

**Pelagic Longline Take Reduction Team Meeting
December 1-3, 2015 – Virginia Beach, Virginia**

Key Outcomes Memorandum

I. OVERVIEW

NOAA's National Marine Fisheries Service (NMFS) convened the Pelagic Longline Take Reduction Team (PLTRT or Team) December 1-3, 2015, in Virginia Beach, Virginia. (See **Attachment 1** for a copy of the agenda.) The meeting focused on the following objectives:

- Provide updates on *pilot whale* abundance, distribution and mortality data
- Take stock of recent and upcoming Take Reduction Plan (TRP or Plan)-related research activities
- Provide updates on TRP implementation to-date, highlighting compliance with current measures, Plan effectiveness and any relevant constraints; consider other relevant programs and policies
- Consider implications of recent data, research results and TRP implementation for attainment of Marine Mammal Protection Act (MMPA) TRP goals; identify new, alternative or additional bycatch reduction measures (both regulatory or non-regulatory)
- Provide opportunities to develop and refine new options

This summary report, prepared by the meeting facilitators, provides an overview of the meeting's key outcomes. It is presented in four main sections: (1) Overview; (2) Participants; (3) Meeting Materials; (4) Key Outcomes; and (5) Next Steps.

II. PARTICIPANTS

The meeting was attended by 17 of the 21 Team members. Team members in attendance were: Terri Beideman, Brendan Cummings, Jane Davenport, Laura Engleby, Damon Gannon, Kerry Harrington, Dewey Hemilright, David Laist, Kristy Long, Beth Lowell, Bill McIntyre, Bill McLellan, Fentress "Red" Munden, Jeff Oden, Marty Scanlon, Sharon Young and Tim Werner. One Team member, David Kerstetter, participated briefly by teleconference.

L. Engleby with NMFS Southeast Region (Protected Resources Division) convened the meeting jointly with PLTRT Program Coordinator Erin Fougères. Staffers from the Southeast Region, the Southeast Fisheries Science Center, the Southeast Observer Program, NMFS headquarters (Protected Resources, Office of General Counsel), NMFS Highly Migratory Species Program, NOAA Office of Law Enforcement, the U.S. Coast Guard and others attended to support the deliberations. One Team alternate, Andrew Read, attended as an observer, as did several members of the public. Scott McCreary with CONCUR, Inc. and Bennett Brooks with the Consensus Building Institute served as the neutral facilitators.

III. MEETING MATERIALS

Numerous meeting materials were provided to support the group's deliberations. Much of the material was provided prior to the meeting, but some documents were distributed at the meeting itself. Presentations were distributed to Team members via email during the meeting itself. Copies of meeting materials can be obtained by contacting E. Fougères at 727-824-5312 or via email at erin.fougeres@noaa.gov.

IV. KEY OUTCOMES

Below is a brief summary of the main topics and issues discussed during the meeting. This summary is not intended to be a meeting transcript. Rather, it provides an overview of the main topics covered, the primary points and options raised in the discussion, and areas of full or emerging consensus.

A. Welcome and Introduction

The meeting kicked off with a brief review of meeting purpose and self-introductions. L. Engleby underscored the need to identify new management measures to reduce bycatch in the pelagic longline fleet, as well reminding participants of the Team's strong history of reaching consensus recommendations. S. McCreary reiterated the primary meeting objectives and provided an overview of the meeting agenda. K. Long next reviewed NMFS' new Take Reduction Team Operating Protocols, which expand previous ground rules and are meant to provide consistency across all Take Reduction Teams. B. Brooks then reminded participants of the Team's informal protocols intended to foster productive dialogue. There were no proposed revisions to either the agenda or operating protocols.

B. Background Briefings

The meeting included a series of briefings and presentations intended to provide Team members with the latest information related to pilot whale bycatch and abundance, fishing practices and related topics such as enforcement, compliance and other recent fisheries management actions including new HMS regulations. Below is a summary of the briefings; presentation materials can be obtained by contacting E. Fougères at 727-824-5323 or via erin.fougeres@noaa.gov. Meeting summaries are available on the web at <http://www.nmfs.noaa.gov/pr/interactions/trt/pl-trt.html>. Discussion related to each of the topics is summarized in the following section.

General Updates

- ***PLTRT Overview.*** E. Fougères provided an overview of PLTRT history, meetings recommendations, as well as key Plan measures. She also reviewed recent Team membership changes, noting the following new members: environmental organizations (Jane Davenport, Defenders of Wildlife); and, fishermen (Martin Scanlon, Kerry Harrington and Bill McIntyre).
- **MMPA Authorizations and Seismic Activity.** Ben Laws with NMFS reviewed key elements (via teleconference) of the Agency's Marine Mammal Protection Act incidental take authorization process, with particular reference to proposed seismic survey activity. The presentation

and follow-on discussion focused on several key points: (1) clarifying key definitions (harassment, negligible impact, etc.) related to incidental take under the Marine Mammal Protection Act (MMPA); (2) outlining statutory and regulatory requirements for allowing incidental takes; and, (3) describing the types of authorizations allowed. B. Laws emphasized that Level A harassment (as defined by the MMPA) equates to acoustic injury, not death. He also noted that the level of takes associated with seismic surveys cited in the North Carolina Coastal Federation paper is from BOEM's EIS, and relates to a much greater level of activity than is currently actually proposed and likely reflects multiple takes of some smaller number of individual animals. In addition to clarifying questions, Team member comments centered on the following:

- Encouraging NMFS to publish a paper correcting errors reported in the NC Coastal Federation paper (“Annual Takes of Marine Mammals in the Mid- and South Atlantic: A Comparison Between Commercial Fishing and Proposed Seismic Surveys for Oil and Gas Exploration and Development” – December 2015);
 - Suggesting there is an anecdotal evidence of a correlation between seismic activity and death, even if there are no formal studies confirming the relationship;
 - Seeking clarification on the environmental review process (BOEM is in the lead); and,
 - Calling for greater coordination between NMFS and the Bureau of Ocean Energy Management to ensure more consistent information on anticipated takes, procedures for limiting seismic activity when marine mammals are present. This was seen as particularly important given that BOEM procedures provide for no further opportunity for public comment/review once oil and gas activities are operational
 - Ongoing frustration that fisheries activities are held to higher (and, therefore, unfair) level of mitigation for marine mammal impacts than the oil and gas industry
- ***Highly Migratory Species.*** Brad McHale with the HMS Program reviewed key elements of the recently adopted Amendment 7, flagging new gear restrictions, electronic monitoring requirements, and research activities. He also discussed increases observer coverage in the Mid-Atlantic Bight in Quarter 1 and 2 of 2016 and 2017 (funding permitted). Several Team members voiced frustration with several aspects of the new rule (e.g., impacts of increased observer coverage, proceeding directly to implementation without first piloting electronic monitoring, increased reporting requirements and more severe penalties). L. Garrison noted that the future bycatch estimates will need to account for any vessel exclusions tied to Amendment 7 implementation.
 - ***Enforcement/Compliance.*** There were several brief presentations related to Plan enforcement and compliance. K. Moore with the U.S. Coast Guard noted that they have participated with the Office of General Counsel (OLE) in two recent pulse operations; neither resulted in issuance of any violations. Regular boardings resulted in one violation for failing to report fishing activity within the Cape Hatteras Special Research Area (CHSRA). Joe Wilson with OLE underscored his office's willingness and ability to support Plan implementation. Finally, Ken Keene with the Southeast Observer Program noted there was strong compliance with the CHSRA call-in requirement, though no observers have been sent out due to funding limitations. He also noted that most vessels appear to be complying with the 20-nautical mile mainline length rule, though many vessels are now doing multi-sets (which he characterized as “stringing together two sets each of which is below the 20-

nautical mile limit”.)

PLTRP-Specific Updates

- ***Pilot whale abundance, bycatch and mortality estimates and fishery trends.*** L. Garrison provided detailed information on trends related to pilot whale abundance, bycatch and mortality estimates, as well as a quick synopsis of recent fishery trends. (A more detailed review of mainline length and gear characteristics is provided elsewhere.) Key presentation points included the following:
 - The 2014 mortality and serious injury estimate for short-finned pilot whales in the draft 2015 Stock Assessment Report (SAR) is 233.9, moving the five-year average (2010-2014) to 192 animals. This level exceeds PBR (or potential biological removal) of 159 animals. During the first three quarters of 2015, there had been very low numbers of interactions observed, suggesting that the 2015 estimate of total take may be lower than that of 2014. L. Garrison noted that there is an apparent cyclic pattern in bycatch rates with a period of about 6 years that is as yet unexplained.
 - There was a high pilot whale bycatch rate observed during 2014 in the Mid-Atlantic Bight (MAB) and Northeast Coastal (NEC). The bycatch rate was accompanied by a high rate of serious injury, with 20 of 24 pilot whales seriously injured. Pilot whale bycatch rates have decreased over time in the southern most part of the MAB and increased over time in the northernmost part.
 - The model for apportioning observed takes between long-finned and short-finned pilot whales has been revised and updated. The analysis continues to show sea surface temperatures, latitude and month as strong predictors of species distribution, with an overlap in the MAB between June and November. Pilot whale takes during 2014 were predicted to have high probabilities of coming from short-finned pilot whales.
 - There were higher than average water temperatures throughout the fall, particularly in the northern MAB/southern NEC.
 - The proportion of observed and reported sets greater than 20 miles in length – a key provision of the current Plan – dropped dramatically in 2013 and has continued through 2014 and 2015. At the same time, the fishery in the MAB has changed, with vessels fishing multiple sets spaced very close together. About 47% of observed sets in the MAB since 2013 have been part of a “multi-set” configuration (two sets on the same trip where one set begins 30 minutes or less after a prior set).

Meeting participants posed numerous clarifying questions. Key discussion points included the following: (1) apportioning stocks is increasingly critical as both short- and long-finned bycatch are now both approaching or over PBR; and, (2) historical data on short- and long-finned location may be less relevant given changes in sea surface temperatures and stock shift; as a result, it may make sense for the Agency to consider relying on more recent data only. Other points related to this topic are summarized in the Key Discussion Themes section below.

Mainline Length

Given the Plan's emphasis on mainline length as a key management action, L. Garrison provided a detailed summary of bycatch rates and mainline length/multi-sets. (Multi-sets refer to those sets made by the same vessel where one set begins *30 minutes or less* after the prior set.) L. Garrison also conducted new analyses during the course of the meeting in response to Team member questions. L. Garrison completed a number of analyses to characterize and help the team to understand the relationship between bycatch rates and "multi-sets." He presented a series of observations based upon available data. He also noted that there are spatial and temporal effects that confound drawing a definitive conclusion about the apparent increase in bycatch rate in "multi-sets." L. Garrison also noted that the sample size is still relatively small, especially when parsed into finer subcategories.

Key presentation points included the following:

- The proportion of multi-sets increased from 1% during the period 1992-2012 to 47% during 2013-2015. This change corresponds to a large increase in lines that are less than 30 nautical miles in length.
- The first set in the pair is generally longer; the average difference in length between the first and second set in the pair is 5.4 miles; all second sets were less than 20 nautical miles.
- All observed multi-sets were observed in June or later in the year; relatively few sets were observed in the MAB prior to June; of 472 sets observed to date during the 2013-2015, only 30 were observed in May-June (6.3%).
- Looking at spatial distribution of observed sets, 58.6% of sets north of 36.2 degrees N are multi-sets. Logbook data is quite consistent with these patterns in the observer data.
- Bycatch rates are higher in multi-sets compared to single sets; similarly, bycatch rates in sets greater than 20 nm are higher than the historical average. But when data is parsed geographically, differences between single and multi-sets tend to disappear. (Bycatch rates S of latitude 36.2 N are much lower than further north.)
- Examining 17 cases of pilot whale bycatch, the bycatch event tended to occur in the first set of a multi-set pair (11/17 times) and in the longer mainline (13/17 times).
- There is a possible indication of higher interaction rates than expected in sets starting at 5 p.m., but the data is very limited and likely differences in set timing relative to sunset at different latitudes in the data set make it difficult to draw any meaningful conclusions.
- There is a significant difference in soak duration between sets with pilot whale interactions and those without, and this is consistent with the idea that longer mainlines result in longer soaks. However, additional analysis to discern any possible difference between single and multi-sets was inconclusive, due to multiple confounding factors in characterizing fishing practices (soak time, length, time of day, line sequence, small sample, etc.).

Meeting participants posed numerous clarifying questions. Key discussion points following L. Garrison's presentation include the following: (1) multi-sets seem to increase length and soak time, both factors that may lead to more interactions; (2) multi-sets have little impact on the

overall number of hooks going into the water; (3) putting greater distance between sets may help reduce interactions, but this approach is considered unworkable by fishermen given the movement of gear with tides and the need to minimize entanglements with other vessel's gear; (4) there is some suggestion that setting gear after sunset may help reduce bycatch and depredation; (5) including sections of line without hooks may be a practical method for mimicking the intended effect of shortening mainline lengths (while avoiding extra soak time). Additional discussion related to this topic is summarized in the Key Discussion Themes section below.

Gear Modifications

Given Team interest in the potential for gear modifications to reduce bycatch, the meeting included several presentations related to longline gear, including analyses of current gear trends and ongoing research. Below is a brief summary of each presentation.

- Hook types and interactions in the Pelagic Longline Fishery. L. Garrison provided the latest data on hook type usage in the fishery based on Observer Program data. Based on his review of available data, L. Garrison said there is “no magic bullet” of a definitive effect of either hook type or size on pilot whale bycatch rates. Key presentation points included the following:
 - Multiple hook types are used in the MAB. The primary hook types being used in the MAB are currently Lindgren Pittman 16/0 or 18/0 with 10° offset (LGPN-LPCIRBL) (61%), Eagle Claw 2048M 16/0 (22%), and Mustad-39960D 16/0 or 18/0. There has been an increase in the use of the Eagle Claw 2048M and Mustad-39960 hooks over time.
 - Most hooks are 16/0 size hooks. In the MAB, 65% are 16/0 and 28% are 18/0 with a 10-degree offset. A higher proportion of 18/0 hooks are used in the SAB and MAB.
 - Weak hook models used in GOM include the Eagle Claw L2048LM and Mustad - 39988D
 - There are 31 observed sets in the MAB with the weak hook models used in the Gulf of Mexico. There were no observed takes.
 - In response to Team member interest in better understanding the correlation between hook type and mouth hookings, L. Garrison conducted an analysis after Day One that showed the following: a greater number of mouth hookings on the Eagle Claw-2048 than expected in the 2005-2015 period but no correlation in the 2013-2015 period. Similar trends were seen for 16/0 versus 18/0 hooks.

Team members posed a number of clarifying questions (hook behavior, serious injury rate by hook type, etc.). More detailed discussion on this topic is summarized in the Key Discussion Themes section below.

- Hook testing on pilot whale mouths. W. McLellan presented the results of his latest research into pelagic longline hook testing on pilot whale mouths. In this most recent round of testing, W. McLellan used two weak hooks tested (the Lindgren Pitman Korean round carbon 18/0 with no offset) or intended to be tested (Lindgren Pitman Korean round carbon 20/0) in the MAB by C. Bergmann, as well as the Mustad 16/0 (#39960D) and the Eagle Claw 16/0 (L-2048M), to assess hook behavior and impacts in a pilot whale's mouth at greater force.

Key study takeaways included the following:

- No hooks tested had sufficiently large gape and bite to be worked around the mandible of the large (>300 cm long) pilot whales used in this study.
- Korean 18 and 20 weak hooks tested behaved differently than Korean carbon hooks tested previously, which “exploded” during testing. The Korean weak hooks opened along their length, exposed barb and tip, and released from lip at the lowest forces recorded in study.
- Mustad 16/0 hooks opened along their length, exposed barb and tip and sliced through lip. (It was noted that such an event would likely not be characterized as a serious injury.) In one test, the tip broke off.
- Eagle Claw hooks resisted the highest force and released from lip tissue when every hook of this type broke at the barb. The barb remained loosely embedded in lip tissue.

Team members posed several clarifying questions. There was also recommendation that W. McLellan conduct further tests on smaller pilot whales, as the hooks might behave differently (e.g., the hook might be able to wrap around a smaller pilot whale’s jaw).

- Weak hook research in the mid-Atlantic. C. Bergmann presented the latest results of the impacts of weak hooks on target catch in the mid-Atlantic pelagic longline fishery. Key presentation points are summarized below.
 - A total of 35,916 hooks (17,958 each of 10% offset standard and weak 18/0 circle hooks) were deployed on two pelagic vessels over a total of 7 trips in the NEC, MAB, SAB and FED. Sixty-six sets targeted swordfish; five sets, swordfish and tuna.
 - In all, 60 experimental were bent to a degree to allow an animal to escape; just two control hooks were bent to a degree to allow animals to escape.
 - Catch rates for eight target species increased on the experimental hooks, though catch for only one species (swordfish) was considered to be statistically significant. Catch rates decreased on five species, though none were considered statistically significant.
 - There were four pilot whale interactions (1 control, 3 unknown); 1 bottlenose (hook unknown); 5 leatherback turtles (3 experimental, 2 unknown); and 3 loggerhead turtles (all experimental hooks)
 - Results continue to be promising, but further study is needed to develop hooks that are customized to mitigate bycatch while not negatively impacting target catch or other species of concern.

Weak hook use in the Hawaii longline fishery. K. Long summarized key findings from the use of weak hooks in the Hawaii longline fishery since implementation of the False Killer Whale Take Reduction Plan in 2013. To-date, there have been 21 observed false killer whale interactions in the deep-set fishery and 1 in the shallow-set fishery. Of the 22 interactions, 21 were hooked and 1 was entangled. With 15 of the 22 animals, the hook was in the mouth or ingested; another 3 were in the head/mouth or ingested. Despite regulations requiring the captain to be present for all interactions, observer reports indicate that captains were confirmed present for only 11 interactions. Crews tended to use active tension (18 interactions) as the preferred method over tying off (2 interactions), and the bulk of the

interactions (15) lasted for 1-5 minutes. As for outcomes, 3 hooks straightened and 1 hook broke; in all other cases, the hook did not straighten and in 7 cases the line broke. Fourteen of the interactions were determined to be serious injuries; five were non-serious injury; one was dead; and two were classified as “could not be determined.”¹

- 2013 bycatch/mitigation workshop. T. Werner presented an overview of key points from the 2013 workshop on mitigating bycatch of and depredation by odontocetes in longline fisheries. The workshop focused on describing all known and proposed techniques for reducing marine mammal depredation and bycatch in longline fisheries worldwide, and then identifying those techniques that are seen to be most promising and/or candidates for further research. Based on the workshop, no single technique is assumed to have widespread application. Major knowledge gaps identified centered on the following: (1) post-hooking/entanglement survivability; and, (2) behavior of marine mammals with longlining (e.g., use of acoustics and visuals to cue into longlines).

Meeting participants posed numerous clarifying questions. Primary points related to this topic are summarized in the Key Discussion Themes section below.

Deterrents

Two presentations focused on recent work and discussions related to deterrents.

- NMFS workshop on deterrents. K. Long provided a brief overview of the NMFS workshop held February 2015 to identify safe methods for deterring marine mammals from damaging fishing gear and catch, and damaging personal or public property. K. Long briefly reviewed workshop purpose, intended work product (e.g., possible prohibitions and guidelines), and likely timeline for any associated rule-making. Participant comments centered on the following: (1) frustration that there wasn't significant fishermen participation in the workshops; and (2) asking that any Agency rulemaking leave room for future experimentation of new deterrents. K. Long explained that the workshop was structured to elicit advice from experts able to discuss the impacts of various deterrent devices and mechanisms on marine mammal health.
- Dolphin dissuasive devices. A. Read summarized recent research into interactive acoustics deterrents in the North Carolina pelagic longline fishery. The research was intended to (1) test the efficacy of the devices in reducing depredation; (2) assess their interactive function (i.e., are they effectively a “call and response” sequence initiated by echolocation); and (3) determine whether the devices can be used practically in the fishery. Working three longline vessels, the devices were tested between July 2013 and November 2015 on a total of 135 sets (74 control sets, 61 active sets). A. Read reported the following key findings:
 - The devices do not affect catch rates and work well with fishing gear (e.g., easy to attach).
 - The intended interactive function worked only intermittently (e.g., the device was only sometimes triggered by echolocation; other times the device triggered without any preceding echolocation).

¹ The six determinations from 2015 are still preliminary and subject to change.

- The devices do not appear to reduce depredation, as the animals appeared to quickly habituate to the devices.

Other Research

The meeting included presentation and discussion on three other research projects summarized briefly below.

- Line cutters. T. Beideman briefed the Team on her work with C. Bergmann to test line cutters. The device, intended to cut the line as close to a hooked animal's mouth as possible, is proving quite effective in field trials, leaving little trailing line and reducing soak time (as crew are able to release a hooked animal much more quickly with the line cutter). The line cutters currently cost \$350 per device. A final report on the field testing is to be released in January 2016.
- Satellite telemetry data. A. Read presented results of satellite telemetry data on pilot whale movements and feeding/diving behavior. Key research findings centered on the following: (1) there is no meaningful distinction between when animals feed (day or night); (2) animals tend to travel to the northeast along shelf break, or offshore following the Gulf Stream or both; (3) they spent more time over canyons when moving along the shelf break; (4) animals return to the Cape Hatteras area; (5) data suggest short-finned pilot whales may be a transboundary stock as satellite-tagged whales move regularly between the Bahamas and the Southeastern U.S. and there are multiple photographic matches of individual pilot whales in Jacksonville and the Bahamas. It was noted that in contrast to the often sometimes stated narrative that "whales must be waiting near the surface to depredate the line," the vast majority of feeding occurs at depth.
- Bycatch Reduction Engineering Program project proposal. Lesley Thorne with Stony Brook University's School of Marine and Atmospheric Sciences provided an overview of research she is conducting with A. Read to (1) better understand the spatial overlap of pilot whale habitat and longline fishing effort and (2) create spatial maps highlighting areas with low interaction probabilities as a way to provide fishermen with information to avoid depredation and interactions. Preliminary results included the following: (1) slope, distance to shelf break and sea surface temperatures are significant predictors of habitat use; (2) pilot whales demonstrate a preference for waters close to the shelf break (85% of satellite locations for whales moving along shelf break were within 10 km of 1,000 m isobaths); warmer water temperatures (peak preference ~25°C); and medium to high bathymetric slopes (peak preference ~25% rise); and (3) fishing away from shelf break could potentially avoid pilot whale interactions.

C. Key Discussion Themes

The background presentations triggered extensive Team member discussions over the 2½-day meeting, with participants acknowledging the need for new measures to replace those Plan components (i.e., mainline length restrictions) that are not proving effective at reducing interactions with and serious injuries to pilot whales. The bulk of discussion, summarized below, focused on identifying potential management measures – both regulatory and non-

regulatory – to provide conservation benefit and improve Plan implementation. Discussions included both plenaries and smaller breakout sessions and caucuses.

- **Current measures are not sufficient to meet Plan goals.** Team members broadly recognized and agreed that current measures, and in particular the 20-nautical mile mainline length (though well intentioned when first introduced to the Plan), are not proving effective at reducing bycatch. Team members, including the fishing industry, voiced a willingness to pivot to a new regulatory regime.
- **New mainline length measures needed.** Given interest in reducing soak time and limiting the overall length of actively fished line in the water and hook concentration, Team members discussed a variety of measures related to mainline length. One option centered on requiring a longer distance break between multi-sets. This was seen as potentially problematic for some vessels, however, as fishermen said it would increase soak time and eliminate the flexibility fishermen need to set gear in different currents and avoid gear conflicts with other vessels. Team members also discussed the potential of once again allowing mainline lengths to exceed 20 nautical miles while concurrently requiring “hookless line interrupters” – stretches of hookless line at various intervals – as a way to mimic multi-sets and deflect animals that might be following a line of hooks to depredate catch or strip bait. Discussion centered on a range of options related to overall mainline length, as well as the frequency and length of hookless line interruptions required. The Team also considered different options targeting specific geographies, with several participants suggesting the Team not overly constrain fishermen outside the Mid-Atlantic Bight. Options considered included the following:
 - Eliminate the 20-nautical mile mainline length cap, but require sections of hookless line interrupts (a one-mile-long break was most frequently discussed) at various intervals on a line not exceeding a certain length (suggestions mostly ranged from 30 to 35 miles long);
 - Eliminate the 20-nautical mile mainline length cap, but limit the total number or miles of hooks that can be deployed (again, along a limited overall mainline length) as a way of capping fishing effort;
 - Give fishermen two options: deploying multi-sets or deploying longer mainlines with hookless line interrupts;
 - Maintain the 20-nautical mile mainline length cap, but require multi-sets be separated by at least one nautical mile and/or cap the second set at no more than 10 nautical miles;
 - Maintain the 20-nautical mile mainline length cap, but eliminate the option of multi-sets (though this was generally seen as a fallback measure if none of the other options under discussion prove effective at reducing takes);
 - Maintain the status quo until the Agency can conduct pilot programs with a substantial enough sample size to statistically confirm the conservation benefit associated with any new mainline length/configuration approach.

In its eventual recommendations, the Team recommended allowing fishermen in the Mid-Atlantic Bight to set up to 30 nautical miles of active gear (gear with leaders and hooks) in

two different configurations: (1) multi-sets separated by at least one nautical mile with no single set exceeding 20 nautical miles; or (2) a single set with a maximum mainline length of 32 nautical miles and continuous active gear (i.e. line with hooks) of no more than 20 nautical miles in length; additionally, any active gear longer than 20 nautical miles must include a break of at least one nautical mile of long line without leaders or hooks (i.e. one hookless line interrupt). This recommendation was seen as a way to balance operational flexibility for fishermen while reducing soak time and instituting a measure (the hookless line interrupts) with the potential to reduce depredation and interactions.

Team members also broadly agreed that (1) line configurations, including hookless line interrupts, will be needed to be carefully recorded in logbooks to facilitate future timely Science Center analysis; and (2) the Agency needs to closely track results and discuss possible changes with the Team, as warranted. There was also a suggestion that any hookless line interrupts be marked with colored buoys to facilitate enforcement.

Terminal gear requirements. In addition to mainline length, Team members focused significant attention on potential changes to terminal gear requirements as a mechanism to reduce bycatch. This was seen as particularly important given the understanding that a straightened hook returned from a hooking event is not likely to be scored as a serious injury.

Team discussions focused initially on hook types, with participants drawing on a combination of the Science Center analysis, C. Bergmann's weak hook study and W. McLellan's hook testing to identify hooks more likely to straighten under the force of a hooked pilot whale (16/0 with 4.05mm wire diameter or 18/0 circle hooks with 4.4mm wire diameter; hook shanks containing round wire; no more than 300-pound straightening force based on manufacturer specifications). Fishing representatives were reluctant to endorse hooks with a diameter less than 4.05 given the potential to lose too many target species to straightened hooks.

The Team was particularly focused on eliminating those hooks (forged, not stamped) that shattered under force (e.g., Lindgren Pitman "flat" carbon hooks) or broke at the barb (Eagle Claw 16/0 L-2048M). The Team also discussed the importance of ensuring that any hook requirement not have unintended negative impacts on other protected species nor be contradictory with other regulations (e.g., sea turtle circle hook regulations). Several Team members emphasized the need to ensure sufficient lead time prior to implementation to ensure available supply of allowable hooks. (Cost was not expected to be a significant factor since most fishermen change out their hooks fairly frequently. Team members did recommend affirmatively reaching out to hook manufacturers well in advance of implementing any new rule.)

Given the False Killer Whale Plan experience – line breaking before hooks straighten – Team members also discussed the imperative of implementing a suite of requirements to make terminal hooks the weakest part of the gear (i.e., ensuring the hook straightens before the line breaks). To that end, Team members discussed the importance of requiring monofilament nylon leaders and/or branch lines with a minimum breaking force unlikely to break before a hook straightens. Team members discussed a range of target specs for breaking force – some

argued for a 300-pound breaking strength certified by the manufacturer, others pressed for a greater strength given the inevitable variation in actual performance. The Team eventually settled on line with a diameter of 1.8 mm or larger (certified by the manufacturer to have a minimum breaking strength of at least 300 pounds), but encouraged NMFS to make explicit in regulation that line be maintained in a manner that ensures the hook is the weakest part of the terminal gear. The Team also discussed whether gear modifications should be applicable broadly or recommended for only specific geographies. Team members agreed that the hook requirement is appropriate for the SAB, MAB, FEC (Florida East Coastal) and NEC (North East Coastal). The geographic extent of the recommendation – extending beyond the MAB – was considered by fishing representatives to be a substantial concession intended to incentive movement towards a Team-wide consensus agreement.

In its eventual recommendations, the Team identified specific hooks meeting its preferred specifications; it did not, however, recommend constraining the fishery to those hooks only as such an approach would be inconsistent with NMFS rule-making protocols (i.e., not requiring specific hooks or manufacturers). The Team considered, but rejected, recommending that the Agency certify acceptable hooks as that is an approach Agency representatives said they are unlikely to put forward given the implementation challenges. The Team also opted to recommend hooks be used widely in the fishery (to maximize the conservation benefit), rather than constraining it to a more limited area.

- **Safe handling and release.** Based on the False Killer Whale Plan experience and a recognition that some vessel captains are not fully aware of PLTRP requirements, the Team discussed the importance of developing clear and effective safe handling and release protocols (e.g., different strategies for applying resistance to make it easier for a hook to straighten and an animal to be released without a serious injury). The Team also discussed the approach used in the False Killer Whale Plan as a possible model (combining requirements for on-board placard language, captain present, updating Protected Species trainings, etc.) After extensive discussion, participants agreed on the need to convene a working group to develop recommended protocols and best practices specific to pilot whale interactions with the pelagic longline fishery (rather than simply adopting False Killer Whale Plan language). TRT members agreed that the Work Group should include a cross-section of Team members and outside experts familiar with marine mammals handling techniques and/or PLL fishing practices. Several Team members emphasized that any protocols developed need to convey that human safety is paramount. Also, once best practices are identified, Team members recommended the Agency convene fishermen workshops to foster broader awareness and buy-in.
- **Observer Program protocols and data collection.** Team members discussed the need to adapt Observer Program data collection protocols and activities to ensure the Team and Agency has the best available data in the future to assess Plan effectiveness. Areas of possible interest (though not necessarily yet agreed to) include: (1) revising the observer reporting forms and/or logbooks to collect data on where exactly on a line depredation, bait-stripping and bycatch occur; and (2) collecting straightened hooks following proper methodological protocols (and on a voluntary basis from willing fishermen) to test for DNA from any tissue remaining on the hook for species identification. Some Team members also

expressed interest in having the on-board observer direct crew during an interaction; Agency staff emphasized that such a role is inconsistent with an observer's prescribed role. Several fishermen recommended any changes be focused on Observer Program data collection, and not vessel logbooks, to not unduly burden the fishing industry.

Team members recommended that the charge to the Safe Handling Work Group be expanded to consider and recommend to the full Team possible changes to the observer reporting forms, logbooks, and other potential methods of information-gathering (such as post-interaction debriefing of captains and crew and using video to document interactions) with a view towards obtaining and sharing information on best practices in the fishery to avoid or mitigate interactions.

- **Cape Hatteras Special Research Area.** Several Team members from the fishing industry asked that the Team consider either (1) eliminating the CHSRA entirely or (2) at least removing the call-in requirement. Team members suggested the requirements were both an obsolete and unnecessary burden since the Agency has not once placed an observer on a vessel since the call-in requirement was implemented, and pilot whale interactions show a consistent pattern of moving farther north (hence, the CHSRA is no longer a useful “hot spot” for focused attention). Other Team members and the Agency voiced a willingness to remove the requirement, but in a contingent fashion: elimination of the CHSRA must be part of a broader package of management measures intended to improve Plan implementation.
- **Revisit serious injury criteria.** Several fishermen on the Team voiced significant frustration with the derivation and explanation of the Agency's existing serious injury criteria for marine mammals. Initial concerns expressed included both the lack of fishermen involvement in the Agency-led dialogue that established serious injury criteria and the lack of a timely process to update criteria based on new data associated with whale post-interaction mortality and/or survival. K. Long brought important clarification to the discussion. She explained that the criteria were developed in a rigorous, multi-day technical workshop in 2007 that brought together experts (including fishery interests) qualified to assess physical impacts of varying injuries on marine mammals. Team members broadly agreed that a follow-up webinar centered on explaining the criteria – derivation and rationale – would be helpful in fostering greater understanding of and confidence in the criteria and more broad-based buy-in to the new management options being considered. Both fishermen and conservationists also supported ongoing revision to the serious injury criteria based on new data (particularly for whales hooked in the mouth and released with a negligible amount of line).
- **Pilot programs v. Plan amendments.** Some participants initially recommended that the Team pilot-test or conduct controlled research on any possible gear modifications before recommending Plan amendments. Others suggested that, given the time needed to write and adopt rules and the sustained high bycatch levels, the Team is better positioned to recommend Plan amendments and then track implementation to assess effectiveness. The Agency, they said, needs only a credible rationale for moving forward and not an air-tight statistical analysis with a high level of predictive power. Team members agreed to forego recommending pilot-testing on its recommended measures in favor of seeking ongoing and

regular feedback from the Agency on Plan impacts. There also needs to be a commitment, some Team members said, to revisit and – if needed – reverse measures that prove ineffective.

- **Other.** A number of other themes and ideas were generated during Team deliberations. These ideas are summarized briefly below:
 - Team members discussed the enforcement challenges associated with both the mainline length and terminal gear recommendations. K. Moore with the U.S. Coast Guard reminded Team members that any eventual approach needs to be easily enforced dockside or at-sea; easily measured metrics are strongly preferred and more likely to foster effective enforcement activities.
 - Gear modifications may be appropriate to implement regionally, as opposed to a fishery-wide application, as gear changes may not be warranted in certain areas.
 - The Team and Agency need to be mindful that any recommendations put forward do not have negative implications for other protected species (e.g., the potential for hook size and shape changes on sea turtles).
 - Taste and smell deterrents are seen by some Team members as a potentially effective deterrent and should be considered for future research. Other Team members noted that these have been shown to be ineffective and cautioned against their use. K. Long also noted that the Agency is considering prohibiting the use of taste deterrents.
 - The Team should continue tracking bycatch reduction efforts worldwide to identify new gear modifications or practices that may prove beneficial in the pelagic longline fishery.
 - Team members explored the potential to make use of the electronic monitoring required under Amendment 7 to track Plan implementation. Fishermen were reluctant to support such suggestions, noting that the electronic monitoring was approved for the purpose of managing blue fin tuna catch only.
 - One Team member suggested the Team continue investigating the potential for different colored lines to deter interactions. Others suggested this may have negative implications for sea turtle and large whale interactions.

D. Consensus Recommendations

Based on the deliberations, the Team agreed to a suite of full consensus recommendations for consideration by the Agency. These recommendations are summarized below and include both regulatory and non-regulatory measures. The language on the following page reflects the consensus language adopted by the Team.

Consensus Recommendations – Regulatory Measures	
Terminal Gear Requirements	<p>The goal of these requirements is to make terminal hooks the weakest part of the gear.</p> <ol style="list-style-type: none"> 1. While pelagic longlining in the FEC, SAB, MAB and NEC, the owner and operator of an Atlantic Pelagic longline vessel must use monofilament nylon leaders and/or branch lines that all have a diameter of 1.8 mm or larger (certified by the manufacturer to at least 300lbs breaking force). 2. While pelagic longlining in the FEC, SAB, MAB and NEC, the owner and operator of an Atlantic Pelagic longline vessel must use only hooks meeting criteria at 50 CFR (Turtle Regulations) and the following specifications: (i) 16/0 or 18/0 circle hooks with hook shanks containing round wire that can be measured with a caliper or other appropriate gauge, with a wire diameter not to exceed 4.05mm if 16/0 or 4.4mm if 18/0; and (ii) no more than 300lbs straightening force based on manufacturer's specifications. Hooks that currently meeting these specifications include: 16/0 Mustad 39960D, 16/0 L-2048-LM Eagle Claw, 16/0 Mustad 39988D, and experimental Lindgren Pitman 18/0 with no offset.
Mainline Length and Setting	<p>While pelagic longlining in the MAB, the owner and operator of an Atlantic Pelagic longline vessel may set no more than 30 miles of active gear (gear with leaders and hooks) in a 24 hour period. Gear may be set either:</p> <ol style="list-style-type: none"> a) Multi-set: in separate sets separated by a least one nautical mile, with the maximum mainline length of any single set no longer than 20 nautical miles; or b) Single-set: in a single set with a maximum mainline length of 32 nautical miles, and continuous active gear (gear with leaders and hooks) of no more than 20 nautical miles. Any active gear in excess of 20 nautical miles must be separated from other active gear along the mainline by a gap of at least one nautical mile along the mainline in which no leaders and hooks are set. <p>The team recommends that as this is implemented the length of sets and locations of breaks within sets be recorded in a form useful to NMFS and the TRT.</p>
Cape Hatteras Special Research Area	<p>The Team recommends the Agency repeal the Cape Hatteras Special Research Area (CHSRA) and any associated call-in requirement under the PLTRP.</p>

Consensus Recommendations – Non-Regulatory Measures	
Safe Handling and Release Work Group	<p>The Team agrees that the primary goal in any pelagic longline/short-finned pilot whale interaction is the successful release of a hooked animal. To that end, the TRT supports convening a Work Group that will report back to the full TRT with recommended changes and updates to the current handling and safe release protocols for marine mammal interactions in the Atlantic pelagic longline fishery and safety of crew and vessels. The Work Group will include TRT members, fishermen, marine mammal health and disentanglement experts, and others with expertise and knowledge related to handling marine mammals and/or PLL fishing practices.</p> <p>The Work Group should review existing placards and captain/crew trainings and recommend developing or revising protocols that increase the likelihood that a hooked pilot whale will safely straighten a weak hook and be released without serious injury. The Work Group should consider whether the Hawaii longline handling and release guidelines can be adapted to the Atlantic pelagic longline fishery’s needs. The Work Group should also consider changes to the observer reporting forms, logbooks, and other potential methods of information-gathering (such as post-interaction debriefing of captains and crew and using video to document interactions) with a view towards obtaining and sharing information on best practices in the fishery to avoid or mitigate interactions. The Work Group would develop recommendations for updating HMS protected species workshops.</p>
Observer Protocols and Data Recording Forms	<ol style="list-style-type: none"> 1. <u>Bycatch and Depredation Event Data</u>: The Team recommends that NMFS modify fishery observer forms so as to enable recording and analysis the following data on pilot whale/marine mammal bycatch events and on target catch depredation events: <ol style="list-style-type: none"> a. Locations of any observed marine mammal bycatch events relative to buoy/dobb number on longline sets and the hook number between buoys/dobbs; b. Locations of any observed target catch depredation events relative to buoy/dobb numbers on longline sets and the hook number between buoys/dobbs. 2. <u>Straightened Hooks</u>: The Team recommends that NMFS modify fishery observer protocols to: <ol style="list-style-type: none"> a. Request that fishery observers 1) ask vessel captains to voluntarily provide straightened longline hooks, and 2) collect tissue swabs stored in DMSO from the barbs of such straightened hooks from a sample of hooks (e.g., <u>50 hooks and swabs</u>) for determining if and at what frequency species of fish or marine mammal responsible for straightening hooks can be identified using genetic analytic techniques; b. If the results of (a) above demonstrate that the species involved in hook-straightening events can be identified, (1) establish standard fishery observer protocols to continue collecting tissue swabs and voluntarily surrendered straightened hooks, and, (2) modify fishery observer forms for recording data on collected straightened hooks and tissue swabs relative to buoy and dobb numbers and hook numbers between buoys and dobbs; and c. Ensure that genetic samples collected under (a) and (b) are analyzed in a timely fashion and provide results to the PLTRT.

V. PUBLIC COMMENT

There was only one public comment during the meeting. On Day Two, TRT Alternate Andy Read underscored the importance of gathering detailed interaction data from captain and crew (understanding both crew and animal behavior) as that information can be used to inform NMFS trainings and captain-to-captain communications. He recommended that a section be added to the logbook for captains to record interaction details.

VI. NEXT STEPS

Based on discussions, the Team and NMFS outlined the following next steps:

- Related to Regulatory Drafting
 - NMFS staff are to prepare develop draft regulations based on Team recommendations. The Agency hopes to have draft regulations completed by the end of 2016.
 - As needed, NMFS may convene a Team teleconference to seek clarification on regulatory approaches needed to implement Team recommendations.
- Related to Safe Release and Handling Methods
 - NMFS is to convene in early 2016 a Work Group to consider safe release and handling methods appropriate for the Atlantic pelagic longline fishery. The Work Group is to include fishermen and marine mammal handling/disentanglement experts.
 - NMFS is to distribute to Team members safe release and handling materials (including vessel placards) developed to support implementation of the False Killer Whale Take Reduction Plan (completed; link to materials distributed during the meeting)
- Related to Serious Injury:
 - NMFS staff are to distribute the Agency's Policy for Distinguishing Serious from Non-Serious Injury of Marine Mammals
 - NMFS is to convene a webinar to provide background on the Agency's Serious Injury Policy; the webinar is to include participation by veterinarians and fold in stranding and photo ID data
- Related to Future Team Meetings
 - NMFS expects to convene a Team webinar in 2016 (or sooner if needed to clarify Team recommendations) to provide updates on Plan implementation, as well as review Amendment 7 implementation and consider ramification for PLTRP objectives
 - NMFS is likely to convene a Team meeting in 2017; an earlier in-person meeting (during the public comment period) was recommended by Team members if the draft rule deviates substantially from Team recommendations
- Other
 - NMFS staff are to distribute the following materials to Team members: (1) all meeting presentations and handouts; and (2) Electronic Monitoring National Policy and related 2013 White Paper. As well, the meeting summary will be

posted on the Team website (<http://www.nmfs.noaa.gov/pr/interactions/trt/pl-trt.html>).

- S. McCreary and B. Brooks are to draft and distribute for Team review a Key Outcomes Memo summarizing Team deliberations and consensus recommendations

Any questions or comments regarding this meeting summary should be directed to Scott McCreary (510-649-8008; scott@concurinc.net) and Bennett Brooks (212-678-0078; bbrooks@cbuilding.org) or Erin Fougères (727-824-5323; erin.fougeres@noaa.gov).