting concluded with a discussion of what would be presented to the Advisory Subpanel the next day and how to coordinate the presentation of the EFP protocol to the Council (scheduled for adoption for public review in September) and the fact that the DGN alternatives involve an EFP, which would have to be considered on a different review cycle from what is proposed in the protocol. The team concluded that the best approach would be to recommend that the protocol come into effect for fisheries that would occur during the 2007 fishing year (April 1, 2007-March 31, 2008). An interim protocol would be in effect for fisheries in the 2006 fishing year (April 1, 2006-March 31, 2007), which would just require Council consideration at any two meetings.

Peter Flournoy mentioned that NMFS received an application involving towing a net pen for bluefin tuna sea farming into U.S. waters to receive fish. He wondered if the Team and Advisory Subpanel should discuss it the next day and provide comments on the application.

THURSDAY, AUGUST 4, 2005 – 8 A.M.

### **HIGHLY MIGRATORY SPECIES MANAGEMENT TEAM MEETING HIGHLY MIGRATORY SPECIES ADVISORY SUBPANEL JOINT MEETING**

#### ***A. Call to Order***

##### **1. Introductions**

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### 2. Approval of the Agenda

The agenda was approved with the addition of a discussion of the bluefin tuna transshipment permit application.

#### ***B. Modification of the Drift Gillnet Closure Area – Develop Preliminary Range of Alternatives***

The team reviewed the previous day's discussion for the benefit of the Advisory Subpanel. Michele Culver presented the range of alternatives that had been developed.

Russell Nelson recommended adding an additional leatherback take limit alternative of one mortality. Although possibly not feasible for a viable fishery opportunity, it would strengthen the NEPA analysis.

Steve Fosmark said he wanted to make sure the area outside the closed area, considering his proposal for a change in the southern boundary, would be subject to the status quo 20% observer coverage. This would provide an opportunity for fishery participants while they waited for an available observer, which would be necessary to fish inside the closed area under the EFP. Furthermore, those fishing further south shouldn't be penalized as far as a requirement to carry an observer, since the takes were so much lower in that area.

Steve Fosmark's proposal, and how the modified southern boundary would work, was discussed. Fosmark's proposal would close an area between Pt. Sur and Pt. Arena and out from Monterey Bay to DGN fishing to protect sea turtles.

The team went over some of the issues they had worked out yesterday, explaining to the Subpanel members about the incidental take that might be permitted and the fact that a "hard" number cannot be identified before the BiOp is completed. They reviewed the likely number of sets that would be possible (650-1,000) and how this relates to leatherback takes.

Mechanisms for real-time reporting of takes were discussed, which might be necessary for a take limit approach.

Procedural aspects of developing the proposal were discussed, including the difference between using an EFP and a regulatory or FMP amendment. Michele Culver said the Advisory Subpanel should discuss how best to determine which vessels would participate in the EFP while the Team and NMFS are developing the NEPA analysis.

There was a discussion of the geographic distribution of past fishing effort, how many fishermen have likely left the fishery rather than shifting fishing area, and how many fishermen would be interested in participating in the EFP. Steve Fosmark said that the boats out of Crescent City, Eureka, San Francisco, and Morro Bay have for the most part not fished since the closed area was implemented.

Gary Burke talked about the relationship between temperature fronts and the distribution of swordfish and sea turtles.

Ken Hinmen expressed concern about including an incidental take limit as high as nine leatherback turtles. Although he understood the need for a range of alternatives, this signaled to the public that a number that high is considered acceptable. Steve Croke responded by saying that presenting such a range is necessary since it's not possible to know what is an acceptable number until NMFS conducts the BiOp. Liz Petras said the NEPA document needs to provide a robust analysis, which uses analytical

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methods consistent with what will be used in the BiOp. It's not possible to say with certainty what the ITS will result in, but as discussed before, take limits consistent with past BiOps can be identified.

Jim Carretta then presented his analysis of incidental take CPUE, similar to the presentation to the team on the previous day.

Pete Dupuy reiterated his point from the previous day of focusing on the objective of providing fishing opportunity, recognizing the constraints established by the ESA.

A discussion of the mortality rate that would be used in the analysis then ensued. Craig Heberer asked about whether observer data and other information could be used to improve assessments of sea turtle mortality under different capture conditions, which could be used in computing mortality rates for future BiOps. Jim Carretta pointed out the difficulty in handling animals as large as leatherback turtles.

The group then engaged in a discussion similar to what occurred the previous day with respect to the stratification of leatherback incidental take CPUE estimates. Chuck Janisse noted that, given observers won't be available to cover all fishing effort under an EFP, the alternatives should be structured so as to allow fishing in the closed area if (and only if) an observer is on the boat, even if the target level of effort cannot be met. This would make the alternatives still viable even if the funding did not come through for the needed level of observer coverage.

Michele Culver suggested that the action be viewed in light of three sequential analyses. First the HMSMT will do a preliminary analysis for the Council action at the November meeting (selecting a range of alternatives for public review). Then a NEPA document would be prepared for Council final decision in March 2006. Finally, NMFS PRD would prepare a BiOp analyzing the preferred alternative. In light of this approach, area closures could still be considered for management purposes, even if the analytical methods (i.e., limited spatial stratification of CPUE) can't distinguish the impacts of area closures. Closed areas could be considered in the preliminary analysis and NEPA document on a qualitative level. Liz Petras noted the BiOp can contain conservation recommendations, which could include closed areas.

The Advisory Subpanel and Team then discussed whether using an EFP was the best way to go. Craig Heberer pointed out that whether the action was an EFP or regulatory amendment, the analyses would be the same.

Potential problems with requiring 100% observer coverage for fishing in the closed area were discussed. For example, vessels rated "unobservable" would not be able to participate. An alternative would be to look into video monitoring.

Steve Fosmark suggested establishing a limit on the number of sets that can be made on a single trip to prevent "observer hoarding" where a fisherman would maximize the opportunity of having an observer aboard to the detriment of other participants. This led to a discussion of how to set up such a limit, for example by limiting the length of trips directly.

In terms of an upper and lower number of sets for the purposes of establishing limits, the lower end of the range is established by the observer program definition of a trip as having more than five sets. Bill Sutton said 10 sets is often a target in terms of economic viability and could represent the upper end in terms of establishing a limit on the number of sets per trip. There was some discussion of "water hauls" in relation to a per-trip limit on sets. The Advisory Subpanel agreed that Steve Fosmark's idea of a limit on trip length should be included in the alternatives.

It was recognized that at this point the alternatives represent management approaches (closed areas,

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incidental take limits, set limits) and the Council is likely to combine elements of these approaches in identifying a preferred alternative. For that reason the Advisory Subpanel probably should not advocate strongly for any one approach at this point.

Russell Nelson suggested the need to limit any future reentry of effort into the fishery in response to management changes. Others argued that social and economic changes resulting from the current closure make it unlikely the fishery will ever expand in the future. It was also recognized that this would require establishing a limited entry program, which could not be accomplished in time to implement an EFP or other action by August 2006. Looking into limited entry could be part of a long-term program, which would eventually replace the EFP.

The group discussed the use of Point Conception to stratify incidental take CPUE and how this might play into different management approaches.

The Advisory Subpanel discussed the closed area proposal presented in the Gallaway report and decided it should not be included in the range of alternatives.

The group further reviewed the alternatives as they had been developed up to that point.

### ***C. Management Regime for High Seas Longline Fishery – Identify Proposed Action and Management Concepts***

Kit Dahl briefly reviewed the reason this item was placed on the agenda. He noted the Council discussed the issue at the June Council meeting without providing specific direction to the HMSMT. They did, however, form the Ad Hoc HMS Management Committee composed of Council members to identify options for moving forward on the issue.

Michele Culver said the team is waiting for direction from the Council, which was not provided at the June meeting. Until the Council or the Ad Hoc HMS Management Committee provides such direction there is little the HMSMT can do on this issue. There is some frustration because of the previously stated desire to consider both the DGN and longline actions in concert with respect to sea turtle impacts.

There was some discussion of the current status of the Hawaii fishery. Svein Fougner said the Hawaii Longline Association was satisfied with the regulatory setup to date, although they believed the set limit component (tradable set certificates) should be eliminated. Craig Heberer pointed out that Hawaii-permitted vessels can currently fish out of the West Coast according to the regulations if they also obtain an HMS permit. Under these dual permits they could land fish on the West Coast under the HMS permit while targeting swordfish under the Hawaii permit, while complying with the associated regulations. The issue is whether there will be enough set certificates remaining, or whether the incidental take limit for leatherbacks or loggerheads had been reached, such as to allow a fall fishery out of the West Coast. These problems could be addressed if the WPFMC instituted a seasonal allocation of set certificates or the incidental take limit.

Russell Nelson underscored the general tenor of the conversation by emphasizing that the Team and Advisory Subpanel are in policy limbo until the Council provides clear direction on this issue. Wayne Heikkila concurred, saying the Ad Hoc HMS Management Committee should “get off the dime.”

Marija Vojkovich said she was frustrated at how difficult it was to understand how the three fisheries in question—the Hawaii swordfish fishery, DGN, and any potential West Coast longline opportunity—potentially interact in terms of sea turtle impacts. Such an understanding needs to be a starting point for any consideration of action.

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Craig Heberer followed up with the view that it is imperative for the Pacific Council to collaborate with the WPFMC on the shallow-set longline issue, given the overlap between any Hawaii and West Coast fishery, especially with respect to any associated sea turtle impacts.

Michele Culver said the Team proposed coming back to the Council with alternatives for both the DGN and longline fisheries so they could be considered together in a BiOp. However, the Council only provided direction on addressing the DGN fishery, so currently this is not possible.

Liz Petras said the longline fishery could be considered in the DGN BiOp as a future action. However, the analysis of the shallow longline fishery would require a separate consultation and any takes authorized for the DGN fishery would affect the environmental baseline used in the shallow longline fishery action consultation.

Lilo Augello pointed out that foreign fisheries have a much greater impact on sea turtles yet it is U.S. fishermen that are penalized.

There was some discussion of a timeline for Council action, with the possibility of permitting the fishery to resume by 2007.

The Advisory Subpanel agreed to request the Ad Hoc HMS Management Committee to “take action as soon as possible to provide guidance to the Management Team.” If possible, the Council could provide guidance at the September Council meeting, if this item were put on the agenda.

Pete Dupuy noted that if the action area were looked at differently, it could yield quite different results as far as any protected species impacts. For example, it might be worth considering a fishery only east of 130° W longitude.

There was a brief discussion of the permit application received by NMFS for the transshipment of bluefin tuna to net pens in Mexican waters.

FRIDAY, AUGUST 5, 2005 – 9 A.M.

### **HIGHLY MIGRATORY SPECIES MANAGEMENT TEAM MEETING**

#### ***D. Status of SAFE Document and Schedule for Completion***

The Team began by reviewing the SAFE outline and discussing what had been completed to date. This included a discussion of the planned list of tables with agreement on which tables could be consolidated so as to reduce the task of completing them.

Inclusion of information on sea turtle bycatch in HMS fisheries was discussed. Michele Culver said this information should be included in the section entitled research and data needs, and monitoring reports.

The list of future additions to the SAFE was discussed.

The inclusion of Pacific-wide catch data was discussed. Peter Flournoy urged caution as to how data on Canadian albacore landings are presented because this could be used in future negotiations. It was agreed there should be a table comparing Pacific-wide landings to West Coast landings by species.

The draft section on status of stocks prepared by Suzy Kohin was reviewed. Whether to include any discussion of stock assessment conducted in the current year was raised. It was agreed that the SAFE should only discuss stock assessments through 2004. A discussion of how stock assessments should be evaluated ensued. Information in the SAFE should also be consistent with the Report to Congress.

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The research and data needs, and monitoring reports section was further discussed. It was agreed a description of port sampling programs should not be included in this section because of their limited scope, but the observer program description should be included. Peter Flournoy said the research and data needs list, which is the same as in the FMP, should be prioritized.

The Team discussed the schedule for completing the SAFE. It was decided that the requisite material could not be completed for the September Council meeting and a new deadline of September 28 was established for receipt of materials at the Council office. Authors would circulate their sections by September 12 for review by other Team members.

### ***C. Tasking/scheduling for Development of Drift Gillnet Fishery Closed Area Modification Alternatives Analysis for November Council Meeting***

The Team recommended putting a copy of the draft meeting summary and a list of the DGN alternatives in September briefing book as an informational item.

Liz Petras would begin working on the preliminary analysis of turtle impacts for the DGN alternatives. NMFS SWR would also compile information on potential observer coverage levels. Michele Culver will provide a written description of the alternatives.

There was a discussion of the EFP application. The Team thought that Federation of Independent Seafood Harvesters (FISH) would be the applicant. The relation between the EFP (format and timing of submission) and the overall process (NEPA document, Council decision-making) was discussed.

The team agreed they should hold a two-day meeting the week of October 2 to review the preliminary analysis of the DGN alternatives and cover any additional tasks in preparation for the November Council meeting briefing book deadline (October 12). This could also be an opportunity for the Team to meet with the Ad Hoc HMS Management Committee.

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Attachments: Preliminary Alternatives for Drift Gillnet Fishery  
*Background information on leatherback turtle (Dermochelys coriacea) takes in the large-mesh drift gillnet fishery off California, with comments on the calculation of leatherback turtle catch per unit effort (CPUE).* Report by Jim Carretta, NMFS SWFSC  
Revised HMS SAFE Outline

## PRELIMINARY ALTERNATIVES FOR DRIFT GILLNET FISHERY

### Fishing Area (Pick 1)

1. Status quo – keep current closed area in place (No Action)
2. Steve Fosmark proposal (i.e., have turtle “conservation” zone and allow fishing north and south of the zone); includes 100% obs coverage in northern area and status quo coverage (20%) in southern area, and shift in northern boundary of southern area  
  
(Note: This alt. requires a new BiOp for southern area because of boundary shift; the HMSMT cannot analyze this proposal and re-do the BiOp for southern area in time for 2006 fishery)
3. Steve Fosmark proposal, without shift in northern boundary of southern area
4. Removal of current closed area

### Turtle Conservation Measures (Pick 1)

(Note: These measures apply to the area currently closed)

5. Mortality limit for leatherback turtles (fishery would revert to status quo when limit is reached), 100% observer coverage (i.e., cannot fish unless carry observer onboard), real-time reporting requirement
  - a. Turtle mortality cap = 1
  - b. Turtle mortality cap = 3
  - c. Turtle mortality cap = 6
  - d. Turtle mortality cap = 9
6. Limit on number of sets (fishery would revert to status quo when limit is reached), 100% observer coverage (i.e., cannot fish unless carry observer onboard)
  - a. Set limit = 500
  - b. Set limit = 750
  - c. Set limit = 1,500

### Management Response

Alt. 5 closes fishery in northern area when turtle cap is reached. Under alt. 6, the number of sets is used as a proxy for the estimated amount of turtle mortalities; if the amount of turtle mortalities exceeds the amount estimated in the ITS, then triggers re-consultation.

### Long-Term Management (Optional)

7. Direct HMSMT to develop plan amendment for long-term DGN effort limitation program (concurrent with EFP to implement fishery in the interim)

Revised 5 August 2005 (correction of Figure 4.)

**Background information on leatherback turtle (*Dermochelys coriacea*) takes in the large-mesh drift gillnet fishery off California, with comments on the calculation of leatherback turtle catch per unit effort (CPUE).**

Jim Carretta  
Protected Resources Division  
Southwest Fisheries Science Center  
National Marine Fisheries Service  
8604 La Jolla Shores Drive  
La Jolla, CA 92037

One of the Highly Migratory Species Management Team (HMSMT) agenda items for 2005 is to examine the potential impact of re-opening portions of the large-mesh swordfish and thresher shark drift gillnet fishery that have been under area closures since 2001 to protect leatherback sea turtles. In their May 2005 meeting in La Jolla, the HMSMT requested that the Protected Resources Division calculate leatherback CPUE for different regions within this fishery; specifically the area south of Point Sur, California (latitude 36 degrees), and another region north of 40 degrees latitude. Jim Carretta cautioned that relatively low take rates of leatherbacks could be found on small geographic scales purely by chance (through geographic overstratification) because leatherback takes are rare events in this fishery (23 observed in approximately 7,000 sets through early 2004)<sup>1</sup>. It is inadvisable to calculate CPUE values for such small regions as a tool for projecting future takes. Leatherback turtles are, however, more common north of Point Conception, California (latitude 34.45 degrees), thus, separate CPUE calculations for areas north and south of Point Conception are more appropriate, as these two regions coincide with major differences in oceanographic water masses, currents, and fauna. As such, they better represent “ecological strata”, rather than geographical strata.

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<sup>1</sup> Peter Dutton of the Protected Resources Division’s Sea Turtle Program noted at the May 2005 meeting that it was important to include biological information such as leatherback foraging habitat preferences and known migratory pathways in any decision-making regarding the relaxation of area closures or the determination of potential fishery takes. He further emphasized that foraging areas and migratory pathways may vary inter-annually, depending on prevailing oceanographic conditions.

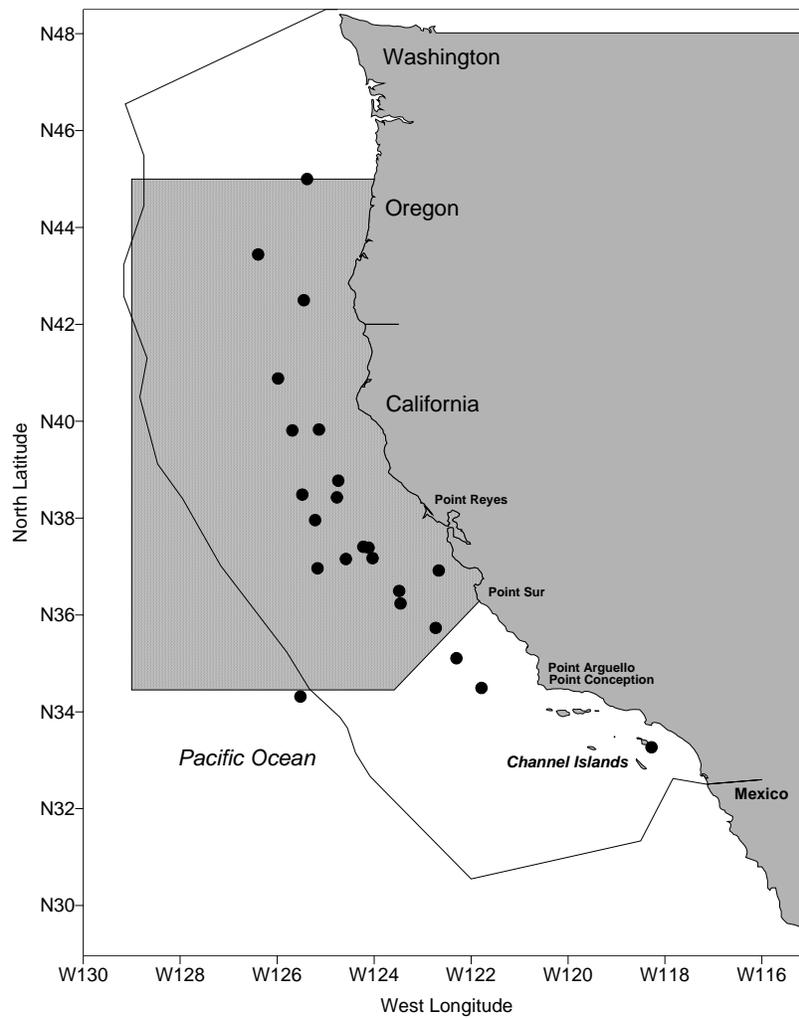
Of the 23 observed leatherback takes, only 2 occurred south of Point Conception, CA (N 34° 27' latitude) from 4,090 observed sets (~0.5 takes/1000 sets). The two takes observed south of Point Conception were in December and January. In comparison, there were 21 observed takes from 2,871 observed sets north of Point Conception (~7 takes/1000 sets). Fourteen of the 21 observed takes occurred in October; the remaining takes were in September (4), November (2) and December (1). Of all 23 takes, thirteen turtles were retrieved dead, nine alive, and one was recorded as 'unknown'. The location of all 23 observed leatherback takes in this fishery are shown in Figure 1. The location of observed sets for the period 1990 – January 2004 are shown in Figure 2.

To examine leatherback CPUE in the drift gillnet fishery, a bootstrap analysis was performed on the actual set data to generate a distribution of “pseudo-CPUE values” for the regions south and north of Point Conception,. Simply, sets were randomly selected with replacement from the actual set data until the number of random sets was equal to the number of observed sets. This selection of random sets constituted “one bootstrap sample”. A CPUE value was calculated from each bootstrap sample and this was repeated 1,000 times, resulting in a distribution of 1,000 “pseudo-CPUE values”. Confidence intervals (CI) for this distribution were obtained by using the percentile method, where the lower 95% CI represents the 2.5<sup>th</sup> percentile of the bootstrap distribution and the upper 95% CI represents the 97.5<sup>th</sup> percentile. The actual set data and bootstrap CPUE values are included in the Excel file “LeatherbackCPUE.xls” (available upon request from Jim.Carretta@noaa.gov).

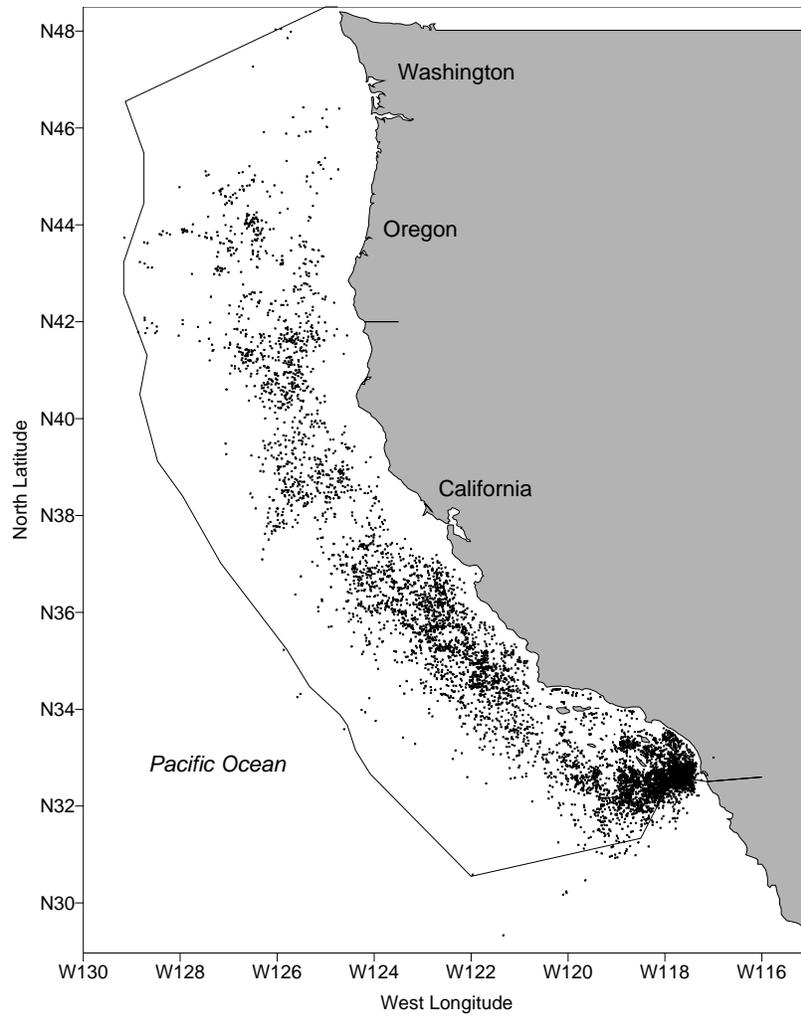
For the area south of Point Conception, the bootstrap mean CPUE is 0.5 leatherbacks per 1,000 sets, with a 95% CI of zero to 1.4 leatherbacks per 1,000 sets (Figure 3). North of Point Conception, the bootstrap mean CPUE is 7.7 leatherbacks per 1,000 sets, with a 95% CI of 4.5 to 10.8 leatherbacks per 1,000 sets (Figure 4). These CPUE values merely reflect the historical take rates in the fishery over large areas, and future CPUE of leatherbacks cannot be “predicted” based on these historical CPUE data. Much new information about the foraging areas and migratory pathways of leatherback turtles has been collected in this region since the area closure was implemented in 2001<sup>2</sup>. This biological information should be incorporated in determining which, if any, areas to re-open in this fishery, as historical CPUE values examined alone are not informative enough for good decision-making.

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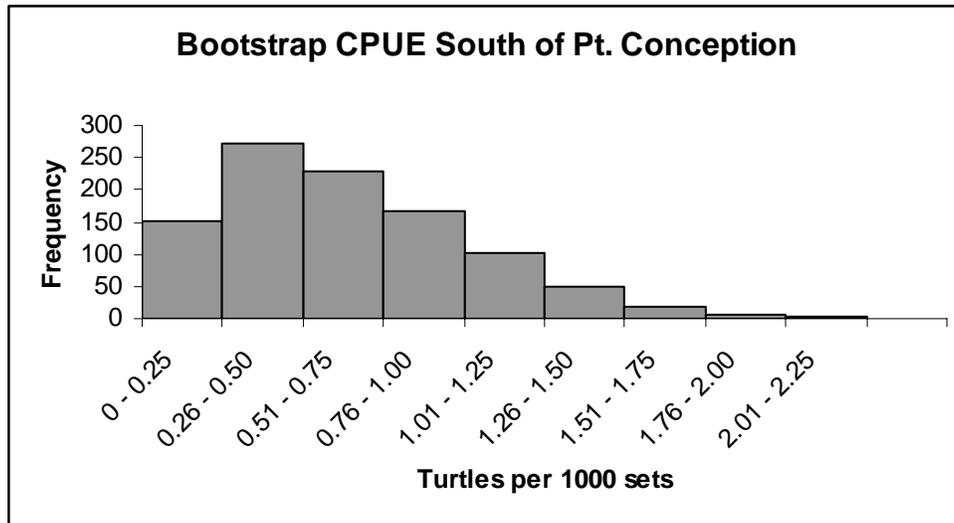
<sup>2</sup> Peter Dutton, Southwest Fisheries Science Center, Marine Turtle Program, 8604 La Jolla Shores Drive, La Jolla, CA 92037.



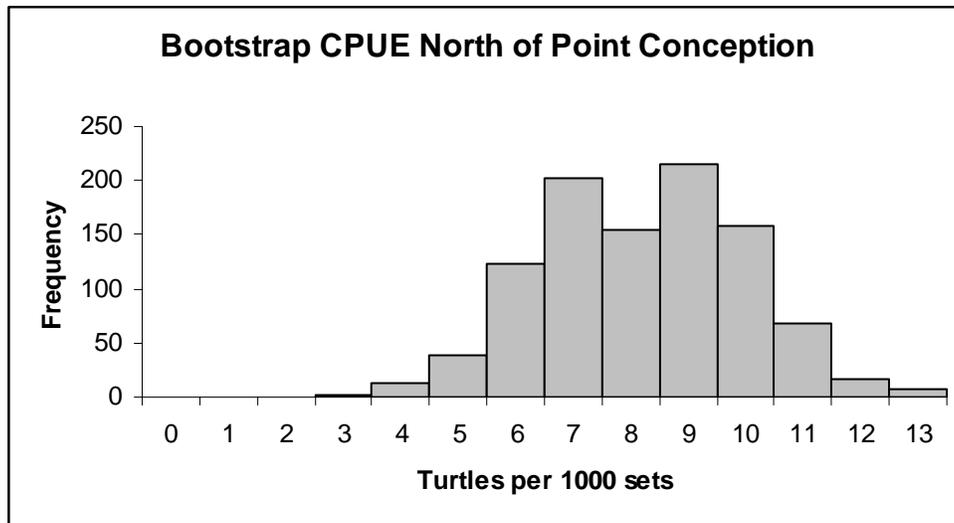
**Figure 1.** Location of observed leatherback sea turtle takes ( $n = 23$ ) in the large-mesh drift gillnet fishery for swordfish and thresher shark, 1990 – 2004. The shaded region represents the area closure implemented in 2001 to protect leatherback sea turtles.



**Figure 2.** Locations of all observed sets ( $n = 6,961$ ) in the large-mesh swordfish and thresher shark drift gillnet fishery, 1990 – January 2004.



**Figure 3.** Distribution of bootstrap-derived leatherback CPUE values for the area south of Point Conception, California.



**Figure 4.** Distribution of bootstrap-derived leatherback CPUE values for the area north of Point Conception, California.

# HMS FMP 2005 SAFE Report Revised Outline

1. Introduction (Kit Dahl)
2. Description of the Fisheries (Michele Culver, Steve Crooke and Steve Wertz, and Jean McCrae, compiled by Steve Crooke)
  - 2.1 Washington (Commercial and Recreational)
  - 2.2 Oregon (Commercial and Recreational)
  - 2.3 California (Commercial and Recreational)
3. Regulations Currently in Place (Liz Petras and Craig Heberer)
  - 3.1 International
  - 3.2 Domestic
4. Statistical Summaries of Catch, Revenue and Effort (Dale Squires, et al.)
  - 4.1 Information and Sources
  - 4.2 Tables and Figures

Item	Description	Display
1	Pacific coast commercial HMS landings, revenues, and average prices by species, 2003-2004	Table
2	Pacific coast commercial HMS landings, revenues, and average prices by fishery, 2003-2004	Table
3	Pacific coast commercial HMS landings and revenues by species, 1981-2004 (Include 3 tables: landings, real revenues, and nominal revenues. Plot only HMS sum totals.)	Line figure
4	Pacific coast commercial landings of albacore, other tunas, swordfish, and sharks, 1981-2004	Histogram
5	Pacific coast commercial revenues for albacore, other tunas, swordfish, and sharks, 1981-2004	Line figure
6	Pacific coast commercial HMS landings by fishery, 1981-2004	Histogram
7	Pacific coast commercial HMS revenues by fishery, 1981-2004	Histogram
8	Pacific coast commercial tuna landings by fishery, 1981-2004	Histogram
9	Pacific coast commercial tuna revenues by fishery, 1981-2004	Histogram
10	Species composition of the commercial tuna landings, 1981-2004	Histogram
11	Species composition of the commercial tuna revenues, 1981-2004	Histogram
12	Pacific coast commercial swordfish landings by fishery, 1981-2004	Histogram
13	Pacific coast commercial swordfish revenues by fishery, 1981-2004	Histogram
14	Species composition of the commercial shark landings, 1981-2004	Histogram
15	Species composition of the commercial shark revenues, 1981-2004	Histogram
16	Number of commercial vessels by fishery, 1981-2004	Line figure
17	Number of commercial landings by fishery, 1981-2004 (if possible for this SAFE; otherwise include in next SAFE)	Line figure
18	Recreational Private Sport Fishing Fleet	
a.	Average weight of swordfish weighed in at the Tuna Club, Balboa Club, and San Diego Marlin Club, 1909-2002	Line figure
b.	Southern California Marlin Catch/Release	Line figure
c.	Catch rates for striped marlin in Southern California, Baja California, and Hawaii, 1970-2003	Line figure
d.	Catch/Landings (no. of fish/mt) by species, 1981-2004	Line figure
e.	Average weight of striped marlin weighed in at selected Southern California Angling Clubs, 1903-2001	Line figure

Item	Description	Display
By State		
	Albacore Surface Hook-and-Line Fishery by Area	
19	Washington	
a.	Number of vessels, 1981-2004	Line figure
b.	Number of landings, 1981-2004	Line figure
c.	Landings (mt), 1981-2004	Line figure
d.	Revenues, 1981-2004	Line figure
20	Oregon	
a.	Number of vessels, 1981-2004	Line figure
b.	Number of landings, 1981-2004	Line figure
c.	Landings (mt), 1981-2004	Line figure
d.	Revenues, 1981-2004	Line figure
21	California	
a.	Number of vessels, 1981-2004	Line figure
b.	Number of landings, 1981-2004	Line figure
c.	Landings (mt), 1981-2004	Line figure
d.	Revenues, 1981-2004	Line figure
	Recreational: Charter/Party Boat	
22	California	
a.	Albacore hours	Line figure
b.	Number of vessels targeting HMS in California waters, 1981-2004	Line figure
c.	Number of angler-hours, 1981-2004	Line figure
d.	Number of fish by species, 1981-2004	Histogram / Line figure
23	Pacific coast HMS landings by species as a share of Pacific-wide landings, 1999-2003	
<b>5. Status of Stocks (Suzanne Kohin)</b>		
	5.1 Introduction, including current assessment and management procedures and control rules	
	5.2 Review processes (assessment reliability)	
	5.3 Recent assessment table	
	5.4 By Species Status	
	5.4.1 Albacore	
	5.4.2 Yellowfin	
	5.4.3 Skipjack	
	5.4.4 Bigeye	
	5.4.5 Bluefin	
	5.4.6 Swordfish	
	5.4.7 Striped Marlin	
	5.4.8 Common thresher	
	5.4.9 Bigeye thresher	
	5.4.10 Pelagic thresher	
	5.4.11 Shortfin mako	
	5.4.12 Blue shark	
	5.4.13 Dorado	
<b>6. Research and Data Needs, and Monitoring Reports (Michelle Culver)</b>		
	6.1 Observer Coverage	
	6.2 Evaluation of Protected Species Interactions (Turtles, Cetaceans, and others)	