

Highly Migratory Species Plan Development Team Report to the Pacific Fishery Management Council - June 2003

The HMS Plan Development Team (PDT) met April 29-30, 2003 during joint meetings with the HMS Advisory Panel, and the HMS Subcommittee of the Scientific and Statistical Committee, at Hubbs Sea World Conference Center, San Diego, CA. After considering the statistical analysis presented by Jim Carretta (NMFS, SWFSC, La Jolla, CA), the team decided to recommend to the Council to stay with present Alternative #2, but

1. shift the longitudinal boundary line from 150°W inshore to 140°W to minimize interactions with sea turtles, particularly loggerheads,
2. immediately begin the limited entry process, and
3. increase observer coverage in this fishery to at least 20%.

Rationales are:

1. Highest turtle take rates are observed in the most western portion of the 'east' area.
2. East of 140°W, no Ridleys taken and Loggerhead takes significantly lower than to the west (out to 150°). See Attachment A.
3. Leatherback takes are similar east and west of 140 °W, but because of few encounters, any difference is not statistically significant.
4. 140 °W is thought to be the boundary of economic feasibility for CA-based longliners.
5. Present observer coverage and duration is inadequate for evaluating extremely rare encounter events with protected resources.

Based on the most current data available, the PDT was unable to propose specific measures for protecting leatherback turtles, since data are too few for meaningful analysis in the eastern area and analysis of the fishery impacts of a closure in the species' cone-shaped migratory corridor could not be prepared prior to the June meeting. It was noted that California-based fishery take rates are based on only 2 interactions on 6 observed trips, with high accompanying CVs. It is assumed that on submission of the Plan to the Department of Commerce, NMFS will enter into consultation concerning the Pacific leatherback sea turtle. If jeopardy is found for this species, with swordfishing allowed east of 140°W, the team recommends that NMFS include in the RPAs a seasonal closure defined by the cone-shaped migratory route of leatherbacks (as per recent satellite tagging data, Attachment B).

The team recommends the following changes in the High Seas Longline Section of Chapter 8:

Outside the EEZ:

Alternative 1 (No Action): No action (status quo).

States' regulations would apply to longline fishing and landings and federal regulations may be developed under other authorities. Vessels would have to obtain HSFCA permits and file HSFCA logbooks, as is now the case.

Alternative 2 (Proposed Action): Applies to West Coast - based longline vessels *selected* conservation and management measures currently applied to Hawaii-based longline vessels to control sea turtle and seabird interactions and to monitor the fishery. Allows continued targeting of swordfish east of 140° W longitude, but not west of that line (to minimize sea turtle interactions). Hawaii management measures adopted listed below under Alternative 3, except measures 2-7, would apply to vessels fishing east of

140°W. All measures (1-9) would apply to vessels fishing west of 140°W. The adopted regulations include measures for avoidance, release and handling of turtles and seabirds, and requirements for attending protected species workshops and for Vessel Monitoring Systems. Except for the two-month closure indicated in measure 4, allows targeting of non-swordfish species (other than 'prohibited' species, Chapter 8 section 8.4.7) throughout the high seas. Additionally, this alternative calls for immediate action on implementing a limited entry program, an increase in observer coverage to at least 20%, and close monitoring of the fishery with regular status reports provided in the annual SAFE report. Recommends an area-season closure, if needed, in the migratory pathway of leatherback turtles (Oct-Dec).

Rationale: A viable West Coast fishery for swordfish could continue net national and regional benefits if such fishing can be non-harmful to protected and other non-targeted species. Closure to swordfish targeting west of 140° W longitude should significantly reduce turtle interactions in this fishery, but close and adequate fishery monitoring is needed, and quick action is required to control further expansion of this fishery.

Alternative 3: Applies to West Coast-based longline vessels *all* conservation and management measures applied to Hawaii-based longline vessels to control sea turtle and seabird interactions and to monitor the fishery. Future measures are to be developed by PFMC in cooperation with other regions/Councils.

Under this alternative, longline vessels operating on the high seas outside the EEZ would be subject to the same controls that apply to Hawaii-based longline fishing vessels holding longline permits. These are as follows:

1. Line clippers, dip nets, and bolt cutters meeting NMFS' specifications must be carried aboard each vessel for releasing turtles (specifications vary by vessel size);
2. A vessel may not use longline gear to fish for or target swordfish (*Xiphias gladius*) north of the equator (0° latitude); landing or possession of more than 10 swordfish per trip is prohibited.
3. The length of each float line possessed and used to suspend the main longline beneath a float must be longer than 20 m (65.6 ft or 10.9 fm).
4. From April 1 through May 31, a vessel may not use longline gear in waters bounded by 0° latitude and 15° N latitude, and 145° W longitude and 180° W longitude;
5. No light stick (any light emitting device for attaching underwater to the longline gear) may be possessed on board a vessel;
6. When a longline is deployed, no fewer than 15 branch lines may be set between any two floats (10 branch lines if using basket gear);
7. Longline gear must be deployed such that the deepest point of the main longline between any two floats, i.e., the deepest point in each sag of the main line, is at a depth greater than 100 m (328.1 ft or 54.6 fm) below the sea surface;
8. While fishing for management unit species north of 23° N latitude, a vessel must:
 - Maintain a minimum of two cans (each sold as 0.45 kg or 1 lb size) containing blue dye on board the vessel during a fishing trip;
 - Use completely thawed bait to fish for Pacific pelagic management unit species;
 - Use only bait that is dyed blue of an intensity level specified by a color quality control card issued by NMFS;
 - Retain sufficient quantities of offal for the purpose of discharging the offal strategically in an appropriate manner;

- Remove all hooks from offal prior to discharging the offal;
 - 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;
 - Use a line-setting machine or line-shooter to set the main longline (unless using basket gear);
 - Attach a weight of at least 45 g to each branch line within 1 m of the hook; and
 - Remove the bill and liver of any swordfish that is incidentally caught, sever its head from the trunk and cut it in half vertically, and periodically discharge the butchered heads and livers overboard on the opposite side of the vessel from which the longline is being set or hauled.
9. Adopt measures for the proper release and handling of turtles and seabirds, the requirement for vessel operators to attend a protected species workshop each year, and the requirement for Vessel Monitoring Systems (VMS). VMS is required because the proposed action involves area-specific regulations.

At the June 2003 Council Meeting, the PDT will present an analysis of fleet economic impacts (RIR/RFA) under the proposed ‘modified’ Alternative # 2, which would prohibit swordfish targeting west of 140°W longitude. It is expected that closure of the area west of 140°W longitude may significantly lower total existing swordfish targeting effort, as the fleet will no longer be able to follow swordfish into the area between 140°W longitude and 150°W longitude in the first quarter of the year.

The PDT notes that the pelagic longline fishery is an existing fishery, that it is not currently subjected to the Western Pacific Fishery Management Council recommendations, and that there are impacts of imposing regulations.

The PDT recommends that the Council begin a limited entry program for the west-coast based pelagic longline fishery to be adopted as an amendment within the next 12-18 months. The PDT is willing to follow Council guidance, and in conjunction with the Advisory Subpanel, to help develop regulations that are required in an amendment for limited entry.

The PDT also recommends a common Biological Opinion on sea turtles that encompasses the areas of both the Pacific Fishery Management Council and the Western Pacific Fishery Management Council. Such an approach would be more unified, consistent and biologically realistic, since the same stocks interact with fisheries in both regions, sometimes in the same areas. Such a single Biological Opinion would encompass the entire stock of sea turtles and the total, often fluid, fishing effort on swordfish and sea turtle mortality, provides a unified, consistent scientific methodology with the same or similar assumptions and methods to support any quantitative and qualitative conclusions concerning stock-wide impacts of fishery interactions and recommendations for mitigation. A single, area-wide and formal Biological Opinion, with its best available and unbiased science, would also raise the confidence of all sectors of the public in the outcome of the Biological Opinion.

Background. (1) The Western Pacific Fishery Management Council will, at its 118th meeting, discuss changes to the current management regime for the Hawaii-based pelagic longline fishery. The recent Biological Opinion (BO), published by NMFS on November 15, 2002, found that the Hawaii-based longline fishery under its current management regime no longer jeopardizes the continued existence of loggerhead, leatherback, and green sea turtles. The Council will consider whether changes can be made to the Northern and Southern Area Closures, that result in similar levels of conservation for sea turtles, but which reduce the economic burden on the fishing industry. The Council may explore options to permit some shallow set swordfish longlining between the equator and some specified latitude, should it be shown that this would not result in major increases in longline-turtle interactions.

(2) The sea turtles are a common-pool, transnational migratory resource, whose migrations traverse the regions of both Councils. As such, this common-pool resource is subject to the combined fishing effort and mortality from all U.S. vessels taking this common resource, regardless of their home port or gear type. A common BO that assesses the collective, total impact of these mortalities on sea turtle species is needed in order to determine permissible levels of takes. The common BO must consider the fluid movement of each Council's fleets into the fishery areas of the other and mortalities from foreign fleets in order to assess the fishing impacts of the U.S. fleets on the turtle species.

A common BO focusing on species impacts will have to address the fishery allocation of "Turtle Mortality Limits (TMLs)," while simultaneously recognizing the fluid movement of fishing effort into common fishing areas for the two Councils. (Separate BOs by each area implicitly allocates TMLs between the areas, but based on historical effort patterns that may not reflect current effort of fleets.) Without explicit area or fleet allocation, a "race to fish" is likely to ensue in order to catch the maximum possible swordfish before the TML is reached. Even within the Pacific Fishery Management Council area, a separate BO will likely bring a "race to fish" between the pelagic longline and drift gill net gears. An allocation of TMLs by fleet may thus be required. Allowing transferability of TMLs between fleets would allow a market mechanism to solve the allocation issue, with TMLs ultimately residing with the fleet that has the highest demand for them.

Biological Opinions have been made one at a time as the situations have arisen and have focused on the marginal increments to total mortality. Any new Biological Opinion should consider the allowable takes that would be non-jeopardizing in the existing fisheries and any effort shifts that have occurred.

The PDT also notes that the discussion on sea turtles and the Biological Opinion has focused on the pelagic longline fishery for swordfish. However, even in the absence of swordfish fishing using pelagic longlines, a pelagic longline fishery for tunas still remains viable and should be considered independently of the swordfish fishery.

The PDT also notes that there have been preliminary considerations of transferring all or part of the northern portion of the pelagic longline swordfish activities to Dutch Harbor, Alaska, which

would be under the jurisdiction of the North Pacific Fishery Management Council.

The PDT notes that the drift gill net fishery has already adopted measures to reduce sea turtle takes.

Team Recommendations:

- 1. Shift line to 140°W with appropriate management measures applying east and west of this line.**
- 2. Direct HMS Plan Development Team to initiate a plan amendment process for limited entry of the pelagic longline fishery.**
- 3. Request NOAA Fisheries conduct a common Biological Opinion with the Western Pacific Fishery Management Council.**

ATTACHMENT A

Significance of Differences in Observed Turtle Take Rates East and West of 140°W Longitude

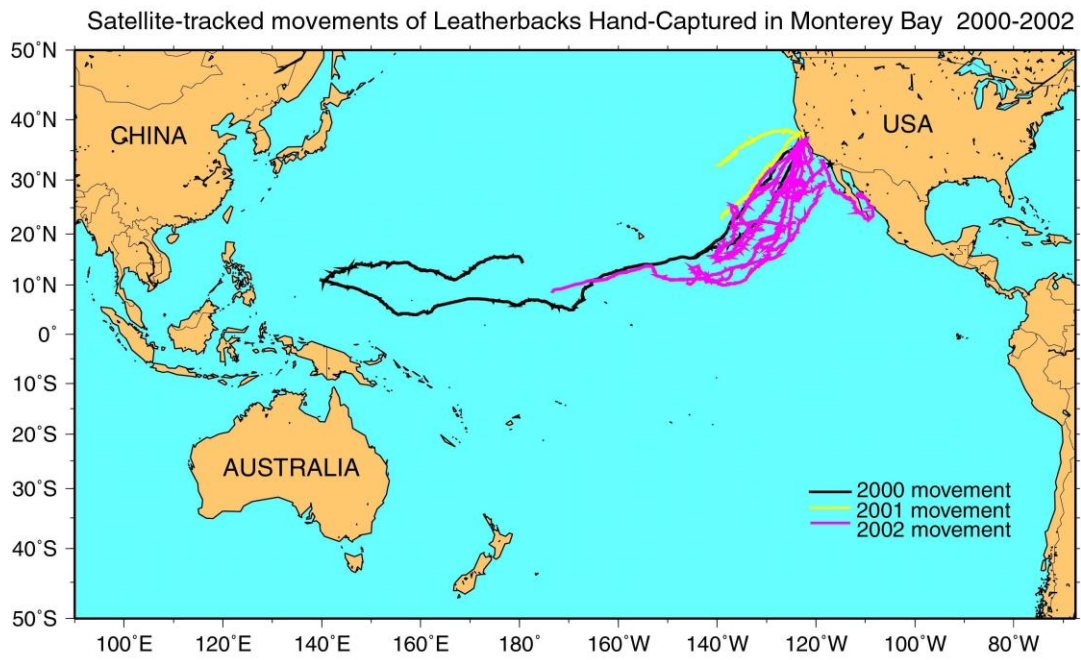
The results for three turtle species east and west of 140°W (all quarters) are given below. There were 354 sets to the west and 232 set to the east.

<u>Turtle sp.</u>	<u>Take</u>	<u>p</u> ¹	<u>West Interval</u> ²	<u>East Take</u>	<u>p</u>	<u>I</u> <u>n</u> <u>t</u> <u>e</u> <u>r</u> <u>v</u> <u>a</u> <u>l</u>
Loggerhead	48	0.136	0.110-0.161	8	0.034	0 . 0 1 7 - 0 . 0

¹ p = Take Rate

²Least Significant Difference Interval

ATTACHMENT B



Leatherback Turtle Satellite Tracking Data (Dutton, Benson & Eckert, unpub. 2003)

ATTACHMENT C
RFA Analysis of Restricting Effort to East of 140°W

Landings summaries for West Coast-Based pelagic longline vessels, 2000-2001.

Swordfish Landings (mt)

	Quarter				
Year	1	2	3	4	Grand Total
2000	658	12	164	1,037	1,871
2001	844	457	18	437	1,756
Grand Total	1,502	469	182	1,474	3,627

Source: PacFIN

Swordfish Revenues (2001 \$)

	Quarter				
Year	1	2	3	4	Grand Total
2000	\$2,983,533	\$64,322	\$904,345	\$4,229,420	\$8,181,620
2001	\$3,376,479	\$1,545,886	\$92,420	\$1,550,305	\$6,565,090
Grand Total	\$6,360,012	\$1,610,208	\$996,766	\$5,779,725	\$14,746,710

Source: PacFIN

Vessels

	Quarter				
Year	1	2	3	4	Total Vessels
2000	27	2	17	44	49
2001	34	24	9	17	38
Grand Total	61	26	26	61	87

Source: PacFIN

Trips

	Quarter				
Year	1	2	3	4	Grand Total
2000	45	2	18	73	138
2001	50	28	10	29	117
Grand Total	95	30	28	102	255

Source: PacFIN

Observed Hooks, by Quarter for 2002, East and West of 140°W for West Coast-Based Longline Fleet (% of Total vis-à-vis 140°W in Parentheses)

Quarter	West of 140°W	East of 140°W	Total
1	13,601 (95.1%)	704 (4.9%)	14,305 (100%)
2	17,255 (84.6%)	3,138 (15.4%)	20,393 (100%)
3	0 (0%)	3,016 (100%)	3,016 (100%)
4	28,018 (31.1%)	62,041 (68.9%)	90,059 (100%)

Source: West-Coast-Based Observer Data

Note: Rows sum to 100%

Observed Hooks, by Quarter for 2002, East and West of 140°W for West Coast-Based Longline Fleet (% of Total by Quarter in Parentheses)

Quarter	West of 140°W	East of 140°W
1	13,601 (23.1%)	704 (1.0%)
2	17,255 (29.3%)	3,138 (4.6%)
3	0 (0%)	3,016 (4.4%)
4	28,018 (47.6%)	62,041 (90.0%)
Total	58,874 (100%)	68,899 (100%)

Source: West-Coast-Based Observer Data

Note: Columns sum to 100%

Estimated Short-Run Swordfish Longline Fleet Profit East and West of 140°W by Quarter, 2002 (\$2001) (% of Total vis-à-vis 140°W in Parentheses)

Location	Quarter				4 Total	Total
	1	2	3	4		
West of 140W	2,083,998 (55.9%)	818,716 (22.0%)	0 (0%)	824,133 (22.1%)	3,726,847 (100%)	
East of 140W	107,870 (5.0%)	148,892 (6.9%)	76,154 (3.5%)	1,824,899 (84.6%)	2,157,814 (100%)	
Total	2,191,867	967,608	76,154	2,649,032	5,884,661	

Note: Observed effort level expanded by factor of 17.5

Short-run cost and effort data from observed trips.

Revenue data from PacFIN

Rows sum to 100%

Estimated Short-Run Swordfish Longline Fleet Profit East and West of 140°W by Quarter, 2002 (\$2001) (% of Total by Quarter in Parentheses)

Location	Quarter				4 Total	Total
	1	2	3	4		
West of 140W	2,083,998 (95.1%)	818,716 (84.6%)	0 (0%)	824,133 (31.1%)	3,726,847	
East of 140W	107,870 (4.9%)	148,892 (15.4%)	76,154 (100%)	1,824,899 (68.9%)	2,157,814	
Total	2,191,867 (100%)	967,608 (100%)	76,154 (100%)	2,649,032 (100%)	5,884,661	

Note: Observed effort level expanded by factor of 17.5

Short-run cost and effort data from observed trips.

Revenue data from PacFIN

Columns sum to 100%

Estimated Short-Run Swordfish Longline Fleet Profit Relative to Current Level of Effort by Quarter: Only Swordfish Fishing, East of 140°W (\$2001)

Effort Level / Quarter	1	2	3	4	Total
150%	161,804	223,338	114,231	2,737,349	3,236,722
140%	151,017	208,449	106,615	2,554,859	3,020,940
130%	140,230	193,560	99,000	2,372,369	2,805,159
120%	129,444	178,670	91,384	2,189,879	2,589,377
110%	118,657	163,781	83,769	2,007,389	2,373,596
100%	107,870	148,892	76,154	1,824,899	2,157,814
90%	97,083	134,003	68,538	1,642,409	1,942,033
80%	86,296	119,114	60,923	1,459,919	1,726,252
70%	75,509	104,224	53,308	1,277,429	1,510,470
60%	64,722	89,335	45,692	1,094,939	1,294,689
50%	53,935	74,446	38,077	912,450	1,078,907

Note: Current level of effort = 100%. E.g. 150% effort = 1.5 x current effort.

Observed effort level expanded by factor of 17.5

Short-run cost and effort data from observed trips.

Revenue data from PacFIN.

No swordfish fishing west of 140W and only swordfish fishing east of 140°W

Assumes no alternative types of fishing (e.g. tuna fishing)

Change in Estimated Short-Run Swordfish Longline Fleet Profit Relative to Current Level of Effort With Fishing Restricted to East of 140°W by Quarter (\$2001)

Effort Level / Quarter	1	2	3	4	Total
150%	-2,030,063	-744,270	38,077	88,317	-2,647,940
140%	-2,040,850	-759,160	30,461	-94,173	-2,863,721
130%	-2,051,637	-774,049	22,846	-276,663	-3,079,503
120%	-2,062,424	-788,938	15,231	-459,153	-3,295,284
110%	-2,073,211	-803,827	7,615	-641,643	-3,511,066
100%	-2,083,998	-818,716	0	-824,133	-3,726,847
90%	-2,094,785	-833,606	-7,615	-1,006,623	-3,942,628
80%	-2,105,572	-848,495	-15,231	-1,189,113	-4,158,410
70%	-2,116,359	-863,384	-22,846	-1,371,602	-4,374,191
60%	-2,127,146	-878,273	-30,461	-1,554,092	-4,589,973
50%	-2,137,933	-893,162	-38,077	-1,736,582	-4,805,754

Note: Current level of effort = 100% (status quo)

Observed effort level expanded by factor of 17.5

Short-run cost and effort data from observed trips.

Revenue data from PacFIN

Total change is increase (effort > 100% current) or decrease (effort < 100% current) in short-run profit east of 140W compared to 100% current short-run profit plus short-run profit loss west of 140W.

Assumes no alternative type of fishing (e.g. tuna fishing)

Percentage Change in Estimated Short-Run Swordfish Longline Fleet Profit Relative to Current Level of Effort With Fishing Restricted to East of 140°W by Quarter (\$2001)

Effort Level / Quarter	1	2	3	4 Total	
150%	-61.7%	-51.3%	33.3%	2.2%	-30.0%
140%	-66.5%	-56.0%	28.6%	-2.5%	-34.8%
130%	-72.0%	-61.5%	23.1%	-8.0%	-40.3%
120%	-78.4%	-67.9%	16.7%	-14.4%	-46.7%
110%	-86.0%	-75.5%	9.1%	-22.0%	-54.2%
100%	-95.1%	-84.6%	0.0%	-31.1%	-63.3%
90%	-106.2%	-95.7%	-11.1%	-42.2%	-74.4%
80%	-120.1%	-109.6%	-25.0%	-56.1%	-88.3%
70%	-137.9%	-127.5%	-42.9%	-74.0%	-106.2%
60%	-161.7%	-151.3%	-66.7%	-97.8%	-130.0%
50%	-195.1%	-184.6%	-100.0%	-131.1%	-163.3%

Note: Current level of effort = 100% (status quo)

Observed effort level expanded by factor of 17.5

Short-run cost and effort data from observed trips.

Revenue data from PacFIN

Total change is increase (effort > 100% current) or decrease (effort < 100% current) in short-run profit east of 140W compared to 100% current short-run profit plus short-run profit loss west of 140W.

Assumes no alternative type of fishing (e.g. tuna fishing)