Key Outcomes Memorandum

Date: **October 19, 2005**

To: **Atlantic Pelagic Longline Take Reduction Team (PLTRT) Members**

From: **Scott McCreary and Eric Poncelet, CONCUR, Inc.**

Re: **Key Outcomes Memorandum – September 27-29, 2005 PLTRT Meeting**

cc: **NOAA Fisheries staff**

Executive Summary – Key Outcomes and Next Steps

On September 27-29, 2005, the Atlantic Pelagic Longline Take Reduction Team (PLTRT) participated in its second meeting, convened in Falls Church, VA. The primary objectives for the meeting were to: 1) provide additional guidance on the scope and goal of the pelagic longline Take Reduction Plan (TRP), 2) provide focused briefings on information and data gathering efforts and implications for the TRP, 3) outline elements of the TRP, and 4) initiate discussion on potential bycatch reduction strategies.

Key outcomes from the meeting are as follows. The PLTRT:

- Adopted new ground rules regarding communication protocols, use of the project website, and preparation and revision of Key Outcomes Memoranda.
- Discussed the password-protected project website: http://www.concurinc.com/PLTRT.
- Discussed possibility of expanding the TRP scope to include Risso's dolphins (this issue will be revisited at the next PLTRT meeting).
- Reviewed and commented on the draft TRP outline.
- Discussed NOAA Fisheries' plan to revise serious injury guidelines for marine mammals.
- Reviewed recent data on Pilot whales and Risso's dolphins, including the results of 1st and 2nd quarter bycatch preliminary estimates and descriptions of stock structure and sensory abilities.
- Reviewed information on the Atlantic pelagic longline fishery, including fishing effort, distribution, seasonality, and the nature of pelagic longline interactions with marine mammals.
- Brainstormed mitigation strategies and possible data needs with regard to:
  - Avoiding exposure of marine mammals to vessel/gear
  - Reducing the probability of interaction once in the vicinity of the gear
  - Minimizing impacts once interaction has occurred
- Established work teams to assist in preparations for the next PLTRT meeting and in outlining potential elements of the TRP. Work teams will focus on the topics of: 1) developing a predictive model, 2) revising the observer data form, 3) identifying and sorting priority research, and 4) developing disentanglement guidance.

Project next steps are outlined in section IV below. The next two PLTRT meetings will take place on January 25-27, 2006, and March 22-24, 2006, in Florida locations to be determined.

This Key Outcomes Memorandum summarizes the results of the September 2005 PLTRT meeting. It focuses on key issues discussed, decisions made, and next steps identified. It is not intended to be a transcript of all meeting activities.

I. Introduction and Outline

On September 27-29, 2005, the Atlantic Pelagic Longline Take Reduction Team (PLTRT) participated in its second meeting. The meeting took place in Falls Church, VA. This Key Outcomes Memorandum summarizes the main results of the meeting. The memorandum is organized as follows:

I. Introduction and Outline

II. Workshop Objectives, Participants, and Materials

III. Key Outcomes

A. Membership additions and changes
B. Ground rules revisions
C. Project website
D. Scope and goal of Pelagic Longline Take Reduction Plan
E. Briefings and Updates
F. Review of draft Take Reduction Plan outline
G. Breakout group activity – Brainstorming bycatch reduction strategies
H. Work teams to be convened
I. Potential agenda topics for next PLTRT meeting

IV. Next Steps and Schedule

II. Workshop Objectives, Participants, and Materials

The primary ***objectives*** for the meeting were as follows:

1. Provide additional guidance on scope and goal of Pelagic Longline Take Reduction Plan (TRP).
2. Provide focused briefings on information and data gathering efforts and implications for the TRP
3. Outline elements of the TRP
4. Initiate discussion on potential bycatch reduction strategies

PLTRT members in attendance included: Nelson Beideman (Blue Water Fishermen's Association), Jim Budi (Fisherman), Jean Cramer (Thunder Mountain Consulting), Brendan Cummings (Center for Biological Diversity), Glenn Delaney, Damon Gannon (Mote Marine Lab), Charlotte Hudson Gray (Oceana), Gail Johnson (Fishing Vessel Seneca), Jessica Koelsch (The Ocean Conservancy), Bill McLellan (University of North Carolina, Wilmington), Rick Mears (Fishing Vessel Monica, alternate for Dan Mears), Vince Pyle (Fishing Vessel Carol Ann), Mike Simpkins (Marine Mammal Commission), Martin Scanlon (fisherman, alternate for Scott Rucky), Rich Seagraves (Mid-Atlantic Fishery Management Council), Nina Young (Orcas Consulting), Sharon Young (Humane Society of the United States), Vicki Cornish (NOAA

Fisheries), Laura Engleby (NOAA Fisheries), and Kristy Long (NOAA Fisheries). PLTRT members David Kerstetter was not able to attend.

NOAA Fisheries staff participating in an advisory capacity included: Tanya Dobrzynski, Tom Eagle, Lance Garrison, Karyl Brewster-Geisz, Brian Hopper, Dennis Lee, Juan Levesque, Deb Palka, Cheryl Scannell, and Kate Wells. Katie Moore attended on behalf of the United States Coast Guard.

The meeting was facilitated by Scott McCreary and Eric Poncelet of CONCUR, Inc.

Meeting materials and presentations for this PLTRT meeting may be found at the password-protected project website: http://www.concurinc.com/PLTRT. Other related materials may be found at: http://www.nmfs.noaa.gov/pr/interactions/trt/pl-trt.htm.

III. Key Outcomes

A. Membership additions and changes

PLTRT membership additions and changes include the following:

- Glenn Delaney (longline fishing industry) and Jessica Koelsch (The Ocean Conservancy) were appointed as new members.
- Mike Simpkins is now the primary representative from the Marine Mammal Commission.
- Nina Young is now representing Orca Consulting.
- Laura Engleby is participating from NOAA Fisheries.

All of the primary and alternate TRT members made brief self-introductions.

B. Ground rules revisions

The facilitation team proposed a set of new ground rules to assist PLTRT members in their ongoing efforts. The ground rules concerned communication protocols, use of the project website, and preparation and revision of Key Outcomes Memoranda (KOMs).

PLTRT members discussed the proposed ground rules. They requested that a standing header or footer be added to all KOMs to indicate that the KOMs are primarily intended as meeting summaries with a focus on key decisions made, issues discussed, and next steps identified.

PLTRT members voted unanimously to adopt the proposed ground rules and for inclusion in future KOMs of a standing header/footer as described above. The revised ground rules are attached.

C. Project website

As noted in the ground rules, CONCUR has developed a confidential project website (http://www.concurinc.com/PLTRT). It is intended for use by the PLTRT and will serve as a

repository of meeting agendas, Key Outcomes Memoranda, and meeting presentations. Use of the website is intended to be limited to the PLTRT; the URL should not be shared [except with members of your organizations]; it should not be published or broadcast, and organizational members should be reminded of this protocol.

Internal TRT documents are intended primarily for use by TRT members. They should not be posted on public websites; nor should the project website URL. TRT members may email TRT documents to their constituents so long as it is understood that these documents are not meant for public consumption.

NOAA Fisheries staff will inform PLTRT members their usernames and passwords for accessing the website via email.

D. Scope and goal of Atlantic Pelagic Longline Take Reduction Plan

Vicki Cornish (NOAA Fisheries) presented on the project goal and scope.

1. Goal of TRP

Vicki reminded PLTRT members that the long-term bycatch reduction goal of the TRP, as defined by the Marine Mammal Protection Act (MMPA, section 118), is to reduce mortalities and serious injuries of marine mammals to an insignificant rate approaching zero within 5 years of implementation of the plan (ZMRG).

2. Scope of TRP

Vicki noted that the scope of a TRP is defined by the target fishery/gear, the target species, and/or the target geographical area. The 2003 settlement agreement between the Center for Biological Diversity and NOAA Fisheries established guiding objectives for the TRP, with a focus on reducing the serious injury and mortality (bycatch) of pilot whales resulting from interactions with pelagic longline gear.[1] The target geographic area for the TRP is the Mid-Atlantic Bight.

Vicki requested that the PLTRT consider expanding this scope to all stocks seriously injured or killed incidental to this fishery. She pointed out that the Atlantic longline fishery has also occasionally taken two other protected marine mammals in recent years: Risso's dolphins, and pygmy sperm whales. She added that the estimated annual bycatch of Risso's dolphins (41) is less than the potential biological removal (PBR) for that species (220), while the estimated annual bycatch of pygmy sperm whales (6) is greater than the PBR for that species (3). Finally, she acknowledged that while less is known about the abundance of Risso's dolphins than pilot whales, the TRP process would still be able to proceed with the current data.

[1] The settlement agreement initially focused on Common Dolphins as well, but there have not been any serious injuries or mortalities of Common Dolphins in the Atlantic by the pelagic longline fishery over the past 5-7 years.

a. NOAA Fisheries Proposal

Vicki proposed that the scope for the PLTRT be expanded to include Risso's dolphins. She pointed out that because the estimated annual mortality and serious injury of Risso's dolphins is above the insignificance threshold (10% of PBR), and because the management strategies under consideration for pilot whales may also benefit Risso's dolphins, there may be efficiencies in having the goal of the TRP be to reduce bycatch of both species. [Note: Vicki did not recommend expanding the scope to include pygmy sperm whales, as the number of actual takes of this species is very low (there has only been one observed serious injury of pygmy sperm whales in the longline fishery over the past 5 years).]

b. Key Issues discussed

Participants expressed a range of views and interests regarding the NOAA Fisheries proposal.

- Some PLTRT members, speaking in favor of expanding the scope to include Risso's dolphins, emphasized the efficiencies associated with this strategy. They also stressed that adding Risso's dolphins to the scope would help ensure that Risso's would not be disadvantaged by efforts to project pilot whales. It was suggested that the longline fishery could benefit from the certainty against future actions under the MMPA regarding Risso's dolphins that would result by having the PLTRT include this species in its plan.
- Other PLTRT members speaking against expanding the scope, stated that the pelagic longline fishery's interest in addressing pilot whales interaction stems in part from their desire to address the issue of depredation of catch by pilot whales. They noted that potential technological solutions may not apply to multiple species and stressed that adding another species to the scope may make the problem much more difficult to resolve. Others added that they needed to better understand the legal ramifications of expanding the scope. These participants nevertheless generally agreed that it would be important to keep Risso's dolphins and other bycatch issues in mind during the TRP process.
- Still other PLTRT participants supported expanding the scope to include pygmy sperm whales for the purpose of bringing the pelagic longline fishery into full compliance with the MMPA.

The PLTRT agreed to revisit the issue of the scope of the TRP again at its next meeting. NOAA Fisheries committed to continue providing applicable information on Risso's dolphins and other marine mammal bycatch as the project moves forwards.

E. Briefings and Updates

The September PLTRT meeting included a series of informational briefings and updates provided by PLTRT members and NOAA Fisheries staff.

1. 1st and 2nd quarter bycatch preliminary estimates

Lance Garrison (NOAA Fisheries) provided an update on the first and second quarter bycatch estimates from the longline fishery. These estimates have undergone preliminary review but have not yet been finalized.

Lance reported that during the second quarter, one pilot whale was observed seriously injured in each of two observed sets. The resulting bycatch rate is an order of magnitude larger than the 5-year average and will likely result in an increase of the 5-year average.

Lance also added that, in addition to the two observed serious injuries, multiple pilot whale serious injuries also occurred in an experimental fishery in the Mid-Atlantic Bight during the second quarter.

2. Proposed plan for revising serious injury guidelines

Tom Eagle (NOAA Fisheries) informed the PLTRT that NOAA Fisheries is planning to convene a workshop within the next six months as a first step toward updating the 1995 guidance on marine mammal serious injury. The purpose of the workshop is to better discern the effect of gear interaction on mortality and serious injury for both large and small cetaceans. An ad hoc intra-agency steering committee has been convened to organize the workshop. Tom noted that producing the new guidance is a multi-step process. It will require a formal rule-making process, including preparation of a NEPA Environmental Assessment (EA) or Environmental Impact Statement (EIS). If a full EIS needs to be prepared, the complete rule-making process could take up to 2-½ years.

Tom stated that currently, serious injury is defined as an injury that is likely to result in a mortality (50 CFR 229.2). There was discussion regarding whether all pilot whales that are released with hooks in their mouths are seriously injured, as evidenced by observations of stranded pilot whales with healed-over mouth scars, presumably from previous hooking incidents.

The new guidance on serious injury would be available for incorporation into the PLTRP once it is finalized.

PLTRT members raised several ***key issues*** in response:

- Participants requested that revision of the guidance be informed by research on the extent to which marine mammals are seriously injured due to interactions with pelagic longline gear. This may require tagging animals. Participants recommended that an analysis be done on the benefits and costs of conducting such research.
- Participants requested that the serious injury workshop involve a wide variety of expertise, including animal physiology, veterinary medicine, fishermen, and gear specialists.

- Participants suggested that incentives be built in to encourage fishermen to take the most helpful action in reducing the potential for serious injury to hooked or entangled marine mammals.
- Participants requested that NOAA Fisheries make efforts to revise the serious injury guidance as expeditiously as possible and suggested including recommendations for how the guidance might be enhanced as part of its TRP.

3. Pilot whale and Risso's dolphin life history, behavior, and physiology characteristics

Bill McLellan (UNC-Wilmington) and Damon Gannon (Mote Marine Lab) presented a briefing on the life history, behavior, and physiological characteristics of short-finned and long-finned Pilot whales and Risso's dolphins. They noted that more data exist regarding Pilot whales on these topics than for Risso's dolphins. They discussed diving behavior and feeding behavior, including food habits, foraging behavior, and feeding mechanics (e.g., suction feeding). They also described the echolocation process by which Pilot whales and Risso's dolphins navigate and detect food, as well as the metabolic and ecological costs of echolocation versus passive listening. Finally, they highlighted a key research question for consideration by the PLTRT: How much of the interaction that has been observed is due to feeding on the catch versus feeding on the bait?

PLTRT members raised the following issues:

- Participants suggested that additional research be conducted on how Pilot whales are interacting with longline gear in general (e.g., taking the bait, getting entangled).
- Participants suggested examining the degree to which interaction with longline gear may be learned behavior.
- Several fishermen suggested that there may be a trend in mouth hooking incidents that is moving geographically from south to north.
- Participants recommended taking underwater video of interactions and photographs of what is being left on the hook after depredation (e.g., fish lips).
- Participants suggested looking for possible correlations between marine mammal noise and gear interactions.

4. Draft consolidated HMS FMP and how it relates to the pelagic longline fishery

Karyl Brewster-Geisz (NOAA Fisheries) provided an update on efforts to draft a consolidated Fishery Management Plan (FMP) for highly migratory species (HMS). She noted that the schedule for completing the FMP is being extended until 2006 due to delays caused by the recent hurricanes.

Karyl described possible areas in which the HMS FMP may have implications for the PLTRP. She described new requirements for attending handling and release workshops focused on sea turtles, and suggested that the PLTRT coordinate with these efforts to provide information about handling and release of marine mammals. She discussed time/area closures in effect for the pelagic longline fishery, noting that NOAA Fisheries did not propose new time/area closures because no combination of time/area closures were found that would reduce bycatch for all species considered. She described new

management steps to address overfishing of key target species, such as albacore tuna. Finally, she discussed new regulatory housekeeping measures, such as new definitions of pelagic longline gear and delineations of closed areas.
The comment period on the draft HMS FMP was scheduled to end October18 but is being extended to March 1, 2006. PLTRT members are encouraged to visit to the agency website http://www.nmfs.noaa.gov/sfa/hms/ for further information. Karyl noted that the final FMP is expected to be completed in the summer/fall of 2006.

PLTRT members expressed a variety of views on the advantages and disadvantages of time-area closures.

5. Characterizing fishery effort, distribution, seasonality, and home port of participants in mid-Atlantic range of fishery

Lance Garrison presented a briefing on the nature of the pelagic longline fishery in the Mid-Atlantic Bight (MAB) and provided a summary of mid-Atlantic fishing effort. These data are derived from logbooks. He examined the home ports of the boats fishing in the MAB, how many are fishing there exclusively, and the timing and distribution of MAB fishing. He also characterized the fishing effort, focusing on the primary targets (tuna and swordfish), the times of the highest bycatch rate in the MAB (July-October), the location of the greatest effort (along the shelf break), and the area where most interactions are taking place (along the shelf break, where there is the highest concentration of pilot whales).

Lance noted that survey efforts are concentrated in the summer and would benefit from more off-season research.

PLTRT members made the following suggestion:

- Participants suggested that fishers be given the authority to make improvements to their vessels to allow them to fish further out to sea, so that they could move out of areas of high bycatch (e.g., the shelf break).

6. Captain's communications

Nelson Beideman (Blue Water Fishermen's Association) presented on the potential for reducing bycatch from improving captain's communications. He summarized findings from a recent article by Gilman et al. (2005) that highlighted several promising techniques.

Nelson described three basic levels of communications protocols among vessels, in ascending order of formality: 1) conversations between friends, 2) gentlemen's agreements (e.g., Atlantic Northeast Distant area research), and 3) third party collection, analysis, and dissemination of communications. He also noted that for captain's communications to be effective, the exchange of information needs to be timely, and the entire fleet needs to cooperate.

PLTRT members expressed broad support for improving real time communications regarding marine mammal interactions. Many believed that a system based on vessel monitoring systems (VMS) could work because most boats are already set up to relay information using this system.

PLTRT members raised the following additional issues:

- Any captain's communications system that involve sharing of information submitted by fishermen to NOAA Fisheries will have to address confidentiality requirements of the Magnuson-Stevens Fishery Conservation and Management Act.
- Peer pressure is critical to the success of a management approach based on captain's communications. However, based on past experience, it is unlikely that all vessels in the longline fishery will participate at the same level. Some may not participate at all.
- Compliance will likely be highest if the system is mandatory. Several participants noted that even a voluntary communications system would help to reduce bycatch.
- Fishers will be reluctant to communicate and report information if they believe the information might be used for political purposes.

Several participants recommended that the PLTRT make a recommendation in its TRP for how to improve accountability of the fleet's vessels for their own bycatch.

7. Overview of observer program and summary of observer data for trips with marine mammal interactions

Dennis Lee (NOAA Fisheries Pelagic Observer Program) and Lance Garrison presented information on the history of the Atlantic pelagic longline fishery observer program. They also described the data forms used for recording information regarding incidental takes and the type of data typically recorded. They noted that information used to determine whether a marine mammal is seriously injured upon release is made using information recorded in the "comments" column of the incidental take log. Such comments often include information on whether the animal was hooked or entangled, the length of trailing gear, release efforts and the effectiveness of these efforts, and the condition and behavior of the animal upon release. They clarified that serious injury coding takes place during an analysis of the data and is not done by observers.

Dennis and Lance suggested two main ways of improving observer data on marine mammal interactions: 1) improve the training of the observers, and 2) improve the format of the incidental take form and the information it captures.

Dennis and Lance also raised the issue that achieving the 8% observer coverage required by current rules and regulations has been difficult to achieve. A key limitation is that many boats do not take observers either because they do not have adequate sleeping accommodations or the required USCG Commercial Fishing Vessel Safety Examination Decal.

Participants recommended revising the observer program's incidental take log and, in particular, expanding the comments column so that the reports on the status of hooking, entanglement, and remaining gear can be more objective and, in turn, objectively analyzed. Participants also recommended adding other types of information to the incidental take log, including:

- How the animal got caught (i.e., wander into gear, hooked eating catch, hooked eating bait)
- Did depredation occur? And, if so, what was left of the catch (e.g., lips only?)
- Was the bait being consumed by other species (e.g., squid)?
- Pictures should be taken of all marine mammals incidentally taken and any catch that is suspected to have been damaged as a result of depredation.

8. Nature of interactions with marine mammals—captain's perspectives and observers' perspectives

Lance Garrison provided a summary of observed injuries and mortalities of marine mammals in the pelagic longline fishery derived from information recorded on the observer program's incidental take log form. Lance noted that for pilot whales and Risso's dolphins:

- Most serious injuries are the result of being hooked
- Gear interactions are most often in the mouth, although wrapping of line around the tail is also common for Risso's dolphins
- The target species primarily associated with pilot whale and Risso's dolphin interactions were tuna and swordfish
- Most of the marine mammals observed interacting with the longline fishery were smaller sized pilot whales (5 to 11 feet in length; not fully grown) and middle sized Risso's dolphins

Lance noted that most observer reports do not provide enough information to discern whether pilot whales were taken as a result of depredation on the catch or the bait; nor were there any other obvious trends regarding marine mammal interactions.

Juan Levesque (NOAA Fisheries) presented observations based on his several years of experience as an observer for the Pelagic Observer Program. Juan recommended the following for addressing the marine mammal bycatch issue:

- Use fishers as a "reality check" for what can realistically be done.
- Improve fleet communications, and use positive incentives for fishers to participate.
- Boats should steam for a full day to lose pilot whales once they are observed near the gear. Experience shows that even 5-15 hours of steaming may not be enough.
- Research the effectiveness of deterrents during haul back, when most depredation appears to be taking place.
- Research the effects of different gangion length. Targeting tuna at deeper depths may decrease bycatch.

Several of the fishermen also shared their experience with marine mammal interactions. Key insights included the following:

- Situations where pilot whales are caught in gear can be very dangerous, due to the size and strength of the whales.
- Bycatch of pilot whales or marine mammals is a relatively rare event for most vessels.
- Captains use a variety of methods to try to bring pilot whales to the boats and release them once hooked or entangled.
- More entanglements appear to happen when gear is slack.
- Releasing pilot whales requires keeping them calm at all times.
- It is critical to maintain control of both ends of the main line.
- There has been greater success de-hooking smaller/juvenile pilot whales.
- De-hookers and line cutters designed for sea turtles may also be useful for releasing marine mammals.

9. Genetics analysis update

Lance Garrison provided an update on the progress of genetic research between June and September, 2005. During this time period, many samples were collected and analyzed. Current results show that the two species of pilot whales (short-finned and long-finned) are easily distinguished from each other, but that there is very low genetic diversity within each species. The implication of this low genetic diversity within each species is that marine resource managers will have to rely upon nuclear markers rather than on more simple mitochondrial DNA for within-stock differentiation, requiring a more complex analysis.

Lance presented the following "take home points":

- There is an apparent break between distribution of long-and short-finned pilot whales at 38 degrees north latitude during summer months.
- The working hypothesis on seasonal distribution is that long-finned pilot whales migrate south into the Mid-Atlantic bight during winter and spring, then move north to Georges Bank and the Gulf of Maine during summer and fall; short-finned pilot whales occur south of Cape Hatteras or offshore during colder months, and move north concentrating near Cape Hatteras and south of 38 degrees along the shelf break during the summer and fall.
- The time/season when the two species overlap needs to be better defined.
- Fall and spring species composition in the mid-Atlantic needs to be better defined to adequately test the working hypothesis. This would be accomplished by dedicated genetic sampling near Cape Hatteras and along the shelf break during these seasons.

Participants raised the following issues:

- Several participants requested that staff examine the degree to which stock structures are the same on both sides of the Atlantic. Recent research suggests that some animals may be migrating across the north Atlantic (participants briefly discussed a Fullard et al. (2000) journal article on pilot whale stock structure in the North Atlantic). Participants were interested in discussing this issue further at the next meeting.

- Participants requested that clear guidelines be established for dealing with cross-boundary stocks.

Lance noted that the Guidelines for Assessment of Marine Mammal Stocks (GAMMS) contain clear guidelines on how to estimate abundance, mortality/serious injury rates, and PBR for trans-boundary stocks. These guidelines and their application to the PLTRP will be discussed in detail at the next meeting.

10. Development of predictive model

Lance Garrison provided an update on the predictive model that he and other PLTRT members (Damon Gannon, David Kerstetter, Jean Cramer, John Watson) have been working to develop. These efforts will continue through the next PLTRT meeting.

Lance described some of the key explanatory variables incorporated into the model. These included:

- Environmental/space/time variables (e.g., average water temperature, water depth, distance from 200 meter isobath, location, fishing and geographic area, time fishing took place)
- Gear type variables (e.g., hook shape and size, bait type, hook depth)
- Fishing intensity variables (e.g., mainline length, number of hooks, set duration, soak duration, haul duration, total duration, hook density, hook hours)
- Target catch.

Preliminary results of the model show several variables to be particularly significant in influencing the rate of interactions with marine mammals. These included:

- Geographic area (most interactions have occurred in the Mid-Atlantic Bight)
- Mainline length (interactions tend to be more frequent with longer mainline lengths, especially over 20 miles; there have been no interactions with mainline lengths under 10 miles)
- Average water temperature (there is a greater probability of interactions with warmer water temperatures)
- Distance from the 200-meter isobath (there is a greater probability of interactions closer to the shelf break)

The next steps in developing the predictive model include looking at interactions between multiple variables and developing similar models for Risso's dolphins, sea turtles, and target species catch (although target species catch may require use of a different statistical model). Participants also suggested other potential variables for inclusion in the model:

- Proportion of catch damaged
- Time of day when haul back took place
- Relationship between interactions and type of boat or boat class
- Phase of moon (clarity of the night)
- Changes in barometric pressure (weather in general)
- Depth of gear (e.g., 10 vs. 15 fathoms for mainline, 30 fathom leaders/gangions)
- Tension of the sets

Participants also recommended that the definitions for the existing variables be clarified (in particular, mainline length).

11. De-hooking product demonstration and video

Nelson Beideman briefly demonstrated the use of de-hooking and release products. Participants also viewed an instructional video presentation on this topic.

Participants suggested several ways in which de-hooking and release gear and training could be improved:

- Develop de-hookers that work well for both J and Circle hooks.
- Provide additional training on the "tether".
- Augment handling procedures with input from veterinary medicine.
- Better inform fishers of the incentives associated with more effective handling of marine mammals and sea turtles.
- Improve the sharing of handling and release information among boats and captains, perhaps as part of a "captain's communications" system.
- Combine handling and release video with standard safety lectures and incorporate it into yearly Coast Guard permitting/certification inspections (and enforce appropriately).

Katie Moore (US Coast Guard) discussed Coast Guard procedures for enforcing protected species protection. Participants requested that enforcement representatives be present at future PLTRT meeting.

12. Bycatch reduction measures that have worked or not worked in similar fisheries

Kate Wells (NOAA Fisheries), speaking on behalf of work team members Sharon Young and Dave Johnston, provided a summary on the effectiveness of a variety of bycatch reduction efforts used in the pelagic longline and other fisheries. Kate reviewed the following main types of mitigation measures:

- Acoustics: passive and active
- Gear modifications, including hooks (circle hooks, corroding hooks, hook strength), bait (color, smell/taste), and line strength (breakaway)
- Fishing techniques, including timing of sets and hauls, depth of sets and spacing of hooks, and deployment methods (speed or location of sets to reduce interaction time)
- Interaction avoidance techniques, such as moving boats away from areas where whales are spotted, area closures, and fleet communications
- Creating incentives to reduce bycatch (e.g., boats that reduce bycatch the most would get to fish more)
- Ongoing studies in the areas of odor receptors, repellent chemicals and chemical deterrents, modified gear, population and abundance, population structure and dynamics, energy use and expenditures, and ecosystem relations

Participants requested that additional information be provided regarding other potential bycatch reduction measures, such as:

- Dying of bait
- Research on random sonic pulses (research from Uruguay)

Participants requested that additional bycatch experts participate in the next PLTRT meeting, including experts familiar with the North Pacific bottom longline fishery and efforts there to reduce bycatch of prohibited species (e.g., halibut) and marine mammals (e.g., sperm whales).

F. Review of draft Take Reduction Plan outline

Vicki Cornish presented a draft outline of the Take Reduction Plan (version dated 9/19/05). Vicki noted that the first two PLTRT meetings have informed sections II – V, while the third and fourth PLTRT meetings will inform sections VI – VIII. Section I will be an executive summary.

Participants offered a variety of comments on the draft outline. Key comments include:

- Section VI.A should focus on strategies for avoiding exposure to vessels/gear.
- Section VI.B should focus on strategies for reducing the probability of interactions once marine mammals are in the vicinity of gear
- Section VI.C should focus on strategies for minimizing the impacts of an interaction once it has occurred
- Section VI strategies can be viewed in terms of scaling (i.e., proximity of marine mammals to gear).
- Section VI strategies need to be prioritized.
- Section VII should be expanded to include other types of future work in addition to research and data collection (e.g., revision of serious injury criteria).
- Section VIII should also include the timeline regarding expected benefits to the stocks.
- Include a new section on international linkages (i.e., links to international management of pilot whales)
- Include a new section on enforcement strategies (or add to section VII)

G. Breakout group activity – Brainstorming bycatch reduction strategies and further research/data collection needs

PLTRT members participated in a breakout group activity to provide input on three main strategies for reducing mortality and serious injuries of pilot whales and other marine mammals in the mid-Atlantic:

- Strategies for avoiding exposure to vessel/gear (large scale)
- Strategies for reducing probability of interaction once in the vicinity of the gear (medium scale)
- Once interaction has occurred, strategies for minimizing impacts of that interaction (small scale)

Participants also discussed the longer-term research, data, or technology needs for each of these strategies.

A summary of PLTRT suggestions is presented in Attachment 1. [Note: These suggestions are still in rough form. As a key next step, NOAA Fisheries will digest and synthesize the recommendations and develop a refined list of possible bycatch reduction strategies and research/data needs.]

H. Work teams to be convened

Participants discussed convening the following work teams to assist in preparations for the next PLTRT meeting:

1. **Continue developing predictive model to provide quantitative assessment of alternative mitigation measures** (Lance Garrison, Jean Cramer, Damon Gannon, Dave Kerstetter). This work team will continue development of the predictive model, taking into account PLTRT comments made at the September meeting.

2. **Develop suggested revisions to observer data forms** (Lance Garrison, Nelson Beideman, Vicki Cornish, Jessica Koelsch). This work team will prepare recommended changes to the incidental take log form.

3. **Identify and sort priority research needs** (Bill McLellan, Damon Gannon, Nina Young, John Watson, Glenn Delaney). This work team will draw on the outcomes of the September PLTRT meeting to identify, sort, and begin prioritizing key research and data needs to be included in the plan.

4. **Develop list of disentanglement strategies** (Jim Budi, Marty Scanlon, Bill McLellan). This work team will develop draft guidance for disentangling marine mammals, drawing on sea turtle experience.

I. Potential agenda topics for next PLTRT meeting

Participants and NOAA staff identified several agenda topics for the next PLTRT meeting. These include:

- Discuss, refine, prioritize/rank bycatch reduction options and strategies
- Conduct a disentanglement demonstration (along with de-hooking)
- Provide disentanglement guidance
- Provide an update on enforcement regarding marine mammal interactions
- Provide 3rd quarter bycatch estimates
- Provide an update on genetic analysis of pilot whales and implications for global stock structure
- Provide an update on research on possible bycatch reduction measures (e.g., corrodible hooks, dyed bait, random sonic pulses, etc.)
- Discuss lessons learned from turtle bycatch reduction strategies and research
- Discuss lessons learned from compliance experience and possible strategies
- Continue to discuss the option of expanding the scope of the PLTRT to include Risso's dolphins and/or other marine mammals

IV. Project Schedule and Immediate Next Steps

A. Schedule of upcoming PLTRT meetings

The third PLTRT meeting is scheduled for January 25-27, 2006, and the fourth PLTRT meeting is scheduled for March 22-24, 2006. Both meetings will be held in a Florida location to be determined (St. Petersburg and Ft. Lauderdale were suggested).

B. Immediate next steps

Immediate next steps include the following:

1. NOAA Fisheries staff

- NOAA Fisheries staff to digest and synthesize the outcomes of the breakout group activity and develop a comprehensive list of all bycatch reduction strategies and research/data needs proposed.
- NOAA Fisheries staff to prepare a revised outline of the TRP.
- NOAA Fisheries staff to begin preliminary drafting of the TRP.
- NOAA staff to prepare an update on ongoing data collection and analysis.

2. PLTRT members and NOAA Fisheries staff

- CONCUR and Vicki Cornish to confer with work teams and identify point persons for each team.
- Work teams to begin scheduling work team activities.

3. Project facilitators

- CONCUR to develop and transmit Key Outcomes Memorandum.
- CONCUR to post September meeting materials and presentations on project website.