DRAFT ATLANTIC TRAWL GEAR TAKE REDUCTION PLAN

Submitted on behalf of the Atlantic Trawl Gear Take Reduction Team

to the

National Marine Fisheries Service
National Oceanic and Atmospheric Administration
Department of Commerce
Northeast Regional Office
One Blackburn Drive
Gloucester, MA 01930

April 2007

Disclaimer: This document was prepared for discussion purposes only and does not represent the official views of the NMFS or the consensus recommendations of the Atlantic Trawl Gear Take Reduction Team (ATGTRT)

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Deliberations Facilitated

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Draft Atlantic Trawl Gear Take Reduction Plan – April 2007
For Discussion Purposes Only

Table of Contents Page

Draft Atlantic Trawl Gear Take Reduction Plan – April 2007
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Executive Summary - To Be Completed (TBC)

NMFS has convened an Atlantic Trawl Gear Take Reduction Team (ATGTRT) to address incidental mortality and serious injury of long-finned pilot whales (*Globicephala melas*), short-finned pilot whales (*Globicephala macrorhynchus*), common dolphins (*Delphinus delphis*), and Atlantic white sided dolphins (*Lagenorhynchus acutus*) in several trawl gear fisheries operating in the Atlantic Ocean.

The goal of the Atlantic Trawl Gear Take Reduction Plan (TRP or Plan) is to reduce, within five years of its implementation, serious injuries and mortalities of long-finned pilot whales, short-finned pilot whales, common dolphins, and Atlantic white sided dolphins to insignificant levels approaching a zero mortality and serious injury rate.[1] Regulations define this insignificance threshold as where such impacts by all fisheries that interact with each stock totals less than 10% of the Potential Biological Removal levels (PBR)[2] established for those stocks.

Scope of the Plan

The impetus for this plan is a 2003 settlement agreement between the NOAA Fisheries= National Marine Fisheries Service (NMFS) and the Center for Biological Diversity (CBD) that required the convening of a Take Reduction Team (TRT) to address pilot whale and common dolphin bycatch in certain Atlantic trawl fisheries by September 2006.[3] At the time of the settlement agreement, the western North Atlantic (WNA) stocks of all three species were identified as strategic stocks.[4] The 2005 U.S. Atlantic and Gulf of Mexico Stock Assessment Report (Waring *et al.* 2006) now list long- and short-finned pilot whales, common dolphin and white-sided dolphin as non-strategic stocks.

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1 The MMPA establishes a requirement that the incidental mortality and serious injury of marine mammals be reduced to insignificant levels approaching a zero rate, commonly referred to as the Zero Mortality rate goal (ZMRG).

2 The potential biological removal (PBR) is the maximum number of animals, not including natural mortalities that may be removed annually from a marine mammal stock while still allowing that stock to reach or maintain its optimal population level.

3 In addition, the 2003 settlement with CBD also required convening a Take Reduction Team under the MMPA by June 30, 2005, to address the bycatch of short- and long-finned pilot whales and common dolphins in the Atlantic pelagic logline fishery. The Pelagic longline TRT submitted a draft TRP to NMFS in June 2006.

4 A strategic stock is one in which direct human-caused mortality exceeds the potential biological removal level for that stock; which is listed as a threatened or endangered species under the Endangered Species Act of 1973; or, which is declining and likely to be listed as a threatened or endangered species within the foreseeable future.

Although not included in the settlement agreement, Atlantic white-sided dolphins also sustain serious injuries and mortalities incidental to the Atlantic trawl fisheries. Further analysis of marine mammal interactions with Atlantic trawl fisheries led NMFS to the decision to address bycatch of Atlantic white-sided dolphin under the scope of the Atlantic trawl gear take reduction planning process.

Because all the marine mammal stocks of concern are below PBR and considered non-strategic stocks, NMFS has directed the Team to develop and submit a draft Plan to the Secretary within 11 months, in accordance with the mandates of the MMPA.

The Atlantic Trawl Gear Take Reduction Team (TRT) members raised several procedural questions during the course of its first meeting in September 2006, concerning their responsibilities. NOAA General Counsel (GC) reviewed the questions raised by the ATGTRT and have provided the following legal guidance to the questions raised by the ATGTRT:

Question 1: Clarify the timeline and requirements under the Marine Mammal Protection Act (MMPA) for development of a Take Reduction Plan (TRP) for marine mammal stocks that are non-strategic; i.e, does the 11 month timeline specified in the MMPA for development of a plan and 5 year timeline for reaching Zero Mortality Rate Goal (ZMRG) apply?

Answer to Question 1: Neither the 11 month timeline for development of a TRP nor the 5 year goal for reaching ZMRG apply to non-strategic stocks that do not interact with Category I fisheries.

However, NMFS intends to continue to adhere to the timeline established by the MMPA to develop a draft TRP within the 11 months that will achieve the goal of reaching ZMRG within the 5 year timeline established by the MMPA.

The other two procedural questions raised by the ATGTRT at the first meeting are as follows followed by NOAA GC's legal guidance to the Team:

Question 2: What is the TRT's responsibility for common dolphins since the take of that species is near ZMRG (+/1 one)?

Answer to Question 2: Since the take of common dolphins is approaching the insignificance threshold, NMFS and the TRT have discretion not to impose measures to further reduce the level of take.

Question 3: Clarify how and why white-sided dolphins were added to the TRT's purview and what are the TRT's responsibilities under Section 118 of the MMPA to address takes of this species; i.e., does 11 month requirement for development of a TRP and the 5-year timeline to

achieve ZMRG apply?

Answer to Question 3: White-sided dolphins were added to the TRT's purview as the result of the reasonable exercise of NMFS' discretion, since they are taken as bycatch by the same trawl fisheries that take common dolphins and pilot whales. Neither the 11 month timeline for development of a TRP nor the 5 year goal for reaching ZMRG apply.

Convening of the ATGTRT

In accordance with the MMPA and the settlement agreement, NMFS convened the ATGTRT in September 2006. At the first meeting, held September 19-22, 2006 in Providence Rhode Island, the Team heard presentations on abundance and serious injuries/mortalities of pilot whales, common dolphin and white-sided dolphins, descriptions and regulatory structure of the Atlantic trawl fisheries and analyses of observer data. In addition, the ATGTRT was presented with the results of a model that analyzed a number of variables (e.g., environmental factors, gear types, etc.) to determine which variables may be useful in predicting and/or minimizing interactions between marine mammals and trawl gear.

Marine Mammal Interactions with Atlantic Trawl Fisheries - TBC

The Nature of Marine Mammal Interactions with Atlantic Trawl Fisheries

The nature of interactions between trawl fisheries and long- and short-finned pilot whales, common dolphin and Atlantic white-sided dolphins is not well understood.

Short- and long-finned pilot whales are difficult to distinguish in the field because of similarities in size, form, and coloration. Therefore, references in NMFS Stock Assessment Reports to date have been made to the combined species, *Globicephala* spp., with respect to both population size and serious injury and mortality due to commercial fishing.

The ability to distinguish between the two pilot whale species is particularly relevant for assessing the impact of Atlantic trawl fisheries, as the distributions of the two pilot whales species are thought to overlap along the mid-Atlantic coast of the U.S. between 35° and 39°N. Currently, NMFS does not have sufficient information to determine the impacts of Atlantic trawl fisheries on each species separately.

Estimated Serious Injury and Mortality of Marine Mammals Incidental to Atlantic Trawl Fisheries

The estimated serious injury and mortality levels of pilot whales, common and Atlantic white-sided dolphin in the Atlantic trawl fisheries do not exceed the Potential Biological Removal level for these stocks but does exceed the insignificance threshold (10% PBR).

NMFS makes serious injury determinations on a case-by-case basis after reviewing observer data. These determinations are based on guidelines generated from a NMFS workshop in 1997. NMFS is currently planning to convene a workshop to review the serious injury guidelines.

The average combined annual serious injury and mortality of pilot whales incidental to Atlantic trawl fisheries is as follows: - **TBC**

The average combined annual serious injury and mortality of common dolphin incidental to Atlantic trawl fisheries is as follows: -**TBC**

The average combined annual serious injury and mortality of Atlantic white-sided dolphin incidental to Atlantic trawl fisheries is as follows: - **TBC**

INSERT SUMMARY TABLE– ESTIMATED SERIOUS INJURY AND MORTALITY – UPDATED NUMBERS AVAILABLE SHORTLY

The 2007 MMPA List of Fisheries (72 FR 14466, March 28, 2007) identifies several other species of marine mammals that have been observed as seriously injured or killed incidental to the trawl fisheries that are the subject of this TRP, including: bottlenose dolphins (WNA offshore), Risso's dolphin (WNA), harbor seal (WNA), harbor porpoise (Gulf of Maine/Bay of Fundy), and harp seal (WNA). In the four trawl fisheries covered by this TRP, each of the above listed species is incidentally seriously injured or killed at an annual rate less than 1% of PBR. This level is below the insignificance threshold, defined as 10% of a stock's PBR level (50 CFR 229.2).

Incidental takes in other fisheries – **TBC**

Pilot Whale

Common Dolphin

White-sided Dolphin

Major Elements of the TRP - to be completed (TBC)

Regulatory Measures: - TBC

Non-regulatory measures: - TBC

Research and data collection measures – TBC

Contingency Measures – TBC

TRP Implementation and Next Steps - TBC

Draft Atlantic Trawl Gear Take Reduction Plan – April 2007
For Discussion Purposes Only

I. MMPA Statutory Requirements and Establishment of Atlantic Trawl Gear Take Reduction Team

A. Requirements of the Marine Mammal Protection Act

Section 118 of the Marine Mammal Protection Act (MMPA) establishes directives and timelines for the development of Take Reduction Plans (TRP) to reduce mortality and serious injury (bycatch) of marine mammals incidental to commercial fishing operations. The immediate goal of a Take Reduction Plan for a strategic stock[5] is to reduce, within 6 months of the plan's implementation, the mortality and serious injury of marine mammals incidental to commercial fishing to levels less than the Potential Biological Removal (PBR) level[6] established for that stock. The long-term goal of a Take Reduction Plan is to reduce, within 5 years of the plan's implementation, the mortality and serious injury of marine mammals incidental to commercial fishing to insignificant levels approaching a zero rate (commonly referred to as the Zero Mortality Rate Goal, ZMRG).

Take Reduction Plans must include a review of the information available in marine mammal stock assessment reports (SARs) and any substantial new information that may have become available since the publication of the most recent SAR. Such information should include, but is not limited to, an estimate of the total number and, if possible, age and gender, of animals from the stocks that are being incidentally killed or seriously injured each year during the course of commercial fishing operations. Plans must also include recommended regulatory or voluntary measures for the reduction of incidental mortality and serious injury, and recommended dates for achieving the specific objectives of the plan.

Take Reduction Teams (TRT) are established by the Secretary[7] to develop draft Take Reduction Plans (TRP). Members of Take Reduction Teams must have expertise regarding the conservation or biology of the marine mammal species that the take reduction plan will address, or the fishing practices that result in the incidental mortality and serious injury of such species.

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5 A strategic stock is defined by the MMPA as one in which direct human-caused mortality exceeds the potential biological removal level for that stock; which is listed as a threatened or endangered species under the Endangered Species Act of 1973; or, which is declining and likely to be listed as a threatened or endangered species within the foreseeable future.

6 The potential biological removal (PBR) is the maximum number of animals, not including natural mortalities that may be removed annually from a marine mammal stock while still allowing that stock to reach or maintain its optimal population level.

7 Secretary refers to the Secretary of Commerce, whose authority for implementation of the Marine Mammal Protection Act has been delegated to the National Marine Fisheries Service (NMFS).

Members include representatives of federal agencies, each coastal state that has fisheries that interact with the species or stock, appropriate regional fishery management councils, interstate fisheries commissions, academic and scientific organizations, environmental groups, all commercial and recreational fisheries groups and gear types that incidentally take the species or stock, Alaska Native organizations or Indian tribal organizations, and others as the Secretary deems appropriate. In addition, take reduction teams must, to the maximum extent practicable, consist of an equitable balance among representatives of resource user interests and non-user interests.

Take reduction teams are not subject to the Federal Advisory Committee Act, and meetings of the teams are open to the public with prior notice of the meetings made public in a timely fashion. Draft Take Reduction Plans are developed by consensus. In the event consensus cannot be reached, the take reduction team must advise the Secretary in writing on the range of possibilities considered by the team, and the views of both the majority and minority.

The timelines specified for the development of Take Reduction Plans vary depending on the status of the stocks affected. Strategic stocks are subject to a slightly more accelerated timeline for the development of plans as compared to non-strategic stocks. Take reduction teams that are addressing incidental mortality and serious injury of strategic stocks have 6 months to submit a draft Take Reduction Plan to the Secretary; for non-strategic stocks, the MMPA directs the team to submit a draft plan within 11 months.[8] The Secretary takes the plan into consideration and, within 60 days of receipt of the team's draft plan, the Secretary publishes the proposed TRP in the *Federal Register*, along with any changes proposed by the Secretary and proposed implementing regulations. Take Reduction Plans are available for public comment for a period not to exceed 90 days. The Secretary issues the final Take Reduction Plan and implementing regulations within 60 days of the close of the public comment period.

After the final plan is published, the team will reconvene periodically[9] to monitor the implementation of the final TRP, and can recommend changes to the plan as necessary until the Secretary determines that the objectives of the plan have been met.

The Atlantic Trawl Gear Take Reduction Team (TRT) members raised several procedural questions during the course of its first meeting in September 2006, concerning their responsibilities. NOAA General Counsel (GC) reviewed the questions raised by the ATGTRT and have provided the following legal guidance to the questions raised by the ATGTRT:

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[8] In the event that a Take Reduction Team does not submit a draft plan to the Secretary within the timeframe required, the Secretary shall publish the proposed plan and implementing regulations within 8 months of the team=s establishment for strategic stocks, and within 13 months of the team=s establishment for non-strategic stocks.

[9] Every 6 months for strategic stocks, and annually for non-strategic stocks, or at such other times as deemed necessary.

Question 1: Clarify the timeline and requirements under the Marine Mammal Protection Act (MMPA) for development of a Take Reduction Plan (TRP) for marine mammal stocks that are non-strategic; i.e, does the 11 month timeline specified in the MMPA for development of a plan and 5 year timeline for reaching Zero Mortality Rate Goal (ZMRG) apply?

Answer to Question 1: Neither the 11 month timeline for development of a TRP nor the 5 year goal for reaching ZMRG apply to non-strategic stocks that do not interact with Category I fisheries.

However, NMFS intends to continue to adhere to the timeline established by the MMPA to develop a draft TRP within the 11 months that will achieve the goal of reaching ZMRG within the 5 year timeline established by the MMPA.

The other two procedural questions raised by the ATGTRT at the first meeting are as follows followed by NOAA GC's legal guidance to the Team:

Question 2: What is the TRT's responsibility for common dolphins since the take of that species is near ZMRG (+/1 one)?

Answer to Question 2: Since the take of common dolphins is approaching the insignificance threshold, NMFS and the TRT have discretion not to impose measures to further reduce the level of take.

Question 3: Clarify how and why white-sided dolphins were added to the TRT's purview and what are the TRT's responsibilities under Section 118 of the MMPA to address takes of this species; i.e., does 11 month requirement for development of a TRP and the 5-year timeline to achieve ZMRG apply?

Answer to Question 3: White-sided dolphins were added to the TRT's purview as the result of the reasonable exercise of NMFS' discretion, since they are taken as bycatch by the same trawl fisheries that take common dolphins and pilot whales. Neither the 11 month timeline for development of a TRP nor the 5 year goal for reaching ZMRG apply.

B. Scope of the Plan

Species focus

A 2003 settlement agreement between NMFS and the Center for Biological Diversity (CBD) resulting from a federal suit filed in California mandated the agency to convene a TRT by September 30, 2006, to address bycatch of long-finned pilot whales (*Globicephala melas),* shortfinned pilot whales (*Globicephala macrorhynchus*), and common dolphins (*Delphinus*

delphis).[10]

At the time of the settlement agreement the western North Atlantic stocks of all three species were identified as strategic stocks. The 2005 U.S. Atlantic and Gulf of Mexico Stock Assessment Report (Waring *et al.* 2006) now lists long- and short-finned pilot whales, common dolphin and white-sided dolphins as non-strategic stocks.

Although not included in the settlement agreement, Atlantic white-sided dolphins also sustain serious injuries and mortalities incidental to the Atlantic trawl fisheries. Further analysis of marine mammal interactions with Atlantic trawl fisheries, led NMFS to the decision to address bycatch of Atlantic white-sided dolphin under the scope of the Atlantic trawl gear take reduction planning process. As noted, the 2005 SAR lists white-sided dolphin as non-strategic.

CLARIFICATION ON TIMELINE FOR DEVELOPMENT OF TRP FOR NON-STRATEGIC STOCKS – NOAA GC

Fisheries focus

The focus of the Take Reduction Plan is the Mid-Atlantic mid-water trawl (including pair trawl), Mid-Atlantic bottom trawl, Northeast mid-water trawl (including pair trawl) and the Northeast bottom trawl. Long- finned and short-finned pilot whales, common dolphin and Atlantic whites-sided dolphin are known to interact with the Mid- Atlantic mid-water trawl, the Mid-Atlantic bottom trawl, Northeast Mid-water Trawl, and the Northeast bottom trawl fisheries, which are classified as Category II fisheries (i.e., fisheries that have occasional incidental mortality and serious injury of marine mammals, defined by NMFS as an annual mortality and serious injury greater than 1 percent and less than 50 percent of the PBR level of a given stock[11]) on the MMPA List of Fisheries (LOF).

Other Category I and II commercial fisheries known to occasionally cause incidental mortality and serious injury of the Western North Atlantic stocks of long- and short-finned pilot whales, white-sided dolphins, and/or common dolphins, as of the Final LOF for 2007 (72 FR 14466, March 28, 2007) include the Atlantic Ocean, Caribbean, and Gulf of Mexico large pelagic longline (excluding the Northeast distant water fishery), Northeast sink gillnet, Mid-Atlantic gillnet, and Northeast anchored float gillnet fisheries.

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[10] The settlement with CBD also mandated the establishment of a Take Reduction Team to address the bycatch of long-finned pilot whales (*Globicephala melas)*, shortfinned pilot whales (*Globicephala macrorhynchus*), and common dolphins (*Delphinus delphis*) in the Atlantic pelagic Longline fishery by June 30, 2005. On June 8, 2006, the PLTRT submitted a draft take reduction plan to NMFS.

[11] MMPA 118 (c)(1)(A)(ii) and 50 CFR 229.2

C. Goal of the Plan

As noted, the timelines specified for the development of Take Reduction Plans vary depending on the status of the stocks affected. Strategic stocks are subject to a slightly more accelerated timeline for the development of plans as compared to non-strategic stocks. The overall goal of the Atlantic Trawl Gear Take Reduction Plan is to reduce, within five years of its implementation, serious injuries and mortalities of pilot whales (*Globicephala* spp.), common dolphins and white-sided dolphins in the Atlantic trawl fisheries to insignificant levels approaching a zero mortality and serious injury rate (i.e., <10% of PBR). Since none of the stocks under the ATGTRP are strategic or taken at levels >PBR, our goal is to reach ZMRG taking into account the economics of the fisher(ies), the availability of existing technology and existing state and regional fishery management plans [MMPA 118 (f)(2)].

NMFS shall consider the goal of the Plan to have been achieved if either:

The serious injury and mortalities of pilot whales, common dolphins and white-sided dolphins are reduced to below the insignificance threshold recognizing that other fisheries also have takes of these species and the insignificance threshold needs to be met for the species as a whole; or,

Further reductions in serious injuries and mortalities of pilot whales, common dolphins and white-sided dolphins in Atlantic trawl fisheries is determined by NMFS to be infeasible, after considering the economics of trawl fisheries, the availability of existing technology, and existing fishery management plans. If this is the case, NMFS, in consultation with the Team, will monitor technological advances and the economics of trawl fisheries and will reconvene the Team to recommend additional measures to reduce bycatch, if it is deemed that there is new technology available and/or additional reductions could be made in an economically feasible manner.

D. Establishment of the Take Reduction Team

NMFS announced the establishment of the Team on September 14, 2006, in the *Federal Register* (71 FR 54273). At that time, the Team was directed to address the incidental mortality and serious injury of short and long-finned pilot whales, common dolphin and white-sided dolphins in the mid-Atlantic mid-water and bottom trawl fisheries and the northeastern bottom trawl and mid-water trawl fisheries, and to prepare a draft Take Reduction Plan for these non-strategic stocks within 11 months of the Team's establishment.

The selection of team members followed guidance provided by section 118 of the MMPA. NMFS strove to select an experienced and committed team with a balanced representation of stakeholders. Members of the Take Reduction Team include fishermen and representatives of the various affected Atlantic trawl fishing industry, environmental groups, marine mammal biologists, fisheries biologists, representatives of the Mid-Atlantic and New England Regional

Fishery Management Council, and representatives from the State of Maine and the state of Massachusetts, the Marine Mammal Commission, and NMFS.

TRT members recognized that there would be some challenges in producing a consensus-based Take Reduction Plan, given their diverging interest on some issues. However, they all agree that incidental take of marine mammals is not in the interest of any of their organizations.

Members of the Atlantic Trawl Gear Take Reduction Team (ATGTRT) are listed below in alphabetical order. Complete contact information for team members is provided in Appendix A.

ATGTRT Members

Melissa Andersen, National Marine Fisheries Service (NMFS)
Regina A. Asmutis-Silvia, Whale and Dolphin Conservation Society (WDCS)
David Beutel, University of Rhode Island Fisheries Center
William Bright, Loper-Bright Enterprises
Brendan Cummings, Center for Biological Diversity (CBD)
Glenn Delaney, Northeast Seafood Coalition (NSC)
Gregory DiDomenico, Garden State Seafood Association
Patricia Fiorelli, New England Fishery Management Council
Damon Gannon, Mote Marine Laboratory, Marine Mammal Center Michael Genovese,
Glen Goodwin, Seafreeze, Ltd.
Elizabeth Griffin, Oceana
Nick Jenkins, Shafmaster Fishing Co.
Jessica Koelsch, The Ocean Conservancy
Robert Lane
Stephen Lee
Jim Lovgren
Rick Marks, Roberston, Monagle & Eastaugh
Dan McKiernan, Massachusetts Division of Marine Fisheries
William McLellan, University of North Carolina, Wilmington
Mark Minton, National Marine Fisheries Service
Peter Moore, American Pelagic Association
Gerry O=Neill
Ryan Rabar
Eoin Rochford, Norpel
Jim Ruhle
Rich Seagraves, Mid-Atlantic Fishery Management Council
Michael Simpkins, Marine Mammal Commission
Terry Stockwell, Maine Department of Marine Resources (MDMR)
Sharon Young, Humane Society of the United States

Alternates
Susan Barco (alternate for Damon Gannon)
Shaun Heena (alternate for Gerry O=Neil, Swan Net East Coast Services)
Jeff Kaelin (alternate for Ryan Rabar)
Jackie Odell (alternate for Glenn Daleney), Northeast Seafood Coalition
Cindy Smith (MDMR)(alternate for Terry Stockwell)

National Marine Fisheries Service Advisors:

Northeast Regional Office

Mary Colligan
David Gouveia
Kevin Collins
Ellen Keane
Glen Salvador
John Kenney
John Higgins

Northeast Fisheries Science Center

Debra Palka
Marjorie Rossman
Richard Merrick
Amy Van Atten
Heather Haas
Kimberly Murray
Kathryn Biscack
Gisele Magnusson
Henry Milliken
Chris Orphanides
Dana Belden

Office of Protected Resources

Kristy Long

Southeast Regional Office

Laura Engleby

Southeast Fisheries Science Center

Patty Rosel
Jeff Gearhart

United States Coast Guard Advisor:
Katie Moore

Facilitators:
Robin Roberts
Madeline West
Dana Mason

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1255 23rd Street, NW, Suite 275
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E. The Role of the Facilitator in the Take Reduction Plan Process

NMFS contracted with RESOLVE, Inc. (Washington, DC) to facilitate team meetings and to assist in logistical arrangements of team meetings. In its role as facilitator, RESOLVE was responsible for: contacting potential team members, maintaining a list of all members and their contact information, planning and facilitating team meetings, working with the team to establish ground rules, guiding and summarizing the deliberations, and synthesizing key results at periodic

junctures in meetings. In addition, RESOLVE identified and arranged for appropriate meeting venues and lodging for team members, reimbursed team members for travel expenses and ensured timely submission of a draft Take Reduction Plan to NMFS.

II. Review of Marine Mammal Abundance, Distribution, Stock Structure and Incidental Mortality - TBC

A. Abundance, distribution and stock structure

1. Data sources

The primary source of data used in determining the abundance, distribution, and stock structure of long and short-finned pilot whales, common dolphins and white-sided dolphins are aerial and ship surveys. The Northeast Fisheries Science Center (NEFSC) and the Southeast Fisheries Science Center (SEFSC) both conducted abundance surveys in the summer of 2004 (which also satisfied the settlement agreement).

The NEFSC conducted a vessel survey from June 23 to July 12, 2004, covering waters from 100 m deep to the Gulf Stream, from Virginia to Cape Cod. The NEFSC also conducted an aerial survey from June 12 to July 12, 2004, which extended from the state border between Virginia and North Carolina to the Bay of Fundy and from the U.S. Atlantic shoreline to the entrance of the Gulf of St. Lawrence. The aerial survey covered continental shelf waters to the 100m isobath in the mid-Atlantic, Georges Bank, and the Gulf of Maine (Palka 2006). The SEFSC conducted a vessel survey from June 22 to August 19, 2004, covering waters from 50 m deep seaward to the U.S. EEZ, from the Maryland/Delaware border into southern Florida.

2. Survey Methodology

Aerial and ship surveys conducted to determine the abundance and distribution of cetaceans in the survey area, including long and short finned pilot whales, common dolphins and white-sided dolphins, employed distance sampling to estimate (Buckland *et al*. 2001). Distance sampling is a widely used methodology for estimating the density and/or abundance of biological populations.

Dr. Debra Palka (NEFSC) provided a description of how the distance sampling methodology is used to estimate abundance of marine mammals, as well as survey results, to the ATGTRT at the September 2006 meeting. In brief, an observer or a team of observers stationed on a vessel or aircraft survey randomly placed tracklines, searching for animals or clusters of animals. For each animal (or cluster of animals) detected, the observers record the bearing and distance to the sighting, and these measures are used to calculate the perpendicular distance to the trackline. The principal assumption of distance sampling is that the ability of observers to detect animals decreases with distance from the trackline in a predictable manner. Based on the number of observations recorded at each distance, one can model the decline in detection probability with distance and adjust the overall count of observed animals (or clusters) to correct for those missed within the surveyed strip. Several other critical assumptions of this approach include that distances are measured accurately or are at least not biased, animals are randomly distributed

with respect to the trackline, and group sizes of animals are estimated accurately. In standard distance analysis, it is assumed that all animals on the trackline are observed. For marine mammal surveys, however, this assumption results in a known negative bias in abundance estimates. This results both from animals that are available to the observers but are missed and because some unknown proportion of marine mammals are submerged and not available to be seen by observers. To correct for this known bias, a direct estimate is made of the probability of detecting animals on the track line (g(0)) using two independent observer teams (Buckland *et al*. 2001).

Both the NEFSC and SEFSC surveys employed methods during shipboard and aerial surveys to estimate g(0). For shipboard surveys, two visual observer teams simultaneously collected sighting data and operated independently of each other (Palka 2006, SEFSC unpublished data). This dual team approach, in which the proportion of sightings seen by one team was compared to that seen by the other, provides data to directly estimate g(0).

For aerial surveys, *g(0)* was estimated using the Hiby circle-back data collection method (Hiby 1999). The circle-back method modifies standard single-plane line-transect methods by circling back and re-surveying a portion of the track line. The Aleading@ legs are the legs that initiated the circle-back, and the Atrailing@ legs are the portions of track line that are re-surveyed. Again, the proportion of sightings for which an animal or group of animals were seen on the track line during the leading legs but not the trailing legs provides an estimate of g(0).

3. MMPA Stock Definitions

Under the MMPA, NMFS is required to define stocks of marine mammals in U.S. waters using the best available data. NMFS has defined a western North Atlantic stock for both pilot whale species as well as for common dolphins and white-sided dolphins. Biological data to definitively define stocks within U.S. waters for these species is lacking. While pilot whales from the western and eastern North Atlantic may constitute a single population, most studies to date find some degree of differentiation across the Atlantic (Bloch and Lastein 1993, Mercer 1975, Abend and Smith 1995, Fullard *et al*. 2000). Information on movements and interbreeding for these species also is lacking, as are up-to-date abundance and fishery-mortality estimates outside the U.S. EEZ. As a result of this lack of information, NMFS estimates PBR, abundance, and mortality only for the populations of these species that occur within the U.S. EEZ, consistent with the Guidelines for Assessing Marine Mammal Stocks (GAMMS; Wade and Angliss 1997) and the MMPA. NMFS nevertheless recognizes that these limited range population and PBR estimates are minimum estimates, and that the best approach is to manage trans-boundary stocks within an international framework.

4. Distribution and stock structure - TBC

Pilot Whale (*Globicephala* sp)

Stock definition and geographic range

Long-finned pilot whales are distributed world wide in cold temperate waters in both the Northern (North Atlantic) and Southern Hemispheres. In the North Atlantic, the species is broadly distributed and thought to occur from 40° to 75°N in the eastern North Atlantic and from 35° to 65°N in the western North Atlantic (Abend and Smith 1999). Short-finned pilot whales are also distributed world wide in warm temperate and tropical waters. In U.S. waters of the Atlantic, this species is found in the Gulf of Mexico (GOM) and in the western North Atlantic as far north as the central Mid-Atlantic Bight. Both species tend to favor the continental shelf break and slope, as well as other areas of high relief, but are also present offshore in pelagic environments. In the western North Atlantic, they may be associated with the Gulf Stream north wall and with thermal fronts (Waring *et al*. 1992).

The two species are difficult to tell apart during visual abundance surveys and therefore, in many cases, reference is made to the combined species, *Globicephala* spp. Due to this difficulty, the exact species= boundaries for short-finned and long-finned pilot whales in the western North Atlantic have not been clearly defined. However, their distributions are thought to overlap along the mid-Atlantic coast of the U.S. between 35° and 39°N (Payne and Heinemann 1993, Bernard and Reilly 1999).

To more clearly define the degree of overlap of the two species in the mid-Atlantic, NMFS conducted a genetic analysis on biopsy samples and samples collected from animals incidentally taken by commercial fisheries in the mid-Atlantic region. Samples analyzed included 194 samples from long-finned pilot whales and 167 samples from short-finned pilot whales (Northwest Atlantic only with an additional 47 analyzed from the Gulf of Mexico). DNA sequence data was collected to identify each sample to species and then ArcGIS was used to plot sample locations and examine areas of overlap. Long- and short-finned pilot whales show a distinct difference in preference for deep water, which may reflect differences in water temperature preferences. Long-finned pilot whales were found on the continental shelf and especially along the shelf break, but did not show evidence of going deeper than the shelf break. Short-finned pilot whales were present on the shelf, especially south of Cape Hatteras, along the shelf edge and in deeper water east of the shelf break (Rosel, unpublished data). No long-finned pilot whale samples were found south of 38°N except for three strandings in North Carolina. These strandings may represent aberrant animals or animals that floated farther south after dying. However, biopsy samples from the winter are needed to determine the southern limit of longfinned pilot whale=s winter distribution in the mid-Atlantic region. No short-finned pilot whales were identified north of 40°N; nor east of 71.5°W in the Mid-Atlantic Bight. Because of fairly complete sampling north of 40°N in winter and summer; this may be a fairly good indication that this species is not regularly found north of this latitude. The greatest area of overlap in distribution of the two species seems to be confined to an area along the shelf edge between 38°N and 40°N in the Mid-Atlantic Bight, where long-finned pilot whales are present in

winter and summer and short-finned pilot whales are present at least in summer. Further sampling will help determine 1) whether short-finned pilot whales are present in this area during winter, and 2) whether long-finned pilot whales are present farther south, and during what periods. In addition, the genetic analyses revealed that long-finned pilot whales have extraordinarily low genetic variability in the mitochondrial control region, but that short-finned pilot whales have a slightly higher level of variability at that gene region. These low levels of genetic variability are consistent with what has been seen in other cetaceans with matriarchal social structures such as killer whales and sperm whales.

Population structure for neither long-finned nor short-finned pilot whales in the North Atlantic is well known. For short-finned pilot whales, there is no available information on whether the North Atlantic stock is subdivided into smaller populations. Several indirect and directed studies on long-finned pilot whales indicate that there is some degree of population differentiation within the North Atlantic. Mercer (1975) examined population dynamics of long-finned pilot whales in Newfoundland waters and noted that depletion of pilot whales due to the Newfoundland drive fishery in the 1950s did not coincide with any reduction of long-finned pilot whale landings in the drive fishery of the Faroe Islands, suggesting the existence of two or more demographically independent populations in the North Atlantic.

Similarly, Bloch and Lastein (1993) performed a discriminant analysis on morphometric characters measured from long-finned pilot whales collected in Newfoundland and Faroe Islands drive fisheries. Significant differences were found between pilot whales in these two areas, with pilot whales in Newfoundland having significantly longer skulls and shorter bodies. In addition, Newfoundland male pilot whales had significantly longer flippers. The authors suggested that the thermal front between the North Atlantic-Irminger current and the East Greenland-Labrador current may provide a physical barrier to dispersal, thereby isolating pilot whales in these two areas and allowing differentiation to arise. They further suggested that, since this front reaches and follows the mid-Atlantic ridge southwards, it may segregate long-finned pilot whales on either side of the Atlantic basin.

Abend and Smith (1995) examined stable isotope ratio differences between long-finned pilot whales sampled in Cape Cod, MA, the mid-Atlantic Bight and the Faroe Islands. Significant differences in nitrogen stable isotope values in different tissue types suggested that the pilot whales in the western and eastern North Atlantic are feeding at different trophic levels, at least in the short and medium term. Using teeth as a proxy for longer-term inferences, significant differences were found between the mid-Atlantic and Faroe samples, but not between Cape Cod and Faroe samples. In addition, differences in isotope ratios in blubber between the mid-Atlantic Bight and Cape Cod suggested these animals were feeding in different areas as well. However, caution should be exercised when interpreting these data because of extremely small sample sizes (three female whales from a single mass stranding event on Cape Cod, three female whales taken in the same haul of a mackerel trawl in the Mid-Atlantic Bight, and three female whales from different pods taken in the pilot whale drive fishery of the Faroe Islands).

Abend and Smith (1999) also thoroughly reviewed all available location information (sightings, strandings, bycatch and harvest reports) and inferential data (prey preferences and distributions, oceanographic processes) for long-finned pilot whales in the North Atlantic. Their conclusions regarding the geographic distribution of the species in the North Atlantic support previously published distributions. However, they concluded the distributional data provide evidence neither for nor against a single population in the Atlantic.

Most recently, Fullard *et al.* (2000) examined eight nuclear microsatellite markers in long-finned pilot whales from Cape Cod, MA, West Greenland, the Faroe Islands and the United Kingdom. Using standard estimates of population subdivision (FST), pairwise comparisons of the Faroe Islands to Cape Cod, the Faroe Islands to West Greenland, and the West Greenland to Cape Cod were all significantly different from each other, revealing significant genetic heterogeneity and some degree of population subdivision within the North Atlantic. Differentiation was highest between West Greenland and the other three sites suggesting that this population may be isolated from the others in the North Atlantic, perhaps due to an ecological difference between cold West Greenland waters and warmer Gulf Stream waters stretching across the Atlantic. It should be noted however, that pairwise comparisons of Cape Cod to locations in the eastern Atlantic showed significant differentiation, suggesting that there may be population differentiation across the Atlantic as well.

Although genetic and morphometric data, which are perhaps the best indicators of population identity, show population heterogeneity among long-finned pilot whales in the North Atlantic, neither the number of nor the geographic ranges of these smaller populations are known.

Biopsy samples were collected on vessel surveys conducted in 2004 and 2005 for genetic analyses to identify species and investigate stock structure. Additional biopsy samples were also available from previous NMFS surveys, as well as from stranded animals and animals incidentally taken by trawl fisheries in the Northwest Atlantic U.S. EEZ. No samples were available from animals taken incidental to the pelagic longline fishery NMFS 2006, PLTRP).

DNA was extracted from pilot whale samples collected from strandings, bycatch, and remote skin biopsy effort using a standard protocol (Rosel and Block 1996). The mitochondrial DNA control region was targeted during extractions because preliminary data determined that it could reliably distinguish between the two pilot whale species. To identify each sample to species, a phylogenetic tree was constructed. In this tree, the two species form separate, well supported groupings. To identify which group corresponds to which species, sequences from known long and short-finned pilot whales (collected from stranded animals identified to species by experts) were included in the analysis. This allowed the identification of all the collected samples to species. One sample collected from a dead, stranded neonate, identified in the field as a pilot whale, turned out to be a Risso=s dolphin calf. All other samples were pilot whales.

Common Dolphin (*Delphinus delphis*)

Stock definition and geographic range

The common dolphin may be one of the most widely distributed cetacean species, as it is found worldwide in temperate, tropical, and subtropical seas. In the North Atlantic, common dolphins occur over the continental shelf along the 200-2000 m isobaths and over prominent underwater topography from 50º N to 40º S latitude (Evans 1994). The species is less common south of Cape Hatteras, although schools have been reported as far south as eastern Florida (Gaskin 1992). NMFS is currently funding genetic and skull morphometric studies, which will provide information on common dolphin stock structure in the western North Atlantic. Preliminary work indicated a high variance in skull morphometric measurements suggesting the existence of more than a single stock. In waters off the northeastern USA coast, common dolphins are distributed along the continental slope (100 to 2,000 meters) and are associated with Gulf Stream (CETAP 1982; Selzer and Payne 1988; Waring *et al.* 1992). They occur from Cape Hatteras northeast to Georges Bank (35° to 42°N) during mid-January to May (Hain *et al.* 1981; CETAP 1982; Payne *et al.* 1984). Common dolphins move onto Georges Bank and the Scotian Shelf from mid-summer to autumn. Selzer and Payne (1988) reported very large aggregations (greater than 3,000 animals) on Georges Bank in autumn. Common dolphins are occasionally found in the Gulf of Maine (Selzer and Payne 1988). Migration onto the Scotian Shelf and continental shelf off Newfoundland occurs during summer and autumn when water temperatures exceed 11ºC (Sergeant *et al.* 1970; Gowans and Whitehead 1995).

Atlantic White-sided Dolphin ((*Lagenorhynchus acutus*)

Stock definition and geographic range

White-sided dolphins are found in temperate and sub-polar waters of the North Atlantic, primarily in continental shelf waters to the 100m depth contour. The species inhabits waters from central West Greenland to North Carolina (about 35°N) and perhaps as far east as 43°W (Evans 1987). Distribution of sightings, strandings and incidental takes suggest the possible existence of three stocks units: Gulf of Maine, Gulf of St. Lawrence and Labrador Sea stocks (Palka *et al.* 1997). Evidence for a separation between the population in the southern Gulf of Maine and the Gulf of St. Lawrence population comes from a virtual absence of summer sightings along the Atlantic side of Nova Scotia. This was reported in Gaskin (1992), is evident in Smithsonian stranding records, and was obvious during abundance surveys conducted in the summers of 1995 and 1999 which covered waters from Virginia to the Gulf of St. Lawrence. White-sided dolphins were seen frequently in Gulf of Maine waters and in waters at the mouth of the Gulf of St. Lawrence, but only a few sightings were recorded between these two regions. The Gulf of Maine population of white-sided dolphins is most common in continental shelf waters from Hudson Canyon (approximately 39°N) on to Georges Bank, and in the Gulf of Maine and lower Bay of Fundy. Sightings data indicate seasonal shifts in distribution (Northridge *et al.*

1997). During January to May, low numbers of white-sided dolphins are found from Georges Bank to Jeffreys Ledge (off New Hampshire), with even lower numbers south of Georges Bank, as documented by a few strandings collected on beaches of Virginia and North Carolina. From June through September, large numbers of white-sided dolphins are found from Georges Bank to the lower Bay of Fundy. From October to December, white-sided dolphins occur at intermediate densities from southern Georges Bank to southern Gulf of Maine (Payne and Heinemann 1990). Sightings south of Georges Bank, particularly around Hudson Canyon, occur year round but at low densities. The Virginia and North Carolina observations appear to represent the southern extent of the species' range. Prior to the 1970s, white-sided dolphins in U.S. waters were found primarily offshore on the continental slope, while white-beaked dolphins (*L. albirostris*) were found on the continental shelf. During the 1970s, there was an apparent switch in habitat use between these two species. This shift may have been a result of the decrease in herring and increase in sand lance in the continental shelf waters (Katona *et al.* 1993; Kenney *et al.* 1996).

5. Abundance Estimates

Pilot Whales

The total number of pilot whales off the eastern U.S. and Canadian Atlantic coast is unknown, although estimates from selected regions of the habitat do exist for select time periods (see Waring *et al*. 2006 for a complete summary). Observers at sea cannot reliably distinguish longand short-finned pilot whales visually. As a result, sightings of pilot whales are not identified to species and resulting survey estimates are considered joint estimates for both species. The best available estimate for *Globicephala* spp. in the U.S. EEZ is the sum of the estimates from the summer 2004 U.S. Atlantic surveys, 31,139 (Coefficient of Variation, or CV=0.27), where the estimate from the northern U.S. Atlantic is 15,728 (CV=0.34), and from the southern U.S. Atlantic is 15,411 (CV=0.43) (Waring *et al*. 2006). This joint estimate is the most recent available, and the surveys have the most complete coverage of the species= habitat. For *Globicephala* spp., the minimum population estimate, which accounts for uncertainty in the best estimate (Wade and Angliss 1997), is 24,866.

A previous survey of pilot whales in the western Atlantic Ocean was conducted during the summer of 1998. The best estimate for pilot whales that came out of the 1998 survey was 14,524 (CV = 0.30, Waring *et al.* 2004). The estimate for the northern U.S. Atlantic was 9,800 (CV = 0.34), while the estimate from the southern U.S. Atlantic was 4,724 (CV = 0.30). There were important differences in the methods between the 2004 and 1998 surveys. First, the 2004 survey in the southern Atlantic included a significant amount of effort along the shelf break in the mid-Atlantic. This area was poorly covered during the 1998 survey due to both a uniform survey design and poor weather conditions. The majority of pilot whale sightings in 2004 were observed in this area, and it is therefore likely that the 1998 estimates were negatively biased. Second, the 2004 survey in the southern Atlantic and the 2004 aerial survey in the northern Atlantic were corrected for g(0), whereas these 1998 surveys were not corrected for this known negative bias.

It is possible that there was an actual increase in the abundance of the species in the surveyed areas between 1998 and 2004. However, the majority of the apparent increase is likely the result of these methodological differences.

Common dolphin

The total number of common dolphins off the U.S. or Canadian Atlantic coast is unknown, although several abundance estimates are available from selected regions for selected time periods. Sightings have been almost exclusively in the continental shelf edge and continental slope areas (Figure 1). An abundance of 29,610 common dolphins (CV=0.39) was estimated from an aerial survey program conducted from 1978 to 1982 on the continental shelf and shelf edge waters between Cape Hatteras, North Carolina and Nova Scotia (CETAP 1982). An abundance of 22,215 (CV=0.40) common dolphins was estimated from a June and July 1991 shipboard line-transect sighting survey conducted primarily between the 200 and 2,000 m isobaths from Cape Hatteras to Georges Bank (Waring *et al.* 1992; Waring 1998). As recommended in the GAMMS Workshop Report (Wade and Angliss 1997), estimates older than eight years are deemed unreliable, and should not be used for PBR determinations. Further, due to changes in survey methodology the earlier data should not be used to make comparisons with more current estimates.

An abundance estimate of 1,645 (CV=0.47) common dolphins was obtained from a June and July 1993 shipboard line-transect sighting survey conducted principally between the 200 and 2,000 m isobaths from the southern edge of Georges Bank, across the Northeast Channel, to the southeastern edge of the Scotian Shelf (NMFS 1993). Data were collected by two alternating teams that searched with 25x150 binoculars and were analyzed using DISTANCE (Buckland *et al.* 1993; Laake *et al.* 1993). Estimates include school size-bias, if applicable, but do not include corrections for *g(0)* or dive-time. Variability was estimated using bootstrap resampling techniques.

An abundance estimate of 6,741 (CV=0.69) common dolphins was obtained from a July to September 1995 sighting survey conducted by two ships and an airplane that covered waters from Virginia to the mouth of the Gulf of St. Lawrence (NMFS unpublished data). Total track line length was 32,600 km. The ships covered waters between the 50 - 1000 fathom depth contour lines, the northern edge of the Gulf Stream, and the northern Gulf of Maine/Bay of Fundy region. The airplane covered waters in the Mid-Atlantic from the coastline to the 50 fathom depth contour, the southern Gulf of Maine, and shelf waters off Nova Scotia from the coastline to the 1000 fathom isobath. Data collection and analysis methods used were described in Palka (1996).

An abundance estimate of 30,768 (CV=0.32) common dolphins was derived from a line transect sighting survey conducted during 6 July to 6 September 1998 by a ship and plane that surveyed 15,900 km of track line in waters north of Maryland (38ºN) (NMFS unpublished data; Palka

2006). Shipboard data were analyzed using the modified direct duplicate method (Palka 1995) which accounts for school size bias and *for g(0)*, the probability of detecting a group on the track line. Aerial data were not corrected for *g(0)*. No common dolphins were encountered during the southern component of the shipboard line transect sighting survey which was conducted between 8 July and 17 August 1998 and surveyed 4,163 km of track line in waters south of Maryland (38ºN) (Mullin and Fulling 2003).

The 1998 data (as well as the data from earlier surveys) suggest that, seasonally, at least several thousand common dolphins occur in continental shelf edge waters, with perhaps the highest abundance in the Georges Bank region.

An abundance estimate of 90,547 (CV= 0.244) common dolphins was obtained from a line transect sighting survey conducted during 12 June to 4 August 2004 by a ship and plane that surveyed 10,761 km of track line in waters north of Maryland (38ºN) (Palka 2006). Shipboard data were collected using the two independent team line transect method and analyzed using the modified direct duplicate method (Palka 1995) accounting for biases due to school size and other potential covariates, reactive movements (Palka and Hammond 2001), and *g(0)*, the probability of detecting a group on the track line. Aerial data were collected using the Hiby circle-back line transect method (Hiby 1999) and analyzed accounting for *g(0)* and biases due to school size and other potential covariates (Palka 2005).

An abundance estimate of 30,196 (CV=0.537) common dolphins was derived from a shipboard survey of the U.S. Atlantic outer continental shelf and continental slope (water depths > 50m) between Florida and Maryland (27.5 and 38º N latitude) conducted during June-August, 2004. The survey employed two independent visual teams searching with 50x bigeye binoculuars. Survey effort was stratified to include increased effort along the continental shelf break and Gulf Stream front in the Mid-Atlantic. The survey included 5,659 km of track line, and accomplished a total of 473 cetacean sightings. Sightings were most frequent in waters north of Cape Hatteras, North Carolina along the shelf break. Data were corrected for visibility bias (*g(0)*) and group-size bias and analyzed using line-transect distance analysis (Palka, 1995; Buckland *et al.*, 2001). The resulting abundance estimate for common dolphins between Florida and Maryland was 30,196 animals (CV =0.537).

The best abundance estimate for common dolphins is the sum of the estimates from the two 2004 U.S. Atlantic surveys. This joint estimate (90,574+30,196=120,743) is considered best because the two surveys together have the most complete coverage of the species' habitat.

White-sided dolphin

The total number of white-sided dolphins along the eastern U.S. and Canadian Atlantic coast is unknown. However, seven estimates are available for portions of the habitat: a 1978-1982 estimate; a shipboard survey estimate from the summers of 1991 and 1992; a shipboard estimate

from June-July 1993; an estimate made from a combination of shipboard and aerial surveys conducted during July to September 1995; an aerial survey estimate of the entire Gulf of St. Lawrence conducted in August to September 1995; an aerial survey estimate from the northern Gulf of St. Lawrence conducted during July and August 1996; and an aerial/shipboard survey conducted from Georges Bank to the mouth of the Gulf of St. Lawrence during July and August 1999.

An abundance estimate of 28,600 white-sided dolphins (CV=0.21) was obtained from an aerial survey program conducted from 1978 to 1982 on the continental shelf and shelf edge waters between Cape Hatteras, North Carolina and Nova Scotia (CETAP 1982).

An abundance estimated of 20,400 (CV=0.63) white-sided dolphins was derived from two shipboard line transect surveys conducted during July to September 1991 and 1992 in the northern Gulf of Maine-lower Bay of Fundy region (Palka *et al.* 1997). This population size is a weighted-average of the 1991 and 1992 estimates, where each annual estimate was weighted by the inverse of its variance.

An abundance estimate of 729 (CV=0.47) white-sided dolphins was obtained from a June and July 1993 shipboard line transect sighting survey conducted principally between the 200 and 2,000m isobaths from the southern edge of Georges Bank, across the Northeast Channel, to the southeastern edge of the Scotian Shelf (NMFS 1993).

An abundance estimate of 27,200 (CV=0.43) white-sided dolphins was calculated from a July to September 1995 sighting survey conducted by two ships and an airplane that covered waters from Virginia to the mouth of the Gulf of St. Lawrence (NMFS unpublished data). Total track line length was 32,600 km. The ships covered waters between the 50 and 1000 fathom contours, the northern edge of the Gulf Stream, and the northern Gulf of Maine/Bay of Fundy region. The airplane surveyed waters in the mid-Atlantic from the coastline to the 50 fathom line, the southern Gulf of Maine, and shelf waters off Nova Scotia from the coastline to the 1000 fathom line. Data collection and analysis methods used were described in Palka (1996).

Kingsley and Reeves (1998) estimated that there were 11,740 (CV=0.47) white-sided dolphins in the Gulf of St. Lawrence during 1995 and 560 (CV=0.89) white-sided dolphins in the northern Gulf of St. Lawrence during 1996. It is assumed these estimates apply to the Gulf of St. Lawrence stock. During the August-September 1995 survey, 8,427km of track lines were flown in an area encompassing 221,949 km2. During the July-August 1996 survey, 3,993km of track lines were flown in an area encompassing 94,665 km2. These estimates were uncorrected for visibility biases such as *g(0)*, the probability of detecting a group on the track line.

An abundance estimate of 51,640 (CV=0.38) white-sided dolphins was obtained from a 28 July to 31 August 1999 line-transect sighting survey conducted from a ship and an airplane covering waters from Georges Bank to the mouth of the Gulf of St. Lawrence (Palka 2006). Total track

line length was 8,212 km. Shipboard data were analyzed using the modified direct duplicate method (Palka 1995) which accounts for school size bias and for *g(0),* the probability of detecting a group on the track line. Aerial data were not corrected for *g(0)* (Palka 2000). The 1999 survey covered the upper Bay of Fundy and the northern edge of Georges Bank for the first time and white-sided dolphins were seen in both areas.

The best available current abundance estimate for white-sided dolphins in the Western North Atlantic stock is 51,640 animals (CV=0.38) as estimated from the July to August 1999 line transect survey because this survey is the most recent and provided the most complete coverage of the habitat of the species.

INSERT STATUS of STOCK

6. Potential Biological Removal Level - TBC

Pilot Whales

Potential Biological Removal (PBR) is the product of minimum population size, one-half the maximum productivity rate, and a "recovery" factor (MMPA Sec. 3. 16 U.S.C. 1362; Wade and Angliss 1997). The minimum population size for *Globicephala* sp. is 24,866. The maximum productivity rate is 0.04, the default value for cetaceans. The "recovery" factor, which accounts for endangered, depleted, threatened stocks, or stocks of unknown status relative to optimum sustainable population (OSP) is assumed to be 0.5 because this stock is of unknown status. PBR for the western North Atlantic *Globicephala* sp. is 249.

Common Dolphin

The minimum population size for the western North Atlantic stock of common dolphin is 99,975 animals. The maximum productivity rate is 0.04, the default value for cetaceans. The "recovery" factor, which accounts for endangered, depleted, threatened, or stocks of unknown status, relative to optimum sustainable population (OSP) is assumed to be 0.5 because this stock is of unknown status. PBR for the western North Atlantic stock of common dolphin is 1,000.

White-sided Dolphin

The minimum population size for the Western North Atlantic stock of white-sided dolphin is 37,904. The maximum productivity rate is 0.04, the default value for cetaceans. The "recovery" factor, which accounts for endangered, depleted, threatened, or stocks of unknown status relative to optimum sustainable population (OSP) is assumed to be 0.5 because this stock is of unknown status. PBR for the western North Atlantic stock of white-sided dolphin is 379.

B. Mortality and serious injury information - TBC

1. Data Sources - TBC

The main sources of data estimating mortalities and serious injuries (bycatch) of marine mammals incidental to Atlantic Trawl fisheries are the Northeast Fishery Observer Program and fishery logbooks. Observer data have been collected since 1992, and logbook data have been reported since the mid-1980s.

Northeast Region Fisheries Observer Program

In 1989 a Fisheries Observer Program was implemented in the Northeast Region (Maine-Rhode Island) to document incidental bycatch of marine mammals in the Northeast Region Multi-species Gillnet Fishery. In 1993 sampling was expanded to observe bycatch of marine mammals in Gillnet Fisheries in the Mid-Atlantic Region (New York-North Carolina). The Northeast Fisheries Observer Program (NEFOB) has since been expanded to sample multiple gear types in both the Northeast and Mid-Atlantic Regions for documenting and monitoring interactions of marine mammals, sea turtles and finfish bycatch attributed to commercial fishing operations. At sea Observers onboard commercial fishing vessels collect data on fishing operations, gear and vessel characteristics, kept and discarded catch composition, bycatch of protected species, animal biology, and habitat (NMFS-NEFSC, 2003).

Other sources of data that provide data on sources of marine mammal mortality, serious injury or entanglement data; include the following:

Northeast Region Vessel Trip Reports

The Northeast Region Vessel Trip Report Data Collection System is a mandatory, but self-reported, commercial fishing effort database (Wigley, *et al.* 1998). The data collected include: species kept and discarded; gear types used; trip location; trip departure and landing dates; port; and vessel and gear characteristics. The reporting of these data is mandatory only for vessels fishing under a federal permit.

Southeast Region Fisheries Logbook System

The Fisheries Logbook System (FLS) is maintained at the SEFSC and manages data submitted from mandatory Fishing Vessel Logbook Programs under several FMPs. In 1986 a comprehensive logbook program was initiated for the Large Pelagics Longline Fishery and this reporting became mandatory in 1992. Logbook reporting has also been initiated since the early 1990s for a number of other fisheries including: Reef Fish Fisheries; Snapper-Grouper Complex Fisheries; federally managed Shark Fisheries; and King and Spanish Mackerel Fisheries. In each case, vessel captains are required to submit information on the fishing location, the amount and type of fishing gear used, the total amount of fishing effort (e.g., gear sets) during a given trip, the total weight and composition of the catch, and the disposition of the catch during each unit of

effort (e.g., kept, released alive, released dead). FLS data are used to estimate the total amount of fishing effort in the fishery and thus expand bycatch rate estimates from observer data to estimates of the total incidental take of marine mammal species in a given fishery.

Southeast Region Fishery Observer Programs

Three Fishery Observer Programs are managed by the Southeast Fisheries Science Center (SEFSC) that observe commercial fishery activity in U.S. Atlantic waters: (1) the Pelagic Longline Observer Program (POP); (2) the Shark Drift Gillnet Observer Program; and (3) the Southeastern Shrimp Otter Trawl Fishery Observer Program.

The Southeastern Shrimp Otter Trawl is a voluntary program administered by SEFSC in cooperation with the Gulf and South Atlantic Fisheries Foundation. The program is funding and project dependent, therefore observer coverage is not necessarily randomly allocated across the fishery. The total level of observer coverage for this program is <1% of the total fishery effort. In each Observer Program, the observers record information on the total target species catch, the number and type of interactions with protected species (including both marine mammals and sea turtles), and biological information on species caught.

Regional Marine Mammal Stranding Networks

The Northeast and Southeast Region Stranding Networks are components of the Marine Mammal Health and Stranding Response Program (MMHSRP). The goals of the MMHSRP are to facilitate collection and dissemination of data, assess health trends in marine mammals, correlate health with other biological and environmental parameters, and coordinate effective responses to unusual mortality events (Becker, *et al.* 1994). Since 1997, the 142 Northeast Region Marine Mammal Stranding Network has been collecting and storing data on marine mammal strandings and entanglements that occur between the states of Maine and Virginia. The Southeast Region Strandings Program is responsible for data collection and stranding response coordination along the Atlantic coast from North Carolina to Florida, along the U.S. Gulf of Mexico coast from Florida through Texas, and in the U.S. Virgin Islands and Puerto Rico. Prior to 1997, stranding and entanglement data were maintained by the New England Aquarium and the National Museum of Natural History, Washington, D.C. Volunteer participants, acting under a letter of agreement, collect data on stranded animals that include: species; event date and location; details of the event (i.e., signs of human interaction) and determination on cause of death; animal disposition; morphology; and biological samples. Collected data are reported to the appropriate Regional Stranding Network Coordinator and are maintained in regional and national databases.

Marine Mammal Authorization Program

Commercial fishing vessels engaging in Category I or II fisheries are required to register under

the Marine Mammal Authorization Program (MMAP) in order to lawfully kill or seriously injure a marine mammal incidental to fishing operations. All vessel owners, regardless of the category of fishery they are operating in, are required to report all incidental injuries and mortalities of marine mammals that have occurred as a result of fishing operations (MMPA 118 (e) and 50 CFR 229.6). Events are reported by fishermen on the MMAP Mortality/Injury Reporting Forms then submitted to and maintained by the NMFS Office of Protected Resources. The data reported include: captain and vessel demographics; gear type and target species; date, time and location of event; type of interaction; marine mammal species; mortality or injury code; and number of interactions.

Other Data Sources for Protected Species Interactions/Entanglements/Ship Strikes

Data on fishery interactions/entanglements and vessel collisions with large cetaceans are reported from a variety of other sources including the New England Aquarium (Boston, MA); Provincetown Center for Coastal Studies (Provincetown, MA); U.S. Coast Guard; whale watch vessels; and Canadian Department of Fisheries and Oceans (DFO). These data, photographs, etc. are maintained by the Protected Species Branch at the Northeast Fisheries Science Center (NEFSC) and the SEFSC.

Northeast Region Dealer Reported Data

The Northeast Region Dealer Database houses trip level fishery statistics on fish species landed by market category, vessel ID, permit number, port location and date of landing, and gear type utilized. The data are collected by both federally permitted seafood dealers and NMFS port agents. Data are considered to represent a census of both vessels actively fishing with a federal permit and total fish landings. It also includes vessels that fish with a state permit (excluding the state of North Carolina) that land a federally managed species. Some states submit the same trip level data to the Northeast Region, but contrary to the data submitted by federally permitted seafood dealers, the trip level data reported by individual states does not include unique vessel and permit information. Therefore, the estimated number of active permit holders reported within this appendix should be considered a minimum estimate.

2. Sampling methods and sources of possible bias - TBC

Serious Injury Determinations

Serious injury determinations are made based on observer comments and descriptions of marine mammal interactions with the gear. Serious injury is defined as “an injury that is likely to lead to mortality” (50 CFR part 229.2). In April 1997, NMFS convened a workshop to discuss available information related to the impact of injuries to marine mammals incidental to commercial fishing operations and to develop a framework upon which NMFS could develop a consistent approach for determining which injuries should be considered serious injuries (Angliss and DeMaster

1998). .NMFS is currently planning to convene a workshop to review the serious injury guidelines resulting from the 1997 workshop.

Representativeness of Observer Coverage

The estimation of serious injury and mortality levels from observer data assumes that observer data are representative of actual fishery bycatch rates, and logbook data represents actual fishing effort.

In order for NMFS to accurately monitor levels of serious injury and mortality of marine mammals in trawl fisheries, and hence, monitor the effectiveness of the final Atlantic Trawl Gear TRP, data collected by observers must be representative of both fishing effort and catches. Representativeness of the sample is critical not only for obtaining accurate (i.e., unbiased) estimates of bycatch, but also for collecting information about factors that may be important for mitigating bycatch (NMFS 2004d).

3. Estimated levels of serious injury and mortality of marine mammals in Atlantic trawl fisheries - TBC

****** NOTE -- NUMBERS TO BE UPDATED*******

Pilot Whales – TBC

Total fishery-related mortality and serious injury cannot be estimated separately for the two species of pilot whales in the U.S. Atlantic EEZ because of the uncertainty in species identification by fishery observers.

Mid-Atlantic Bottom Trawl

Two pilot whales were observed taken in the Mid-Atlantic Trawl fishery in 2000.

GOM/GB Herring Mid-Water Trawl JV and TALFF

There were no marine mammal takes observed from the domestic mid-water trawl fishing trips between 2000 and 2004. A U.S. joint venture (JV) mid-water (pelagic) trawl fishery was conducted on Georges Bank from August to December 2001. Eight pilot whales were incidentally captured in a single mid-water trawl during JV fishing operations. Three pilot whales were incidentally captured in a single mid-water trawl during foreign fishing operations (TALFF). The 2000-2004 average mortality attributed to the Atlantic herring mid-water trawl fishery was 11 animals.

Northeast Bottom Trawl

The fishery is active in New England waters in all seasons. Two pilot whales were taken in the Gulf of Maine in 2004.

Northeast Mid-Water Trawl – Including Pair Trawl

The two most commonly targeted fish in this fishery are herring (94% of VTR records) and mackerel (0.4%). Thus, the observer coverage and bycatch estimates are only for these two sub-fisheries. The observer coverage in this fishery was highest during 2003 and 2004, though a few trips in earlier years were observed. A pilot whale was observed taken in the single trawl fishery on the northern edge of Georges Bank (off of Massachusetts) in a haul that was targeting (and primarily caught) herring. Due to small sample sizes, the bycatch rate model used all observed mid-water trawl data, including paired and single, and Northeast and mid-Atlantic mid-water trawls, that targeted either herring or mackerel and were observed between 1999 and 2004 (NMFS unpublished data). The model that best fit these data was a binomial logistic regression model that included target species and bottom slope as significant explanatory variables, and soak duration as the unit of effort. Estimated annual fishery-related mortalities (CV in parentheses) were: 4.6 (0.74) in 2000, 11 (0.74) in 2001, 8.9 (0.74) in 2002, 14 (0.74) in 2003, and 5.8 (0.74) in 2004 (NMFS unpublished data). The average annual estimated fishery-related mortality during 2002-2004 was 8.9 (0.35).

Common dolphins - TBC

Northeast Bottom Trawl

One common dolphin was observed taken in 2002 and three in 2004.

Mid-Atlantic Bottom Trawl

Three common dolphins were observed taken in the mid-Atlantic bottom trawl fishery in 2000, two in 2001 and nine in 2004.

White-sided dolphins - TBC

Recently, within U.S. waters, white-sided dolphins have been observed caught in the Northeast bottom trawl, Northeast mid-water trawl, mid- Atlantic bottom trawl, mid-Atlantic mid-water trawl, Gulf of Maine/Georges Bank herring trawl TALFF fisheries and the Northeast sink gillnet

Northeast Bottom Trawl

One moderately decomposed dolphin was brought up during a monkfish trawl in April 2001 east

of Cape Cod. This moderately decomposed animal could not have been killed during this haul because the haul duration was only 4.6 hours. Thirty-two mortalities were documented between 1991 and 2004 in the Northeast bottom trawl fishery; 1 during 1992, 2 during 1994, 1 in 2002, 12 in 2003, and 16 in 2004. The 1 white-sided dolphin taken in 1992 was in a haul composed of cod, silver hake and pollock. One of the 1994 takes was in a haul composed of white hake, pollock and monkfish. The other 1994 take was in a haul which captured seven species none of which were dominant. In 2002, there was one take reported in a Northeast bottom trawl haul.

Northeast Atlantic (Gulf of Maine/Georges Bank) JV and TALFF Herring Fishery

As noted above, a U.S. joint venture (JV) mid-water (pelagic) trawl fishery was conducted during 2001 on Georges Bank during August to December. No white-sided dolphins were incidentally captured.

During foreign fishing operations (TALFF), two white-sided dolphins were incidentally captured in a single mid-water trawl. During TALFF fishing operations all nets fished by the foreign vessel are observed. Hence, the total mortality attributed to the Atlantic herring JV and TALFF mid-water trawl fisheries in 2001 was 2 animals.

Northeast Mid-water Trawl Fishery (Including Pair Trawl)

As noted above, the two most commonly targeted fish in this fishery are herring (94% of VTR records) and mackerel (0.4%). The observer coverage in this fishery was highest during 2003 and 2004, although a few trips in earlier years were observed. A white-sided dolphin was observed taken in the single trawl fishery on the northern edge of Georges Bank during July 2003 in a haul targeting herring. A bycatch rate model fit to all observed mid-water trawl data (including paired and single, and Northeast and mid-Atlantic mid-water trawls, that targeted either herring or mackerel and were observed between 1999 and 2004 (NMFS unpublished data)) provided the following annual fishery-related mortality (CV in parentheses) estimates: 4.3 (0.74) in 1999, 4.5 (0.74) in 2000, 8.9 (0.74) in 2001, 14 (0.44) in 2002, 2.0 (0.74) in 2003, and 0.5 (0.5) in 2004 (NMFS unpublished data). The average annual estimated fishery-related mortality during 2002-2004 was 6.0 (0.33).

Mid-Atlantic Mid-water Trawl Fishery (Including Pair Trawl)

The two most commonly targeted fish in this fishery are herring (54% of VTR records) and mackerel (26%). The observer coverage in this fishery was highest during 2000, 2003 and 2004, although a few trips in other years were observed. A white-sided dolphin was observed taken in the pair trawl fishery near Hudson Canyon (off New Jersey) during February 2004 in a haul targeting mackerel (but landing nothing). A bycatch rate model fit to all observed mid-water trawl data (including paired and single, and Northeast and mid-Atlantic mid-water trawls, which targeted either herring or mackerel and were observed between 1999 and 2004 (NMFS

unpublished data)) provided the following annual fishery-related mortality (CV in parentheses) estimates: 0 (0.55) in 1999, 0 (0.55) in 2000, 0 (0.55) in 2001, 9.4 (0.55) in 2002, 73 (0.55) in 2003, and 31 (0.55) in 2004 (Palka in prep.). The average annual estimated fishery-related mortality during 2000-2004 was 23 (0.39).

Mid-Atlantic Bottom Trawl Fishery

One white-sided dolphin incidental take was observed in 1997. Recently observer coverage for this fishery has been about 1%, except for 2004 when it was 3%.

4. Estimated level of serious injury and mortality of marine mammals in other fisheries

The 2007 MMPA List of Fisheries (72 FR 14466, March 28, 2007) identifies several other species of marine mammals that have been observed as seriously injured or killed incidental to the trawl fisheries that are the subject of this TRP, including: bottlenose dolphins (WNA offshore), Risso's dolphin (WNA), harbor seal (WNA), harbor porpoise (Gulf of Maine/Bay of Fundy), and harp seal (WNA). In the four trawl fisheries covered by this TRP, each of the above listed species is incidentally seriously injured or killed at an annual rate less than 1% of PBR. This level is below the insignificance threshold, defined as 10% of a stock's PBR level (50 CFR 229.2).

V. Sensory Abilities and Foraging Ecology of Pilot Whales, Common Dolphin and White sided-Dolphin - TBC

A. Sensory Abilities

Odontocete cetaceans rely heavily on acoustics to sense their environment. They use both passive listening and active sonar (i.e., echolocation). Odontocetes possess excellent hearing. The frequency sensitivity of the auditory system for either pilot whale species is not well known. However, the most sensitive range of hearing for an animal is often similar to the frequency range of the sounds they produce. Based on the sounds produced by pilot whales, they are likely to be most sensitive to sounds between 2 and 60 kHz. The temporal resolution of odontocete hearing is very high (e.g., Mooney *et al*. 2006), which is likely an adaptation to the higher speed at which sound travels in the ocean (the speed of sound is approximately five times faster in the sea than in air) and the need to follow prey via echolocation from very close ranges during pursuit and capture phases of foraging. Bottlenose dolphins (*Tursiops truncatus*) have been shown to use passive listening for prey detection (Gannon *et al*. 2005). Mammal-eating or >transient= killer whales (*Orcinus orca*) have also been shown to incur ecological costs from echolocating (i.e., from prey being alerted by echolocation). Barrett-Lennard *et al*. (1996, Deecke *et al*. (2002), and Guinet (1992) hypothesized that mammal-eating killer whales detect

prey via passive listening. It is, therefore, not unreasonable to assume that pilot whales can use passive acoustic cues such as the sounds made by fishing vessels, fishing gear, or hooked fish to locate food sources. The open ocean is a good environment for sound transmission. Under favorable conditions, sounds produced by fishing vessels should transmit over distances of several kilometers.

Echolocation consists of three distinct processes: sound production, sound reception, and signal processing. For most echolocating odontocetes, as they approach a target on which they are echolocating (e.g., a prey item), the time interval between successive clicks decreases. This results from the decreasing two-way travel time of the click and its associated echo as the whale gets closer to the target. As an echolocating odontocete gets very close to a target the click repetition rate becomes very high, resulting in what is commonly referred to as the Aterminal buzz.@ Short-finned pilot whales have been shown definitively to use echolocation. Short-finned pilot whales emit clicks with peak energy between 30 and 60 kHz and source levels of approximately 180 dB re 1 µPa at 1 m (Evans 1973). Echolocation has not been shown conclusively in long-finned pilot whales, but this is most likely due to a lack of research effort as this species produces broadband clicks that are similar to the echolocation sounds of well-studied species.

Risso's dolphins are thought to be able to detect small squid (20-cm mantle length) from a distance of 85 m (Madsen *et al.* 2004). False killer whales, *Pseudorca crassidens*, which produce echolocation sounds that are almost identical to Risso's dolphins, are estimated to be capable of detecting 1 meter-long yellowfin tuna from distances of approximately 210 m (Madsen *et al.* 2004)

In addition to echolocation sounds, pilot whales produce whistles and pulse bursts that are thought to be used for communication. Risso's dolphins produce whistles with dominant frequencies from 3.5 to 4.5 kHz (Caldwell *et al.* 1969) and pulse bursts with dominant frequencies between 2 and 5 kHz (Watkins 1967). Long-finned pilot whales emit whistles with dominant frequencies from 1.6 to 6.7 kHz and short-finned pilot whales produce whistles having dominant frequencies between 2 and 14 kHz with source levels of approximately 180 dB re 1 µPa at 1 m (Caldwell and Caldwell 1969, Fish and Turl 1976).

B. Foraging Ecology (See Gannon and McLellan's presentation)

Short and long-fin pilot whales both primarily eat medium-sized squids (mantle lengths of 5 to 40 cm) that inhabit neritic, oceanic, and benthic habitats (Gannon *et al.* 1997a, 1997b; Kruse *et al.* 1999; Jordan-Sardi *et al.* 2005). Up to 77% of the long-finned pilot whales= diet in the mid-Atlantic Bight and southern Georges Bank is long-finned squid, *Loligo pealei* (Gannon *et al.* 1997a, 1997b). They also eat a variety of other squids including short-finned squid (*Illex illecebrosus*) and Histioteuthid squid, and small schooling fishes such as Atlantic mackerel (*Scomber scombrus*) and Atlantic herring (*Clupea harengus*). The stomach contents of short-

finned pilot whales that stranded on the Outer Banks of North Carolina in February of 2005 included a variety of squids, including *Loligo* sp., *Brachioteuthis riisei*, *Histioteuthis reversa*, and *Taonius pavo*, and fishes such as big scale (*Scopelogadus mizolepis*) and offshore or silver hake (*Merluccius* sp.) (Jordan-Sardi *et al.* 2005). Both short and long-fin pilot whale species typically swallow their prey whole and all appear to forage mostly at night (Gannon 1995; Shane 1995; Gannon *et al.* 1997a, 1997b; Kruse *et al.* 1999; Baird *et al.* 2002). Long-finned pilot whales dive to depths of at least 650 m (Baird *et al.* 2002, Nawojchik *et al.* 2003) and capture their prey by suction (Werth 2000).

Common Dolphin - ***TBC***

White-sided Dolphin - ***TBC***

WHAT, IF ANYTHING IS KNOWN ABOUT THE DEPREDATION OF TRAWL FISHERIES TRAGET SPECIES BY PW, CD & WSD?

IV. Description of Atlantic Trawl Gear Fisheries – TBC

Trawl fisheries operating in the mid-Atlantic and northeastern U.S. have experienced significant change over the past decade (e.g., reduction of days at sea etc.).

A. Atlantic Trawl Fisheries

International management regime - TBC
Economics/value landings etc - TBC

1. Mid-Atlantic Bottom Trawl

Target Species:
Include, but are not limited to: Atlantic Cod, Haddock, Pollock, Yellowtail Flounder, Winter Flounder, Witch Flounder, American Plaice, Atlantic Halibut, Redfish, Windowpane Flounder, Summer Flounder, Spiny and Smooth Dogfish, Monkfish, Silver Hake, Red Hake, White Hake, Ocean Pout, Scup, Black Sea Bass, Skate spp, Atlantic Mackerel, *Loligo* Squid, *Illex* Squid, and Atlantic Butterfish.

Number of Permit Holders: To Be Determined

Number of Active Permit Holders: To Be Determined

Mixed Groundfish Bottom Trawl Total Effort: Total effort, measured in trips, for the Mixed Groundfish Trawl from 1998 to 2004 was 27,521, 26,525, 24,362, 27,890, 28,103, 25,725 and 22,303, respectively (NMFS). The number of days absent from port, or days at sea, is yet to be determined. Figures documenting approximate trawl trip locations are not yet available.

Squid, Mackerel, Butterfish Bottom Trawl Total Effort: Total effort, measured in trips, for the domestic Atlantic Mackerel Fishery in the Mid-Atlantic Region (bottom trawl only) from 1997 to 2004 were 373, 278, 262, 102, 175, 310, 238, and 231, respectively (NMFS). Total effort, measured in trips, for the *Illex* Squid Fishery from 1998 to 2004 were 412, 141, 108, 51, 39, 103, and 445, respectively (NMFS). Total effort, measured in trips, for the *Loligo* Squid Fishery from 1998 to 2004 were 1,048, 495, 529, 413, 3,585, 1,848, and 1,124, respectively (NMFS). Atlantic Butterfish is a bycatch (non-directed) fishery, therefore effort on this species will not be reported. The number of days absent from port, or days at sea, is yet to be determined. Figures documenting approximate trawl trip locations are not yet available.

Temporal and Spatial Distribution: The Mixed Groundfish Fishery occurs year-round from Cape Cod, Massachusetts to Cape Hatteras, North Carolina. Because of spatial and temporal differences in the harvesting of *Illex* and *Loligo* Squid and Atlantic Mackerel, each one of these

sub-fisheries is described separately.

***Illex* Squid**
The U.S. domestic fishery for *Illex* Squid, ranging from Southern New England to Cape Hatteras, North Carolina, reflects patterns in the seasonal distribution of *Illex* Squid (*Illex illecebrosus*). *Illex* is harvested offshore (along or outside of the 100m isobath), mainly by small-mesh otter trawlers, when the Squid are distributed in continental shelf and slope waters during the summer months (June-September) (Clark 1998).

***Loligo* Squid** The U.S. domestic fishery for *Loligo* Squid (*Loligo pealeii*) occurs mainly in Southern New England and mid-Atlantic waters. Fishery patterns reflect *Loligo* seasonal distribution, therefore most effort is directed offshore near the edge of the continental shelf during the fall and winter months (October-March) and inshore during the spring and summer months (April-September) (Clark 1998).

Atlantic Mackerel The U.S. domestic fishery for Atlantic Mackerel (*Scomber scombrus*) occurs primarily in the Southern New England and mid-Atlantic waters between the months of January and May (Clark 1998). An Atlantic Mackerel Trawl Fishery also occurs in the Gulf of Maine during the summer and fall months (May-December) (Clark 1998).

Atlantic Butterfish Atlantic Butterfish (*Peprilus triacanthus*) undergo a northerly inshore migration during the summer months, a southerly offshore migration during the winter months, and are mainly caught as bycatch to the directed Squid and Mackerel Fisheries. Fishery Observers suggest that a significant amount of Atlantic Butterfish discarding occurs at sea.

Gear Characteristics: The Mixed Groundfish Bottom Trawl Fishery gear characteristics have not yet been determined or summarized. The *Illex* and *Loligo* Squid Fisheries are dominated by small-mesh otter trawls, but substantial landings of *Loligo* Squid are also taken by inshore pound nets and fish traps during the spring and summer months (Clark 1998). The Atlantic Mackerel Fishery is prosecuted by both mid-water (pelagic) and bottom trawls.

Management and Regulations: The Mid-Atlantic Bottom Trawl Fishery has been defined as a Category II fishery in the 2006 List of Fisheries (71 FR162, 50 CFR Part 229). There are at least 2 distinct components to this fishery. One is the mixed groundfish bottom trawl fishery. It is managed by several federal and state FMPs that range from Massachusetts to North Carolina. The relevant FMPs include, but may not be limited to, Monkfish (FR 68(81), 50 CFR Part 648); Spiny Dogfish (FR 65(7), 50 CFR Part 648); Summer Flounder, Scup, and Black Sea Bass (FR 68(1), 50 CFR part 648); and Northeast Skate Complex (FR 68(160), 50 CFR part 648). The second major component is the squid, mackerel, butterfish fishery . This component is managed by the federal Squid, Mackerel, Butterfish FMP. The *Illex* and *Loligo* Squid Fisheries are managed by moratorium permits, gear and area restrictions, quotas, and trip limits. The Atlantic Mackerel and Atlantic Butterfish Fisheries are managed by an annual quota system.

Observer Coverage: During the period 1996-2004, estimated observer coverage (measured in trips) for the Mixed Groundfish Bottom Trawl Fishery was 0.24%, 0.22%, 0.15%, 0.14%,1%, 1%, 1%, 1%, and 3%, respectively.

During the period 1996-2004, estimated observer coverage (trips) in the *Illex* Fishery was 3.7%, 6.21%, 0.97%, 2.84%, 11.11%, 0.00%, 0.00%, 8.74% and 5.07%, respectively. During the period 1996-2004, estimated observer coverage (trips) of the *Loligo* Fishery was 0.37%, 1.07%, 0.72%, 0.69%, 0.61%, 0.95%, 0.42%, 0.65% and 5.07%, respectively. During the period 1997-2004, estimated observer coverage (trips) of the domestic Atlantic Mackerel Fishery was 0.81%, 0.00%, 1.14%, 4.90%, 3.43%, 0.97%, 5.04% and 18.61%, respectively. Mandatory 100% observer coverage is required on any Joint Venture (JV) fishing operation. The most recent Atlantic Mackerel JV fishing activity occurred in 1998 and 2002 where 152 and 62 transfers from USA vessels were observed respectively. Only the net transfer operations from the USA vessel to the foreign processing vessel are observed. The actual net towing and hauling operations conducted on the USA vessel are not observed.

Comments: Mobile Gear Restricted Areas (GRAs) were put in place for fishery management purposes in November 2000. The intent of the GRAs is to reduce bycatch of scup. The GRAs are spread out in time and space along the edge of the Southern New England and Mid-Atlantic Continental Shelf Region (between 100 and 1000 meters). These seasonal closures are targeted at trawl gear with small-mesh sizes (<4.5 inches inside mesh measurement). The Atlantic Herring and Atlantic Mackerel Trawl Fisheries are exempt from the GRAs. Access to the GRAs to harvest non-exempt species (*Loligo* Squid, Black Sea Bass, and Silver Hake) can be granted by a special permit. For detailed information regarding GRAs refer to (FR 70(2), (50 CFR Part 648.122 parts A and B)).

Protected Species Interactions: Documented interaction with White-sided Dolphin, Common Dolphin, Long-finned Pilot Whale, Short-finned Pilot Whale, Harbor Seal, Gray Seal, and Harp Seal. Not mentioned here are possible interactions with sea turtles and sea birds.

2. Northeast Bottom Trawl

Target Species: Atlantic Cod, Haddock, Pollock, Yellowtail Flounder, Winter Flounder, Witch Flounder, American Plaice, Atlantic Halibut, Redfish, Windowpane Flounder, Summer Flounder, Spiny Dogfish, Monkfish, Silver Hake, Red Hake, White Hake, Ocean Pout, and Skate spp.

Number of Permit Holders: To Be Determined

Number of Active Permit Holders: In 2002 there were 803 active federal permits reported in the Northeast Region Dealer Reported Landings Database.

Total Effort: Total effort, measured in trips, for the North Atlantic Bottom Trawl Fishery from 1998 to 2004 was 13,263, 10,795, 12,625, 12,384, 12,711, 11,577 and 10,354, respectively (NMFS). An average mean of 970 (CV=0.04) vessels (full- and part time) participated annually in the fishery during 1989-1993. The number of days absent from port, or days at sea, is yet to be determined. Figures documenting approximate trawl trip locations are not yet available.

Temporal and Spatial Distribution: Effort occurs year-round with a peak during May, June, and July primarily on the continental shelf and is distributed throughout the Gulf of Maine, Georges Bank and Southern New England Regions.

Gear Characteristics: To Be Determined

Management and Regulations: The North Atlantic Bottom Trawl Fishery has been defined as a Category II fishery in the 2006 List of Fisheries (71 FR162, 50 CFR Part 229). This gear is managed by several federal and state FMPs that range from Maine to Connecticut. The relevant FMPs include, but may not be limited to: the Northeast Multispecies (FR 67, CFR Part 648); Monkfish (FR 68(81), 50 CFR Part 648); Spiny Dogfish (FR 65(7), 50 CFR Part 648); Summer Flounder, Scup and Black Sea Bass (FR 68(1), 50 CFR part 648); Atlantic Bluefish (FR 68(91), 50 CFR Part 648); and Northeast Skate Complex (FR 68(160), 50 CFR part 648). These fisheries are primarily managed by TACs; individual trip limits (i.e., quotas); effort caps (i.e., limited number of days at sea per vessel); time and area closures; and gear restrictions.

Observer Coverage: Vessels in the Northeast bottom Trawl Fishery, a Category II fishery under the MMPA, were observed in order to meet fishery management needs rather than monitoring for bycatch of marine mammals.

Comments: Mobile Gear Restricted Areas (GRAs) were put in place for fishery management purposes in November 2000. The intent of the GRAs is to reduce bycatch of Scup. The GRAs are spread out in time and space along the edge of the Southern New England and mid-Atlantic continental shelf region (between 100 and 1000 meters). These seasonal closures are targeted at trawl gear with small-mesh sizes (<4.5 inches inside mesh measurement). The Atlantic Herring and Atlantic Mackerel Trawl Fisheries are exempt from the GRAs. For detailed information regarding GRAs refer to (50 CFR Part 648.122 parts A and B).

Protected Species Interactions: Documented interaction with White-sided Dolphin, Common Dolphin, Harbor Seal, and Harp Seal. Not mentioned here are possible interactions with sea turtles and sea birds.

3. Northeast Mid-Water Trawl Fishery (includes pair trawls)

Target Species: Atlantic Herring and miscellaneous pelagic species.

Gear Characteristics: Historically, the Atlantic Herring resource was harvested by the Distant Water Fleet (DWF) until the fishery collapsed in the late 1970s. There has been no DWF since then. A domestic fleet has been harvesting the Atlantic Herring resource utilizing both fixed and mobile gears. Only a small percentage of the resource is currently harvested by fixed gear due to a combination of reduced availability and less use of fixed gear (Clark 1998). The majority of the resource is currently harvested by domestic mid-water (pelagic) trawls (single and paired).

Management and Regulations: The Northeast Mid-Water Trawl Fishery has been defined as a Category II fishery in the 2006 List of Fisheries (71 FR162, 50 CFR Part 229). Atlantic herring are managed jointly by the MAFMC and 148 ASMFC as one migratory stock complex. There has been a domestic resurgence in a directed fishery on the adult stock due to the recovery of the adult stock biomass.

Temporal and Spatial Distribution: The current fishery occurs during the summer months when the resource is distributed throughout the Gulf of Maine and Georges Bank regions. The stock continues on a southerly migration into mid-Atlantic waters during the winter months.

Total Effort: Total effort, measured in trips, for the Northeast Mid-Water Trawl Fishery (across all gear types) from 1997 to 2004 was578, 289, 553, 1,312, 2,404, 1,736, 2,158, and 1,564, respectively (NMFS).

Observer Coverage: During the period 1997-2004, estimated observer coverage (trips) was 0.00%, 0.00%, 0.73%, 0.46%, 0.06%, 0.00% , 2.25% and 11.48%, respectively. A U.S. JV Mid-Water (pelagic) Trawl Fishery was conducted on Georges Bank from August to December 2001. A total allowable landings of foreign fishery (TALFF) was also granted during the same time period. Ten vessels (3 foreign and 7 American), fishing both single and paired mid-water trawls, participated in the 2001 Atlantic Herring JV Fishery. Two out of the three foreign vessels also participated in the 2001 TALFF and fished with paired mid-water trawls. The NMFS maintained 74% observer coverage (243 hauls) on the JV transfers and 100% observer coverage (114 hauls) on the foreign vessels granted a TALFF.

Comments: Mobile Gear Restricted Areas (GRAs) were put in place for fishery management purposes in November 2000. The intent of the GRAs is to reduce bycatch of Scup. The GRAs are spread out in time and space along the edge of the Southern New England and mid-Atlantic continental shelf region (between 100 and 1000 meters). These seasonal closures are targeted at trawl gear with small-mesh sizes (<4.5 inches inside mesh measurement). The Atlantic Herring and Atlantic Mackerel Trawl Fisheries are exempt from the GRAs. For detailed information regarding GRAs refer to (50 CFR Part 648.122 parts A and B)

Protected Species Interactions: Documented interaction with White-sided Dolphin and Long-finned Pilot Whale. There were no marine mammal takes observed from the domestic Mid-Water

Trawl Fishery trips during the period 1997-2002. Not mentioned here are possible interactions with sea turtles and sea birds.

Mid-Atlantic Mid-Water Trawl Fishery (includes pair trawls)

Target Species: Atlantic Mackerel, Chub Mackerel and other miscellaneous pelagic species.

Gear Characteristics: To be determined.

Management and Regulations: The Mid-Atlantic Mid-Water Trawl Fishery has been defined as a Category I fishery in the 2006 List of Fisheries (71 FR162, 50 CFR Part 229).

Temporal and Spatial Distribution: To be determined.

Total Effort: Total effort, measured in trips, for the mid-Atlantic Mid-Water Trawl Fishery (across all gear types) from 1997 to 2004 was 331, 223, 374, 166, 408, 261, 428, and 360, respectively (NMFS). Observer Coverage:. During the period 1997-2004, estimated observer coverage (trips) was 0.00%, 0.00%, 1.01%, 8.43%, 0.00%, 0.77% , 3.5% and 12.16%, respectively.

Comments: Mobile Gear Restricted Areas (GRAs) were put in place for fishery management purposes in November 2000. The intent of the GRAs is to reduce bycatch of Scup. The GRAs are spread out in time and space along the edge of the Southern New England and mid-Atlantic continental shelf region (between 100 and 1000 meters). These seasonal closures are targeted at trawl gear with small-mesh sizes (<4.5 inches inside mesh measurement). The Atlantic Herring and Atlantic Mackerel Trawl Fisheries are exempt from the GRAs. For detailed information regarding GRAs refer to (50 CFR Part 648.122 parts A and B).

Protected Species Interactions: . Documented interaction with White sided dolphins and Pilot Whale spp. Not mentioned here are possible interactions with sea turtles and sea birds.

B. Canadian Trawl Fisheries - TBC

C. Regulatory/Management Structure – TBC

Magnuson Stevens Act *(Fishery Management Plans)*

Under the, NMFS must, consistent with the National Standards, manage fisheries to maintain optimum yield (OY) by rebuilding overfished stocks and preventing overfishing.

Describe Council Process & Relevant FMPs here

Fishery Specific Requirements
Fishermen who use trawl gear target a variety of species. Atlantic trawl fisheries also incidentally catch protected species (e.g., marine mammals and sea turtles). The regulations in place for the various Atlantic trawl fisheries have been instituted for a variety of reasons in order to ensure sustainability of target and incidental species. Some of the regulations that apply to the various Atlantic trawl fisheries of concern:

- Permit requirements:
- Reporting requirements:
- Gear and vessel marking requirements:
- Monitoring requirements:
- Bycatch or bycatch mortality reduction measures:
- Species-specific restrictions:

V. Summary of Bycatch Reduction Strategies Currently Used in Trawl Fisheries - TBC(Review Alice McKay's presentation here)

A. Atlantic Trawl Fisheries

Fishermen are motivated to avoid interactions with marine mammals, as these interactions can result in significant economic loss due to damage to trawls and fishing time lost spent trying to remove incidentally captured marine mammals from trawl gear.

1. Regulatory Measures - TBC

Time/Area Closures

A closed area is an area of the ocean closed to either a certain fishing gear, vessel size, or for a certain target species. Closures affecting Atlantic trawl fisheries have been implemented at various time (**SUMMARIZE HERE**).

Gear Modifications (e.g., Mesh size, tow times, TEDs etc

(SUMMARIZE HERE)

2. Non-Regulatory measures currently Used - TBC

B. Other Trawl Fisheries Bycatch Reduction Measure - TBC - (e.g., TEDS)

C. Trawl Fisheries Worldwide – TBC

VI. Expected Effects of Various Bycatch Reduction Strategies: Analysis of Observer Data and Results of Predictive Modeling -- TBC

VII. Recommendations for Management Strategies to Reduce Mortalities and Serious Injuries of Pilot Whales, Common Dolphin and White-sided Dolphins in Atlantic Trawl Fisheries -- TBC

Question for the ATGTRT -- Do any of significant variables presented below provide the basis for management measures, taking into account the technological and economic feasibility, that can be implemented in the (1) short-term (i.e., within 1 year); or (2) long-term (within 5 years) that would achieve the goal of the TRP to reduce the serious injury and mortality of marine mammals incidentally captured in Atlantic trawl fisheries to insignificant levels?

At the first meeting of the ATGTRT, Deb Palka and Marjorie Rossman presented a summary of correlation analysis that analyzed a number of variables to determine which variables may be useful in predicting and/or minimizing interactions between marine mammals and Atlantic trawl, as well as interactions with sea turtles and catches of target species.. They provided a list of variables with the most statistically significant correlations, by marine species and fishery. They stressed that while some variables show a correlation, it is unclear whether these associations are in fact meaningful relationship in regards to bycatch mitigation.

The following provides the summary of significant variables presented by Palka and Rossman.

Bottom Trawl

White-sided dolphins

SST and MONTH (February and March)
DEPTH (> 110m)
WIREOUT (> ~ 150 fathoms)
AREA and LATITUDE (Northeast, specifically 513, 514, 515, and 522)

Pilot whales

VESSEL HORSE POWER (∃1265 tons)
BOTTOM SLOPE (very steep [∃ 3.9E])
BOTTOM DEPTH (~300 ʙ 600m)
CODEND MESH SIZE (< 70mm)

Common dolphins

AREA and LATITUDE

622 & 627Boff Delaware on shelfbreak
525 B southern edge of Georges Bank
BOTTOM SLOPE (steep)
TARGET SPECIES (Loligo and silver hake)

Mid-water Trawl

White-sided dolphin & Pilot whales

TIME OF DAY (night)
CODEND TWINE TYPE AND CODEND MATERIAL (single twine and Spectra or a combination of materials) ***
BOTTOM SLOPE (steep [∃0.5E])
TARGET SPECIES and LATITUDE
mackerel in mid-Atlantic on shelf-break
Herring in Northeast on northern edge of Georges Bank

A. Recommended management and research/data collection measures - TBC

Potential management

1. Time/Area Management
   - Time/area closures
   - Time area gear modification requirements
   - Other

2. Conduct research on gear modifications and/or operating procedures
   - Excluder panels
   - Video monitoring
   - Look at International bycatch reduction methods

3. Conduct research on cetacean behavior
   - Use cameras and other technologies to document animal behavior around trawls - will/could lead to best ways to avoid interactions B needed to inform viable mitigation options
   - Photo-document activity of animals around nets to show the prevalence of marine mammals in close proximity to fishing vessels
   - Develop practical protocol for documenting underwater animal behavior
   - Develop research plan for documenting underwater animal behavior
   - Photo document surface behavior of animals around nets

4. Conduct research on acoustical and other potential marine mammal deterrence and systems
   - Investigate mechanical/acoustical deterrent options (e.g. excluder panels in mouth of the net, pingers)

5. Establish special research area(s)
   - The identification of research area(s) to enable focused research on pilot whale, common dolphin and white-sided dolphin interactions may contribute to achieving the objectives of the TRP.

6. Observer coverage
   - Ensure representative sampling of fishing effort
   - Sampling design should be targeted toward achieving statistical reliability of marine mammal bycatch estimates
   - Allocate observer coverage to fisheries, regions, and seasons with the highest observed or reported bycatch rates of pilot whales
   - Characterize marine mammal behavior
   - Increase collection of biopsy samples from incidentally captured marine mammals
   - Increased funding for observer coverage

7. Conduct comprehensive surveys of affected marine mammal stocks to improve the precision of abundance estimates

8. Fishing Vessel communication
   - Encourage vessel operators to maintain communications regarding protected species interactions with the goal of identifying and exchanging information relevant to avoiding protected species bycatch
   - Bycatch Ahotspot@ communication within industry

9. Initiate Training for Captains
   - Avoidance and mitigation
   - Observer sensitivity i.e. need for biopsy, temperatures of taken marine mammals, stomach samples etc

10. Periodic (quarterly, bi-annual, annually?) reports of bycatch of marine mammals in the Atlantic Trawl Fisheries to the Take Reduction Team for its review.

11. Data-mining of existing data and/or information

- From PLTRP B may provide a useful framework for discussions of ATGTRT -

Data mining and research needs can be sub-divided into three categories based on the

estimated time needed to complete the research, once it was initiated: (1) short duration projects that could be completed within one year of initiation; (2) medium duration projects that would require one to three years to complete, and (3) long duration projects that would take five years or longer to complete. The PLTRT emphasized that these categories reflect the time needed to complete a project relative to initiation of the research effort; they are not intended to reflect the level of priority for implementation.

B. Implementation of Recommended Management Measures – TBC

C. Monitoring of Take Reduction Plan - TBC

1. Periodic Plan Assessment

The following types of information should be provided by NMFS to inform these periodic assessments:

- Updated stock assessment reports
- Updated Take Estimates
- Update on data collection and research findings
- Update on status of observer coverage
- Other????

The timing of these assessments should be tied to both the availability of data and the time needed to adequately evaluate the effectiveness of management measures or the results of the research program. The Team requested that they be provided with periodic bycatch reports, which will in turn help inform the decision of when it will be timely and useful to reconvene.

2. Contingency Measures

Establish thresholds (e.g., takes in relation to PBR & ZMRG) that, if reached, would trigger implementation of additional management measures.

VIII. Next Steps

A. Completion of Draft TRP

Workgroups?

B. Near-Term Next Steps - TBC

Immediate steps that can be taken to reduce the bycatch of pilot whales, common dolphins and white-sided dolphins in Atlantic trawl fisheries.

REFERENCES

Gulf of Mexico marine mammal stock assessments B 2005. U.S. Dept. Commerce., NOAA Tech. Mem. NMFS-NE-194, 346 pp. Available at: http://www.nmfs.noaa.gov/pr/sars/.

Appendix A - List of Atlantic Trawl Gear Take Reduction Team Members (as of April 2007)

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Appendix B - Atlantic Trawl Gear Take Reduction Team -- Ground Rules

Proposed Ground Rules for Use at September 19-22, 2006, ATGTRT Meeting

Decision-Making: The Atlantic Trawl Gear Take Reduction Team (TRT) will seek to develop consensus recommendations where possible. In this context, Aconsensus@ means that the recommendation in question is supported by all TRT members present at the meeting; this does not necessarily mean that each TRT member likes everything about the recommendation, but that each member is willing to accept it. Where consensus cannot be reached on a particular issue in the time available for developing a recommendation on that issue, the range of possibilities considered by the TRT will be presented, including the views of both the majority and minority.

Membership: Membership will reflect a balance or representation by interest, region, and sector. Members are encouraged to reflect their own viewpoints and the viewpoints of their constituencies.

Alternates: For those Members not able to attend a meeting, their designated alternate is invited to attend and will speak on behalf of the Member.

Attendance: Team members are encouraged to attend all TRT meetings. Team members can designate one alternate to attend in their absence. It is the responsibility of the Team member to keep their alternate informed and prepared for meetings. A Team member who needs to send an alternate is requested to notify NMFS that an alternate will attend for them, and who that person is, at least one week in advance of the meeting.

Meeting Agendas: Draft meeting agendas are circulated to Team members prior to each TRT meeting and finalized by the Team during the first portion of the meetings.

Meeting Summaries: Meeting summaries will be drafted by the facilitation team, and then circulated to TRT members for review and comment. The facilitation team will revise accordingly, and then mail the final summary to Team members. Members of the team are encouraged to circulate meeting summaries to their respective constituencies once they are finalized. Summaries will not attribute comments or suggestions.

Media Contact: Media inquiries concerning the TRT will be referred to the NMFS Public Affairs Officer, who will share the TRT roster upon request. Media representatives inquiring about the TRT process will be referred to approved meeting summaries. Team members may talk to media representatives concerning their own views about the issues being discussed by the Team. However:

A. TRT members agree not to attribute particular comments to particular individuals,

nor to characterize others= views;

B. TRT members agree not to portray ideas as consensus before the TRT has explicitly agreed on them.

Public Comment: Members of the public are encouraged to direct comments through TRT members or speak at designated times on the meeting agenda.

Addition --

Multi-interest Work Teams and Interest Group Caucusing

NMFS staff and RESOLVE expect that cross-interest group work teams may be an important way to develop constructive, integrative work products during and between TRT meetings. The aim of such work teams is to encourage multi-interest options and work products rather than work products put forward by a single bloc or interest group. It is anticipated that work teams will meet primarily by teleconference. As appropriate, opportunities will be provided during TRT meetings for caucusing within interest groups.

Appendix C - Brief Summary of ATGTRT Meetings

Meeting #1 - Providence, Rhode Island, September 19-22, 2006

The Atlantic Trawl Gear Take Reduction Team held its first meeting, September 19-22, 2006 in Providence, Rhode Island. The meeting was facilitated by staff of RESOLVE. The first two-days of the ATGTRT meeting was dedicated to presenting the ATGTRT with the best available information and data including the mandates of the MMPA, the level of serious injury and mortality of marine mammals in Atlantic trawl fisheries, the biology of marine mammal species known to interact with trawl fisheries, an overview of ongoing trawl gear research, both domestically and in Europe and characterization of the various trawl fisheries operating in the Mid-Atlantic and Northeast U.S. Additional background information, meeting binder documents and presentations are available on the ATGTRT website at:
http://www.nero.noaa.gov/prot_res/atgtrp/index.html

Data presented by NMFS scientist from the Northeast Fisheries Science Center at the meeting indicate that the takes of all the marine mammal species of concern are currently below their respective potential biological removal (PBR) levels and therefore are non-strategic stocks. The charge to the ATGTRT is to develop a TRP within 11 months that, once implemented, will achieve the long-term goal of the MMPA of reducing serious injury and mortality of affected stocks to a level approaching a zero mortality rate goal (ZMRG).

The ATGTRT utilized workgroups to identify initial research questions and data needs needed to begin to develop potential management options. The ATGTRT identified specific items from this list of information needs that NMFS staff will provide at the next ATGTRT meeting.

Action Items

The following list represents the topics discussed on the third and fourth day. The list is organized by sector-specific work groups. The fishing industry further subdivided their list into over-arching and specific data needs, as well as dividing them by fishery type. All the work groups requested that NMFS provide certain materials or information for the next meeting, which are designated with an asterisk below.

The group reached consensus in its recommendation that another face-to-face meeting of the ATGTRT be held.

FISHING INDUSTRY

Over-arching Issues

- Issue of settlement agreement
    - Clarify timeline and requirements under MMPA for the development of a Take Reduction Plan for stocks that are non-strategic (i.e., does 11-month timeline for development of a plan and 5-year timeline for achieving ZMRG apply?).[12]
    - What is the TRT's responsibility for common dolphins since take is near ZMRG (+/- 1)?*
    - Clarify how and why white-sided dolphins were added to the TRT's purview and what the TRT's responsibilities are under MMPA to address takes in this stock (i.e., does 11-month requirement for development of TRP and 5-year timeline to achieve ZMRG apply?).*

Specific Data Needs

- Re-categorize gear type based on fish species caught, as reported in the vessel trip report (VTR)
- Determine directed fishery by gear description or species caught (not species targeted)
- Improve description of gear in VTR for all fisheries

Mid-water Trawl (single, herring)

- Analyze takes by depth*
- Break down hauls by day/night/transition*
- Clarify tow duration (brakes "on" and "off")*
- Document how many turnarounds vessels make during a haul (from observer reporting)

Mid-water Trawl (single, mackerel)

- Analyze takes by depth*
- Break down hauls by day/night/transition*
- Clarify tow duration (brakes "on" and "off")*
- Document how many turnarounds vessels make during a haul (from observer reporting)

Mid-water trawl (pair, herring)

- Clarify tow duration (brakes "on" and "off")*
- Categorize catch by species caught in VTR*
- Include just the most recent data (2000-2005)*
- Break out joint venture (JV) data separately in database*
- Document how many turnarounds vessels make during a haul (from observer reporting)

Mid-water trawl (pair, mackerel)

- Clarify tow duration (brakes "on" and "off")*

[12] * Denotes materials / information that NMFS will provide for the next meeting.

- Categorize catch by species caught in VTR*
- Include just the most recent data (2000-2005)*
- Break out joint venture (JV) data separately in database*
- Document how many turnarounds vessels make during a haul (from observer reporting)

Bottom Trawl

- Re-categorize fisheries as Loligo offshore, Loligo inshore, Ilex*
- Identify time of day*

Bottom Trawl Multi-species/Groundfish (consider sub-categories/fisheries as appropriate*)

- Account for fishery in flux – (e.g., vessel buyout, effort reduction, shifting effort, closures, etc.)
- Get frequency distribution of vessel horse power by target species*
- Analyze takes by depth, remove slope (slope is not relevant)*
- Further analyze interactions by specific gear types (consider sub-categories/fisheries as appropriate)*
- Characterize bottom substrate (e.g., hard, sandy, muddy)*
- Use cameras and other technologies to document animal behavior around trawls – this will/could lead to best ways to avoid interactions – information needed to inform viable mitigation options
    - Identify funding sources and research priorities*
- Investigate mechanical/acoustical deterrent options (e.g., excluder panels in mouth of the net, pingers)
    - Identify funding sources and research priorities*
- Use only data from the last 5 years (at most) because of multiple changes due to fishery management and days at sea*
    - Show data separately so that changes can be documented*
- Analyze 2005/2006 observer data
    - Provide basic information on 2005/2006 observer data as available*
- Improve communication between TRT members and other researchers on reasons for bycatch, technologies & techniques
- Break down the observer data to show specific individual takes used in the take analysis and make this information available to the industry*
- Analyze takes in conjunction with weather conditions, time of day, moon phase (e.g., sea state, wind direction, cloud cover)
- Expand stomach content analysis data and compare to target species -- will inform our understanding of marine mammal behavior (e.g., depredating target species, playing)
- Increase observer collection of marine mammal body temperatures
- Provide a summary of the current regulatory/management measures in place in Canada*

- Photo-document activity of animals around nets to show the prevalence of marine mammals in close proximity to fishing vessels
    - Underwater
        - Develop practical protocol*
        - Develop research plan*
    - Surface behavior
- Dedicate observers exclusively to marine mammals (see also NGO recommendation, below)
    - Industry has concerns about cost of additional marine mammal observers
- Initiate trainings for captains – avoidance and mitigation, observer sensitivity (e.g., need for biopsy, temperatures of taken marine mammals, stomach samples)
    - Outreach documents : color species identification, TRT process (post on website)*
- Improve communication within industry regarding bycatch "hotspots"
- NGOs conduct outreach to constituencies on industry efforts to limit bycatch
- Improve descriptions in observer data on nets and configuration*
- Recognize concern: mitigation measures dependent on safety
- Improve characterization of depth and depth range (consider "beginning tow depth" & "end tow depth" as range for analysis)*
- Use technology (digital photography/video) to evaluate marine mammal presence (as opposed to people looking out of "bubble windows" on aerial surveys)
    - Make sure techniques used in abundance estimates are state-of-the-art
- List of Fisheries analysis – revisit characterization of trawl fisheries, provide updated tier analysis for trawl fisheries*

CONSERVATION NGOS

- Provide information on areas 515, 521, and 522*
    - Where are the takes occurring? (Are 513, 514 correct?)*
    - Fisheries in March & April in 521 & 522. What is going on regarding effort in the rest of year in those areas?*
    - Are areas closed in March & April? Is something unique going on with dolphins in those areas that may contribute to the bycatch?*
    - Hard bottom vs. soft bottom: how might there be differences in gear fished on these bottoms that contribute to bycatch?*
- Provide information on area 622*
    - Description of fisheries and marine mammal interactions*
- Relationship of vessel horsepower & takes (e.g., speed, noise, other contributors related to large boats)
- Dedicate observers exclusively to marine mammals to describe marine mammal interactions around the nets (don't count fish)
- Retraining of observers working up marine mammals (i.e., biopsies, temperatures)*

- Run models looking at combination of variables*
    - This may ID other research needs*
- Pilot whales
    - Which species are impacted?
    - Importance of biopsy samples
    - Match existing biopsy with fishery to see with which stock is interacting*
- Run 2005 data
    - Deeper exploration of factors that look significant
- Re-run all analyses including 2005/2006 data
    - Estimate bycatch for each marine mammal species by these variables:
        - Mid- (pair & single) & bottom trawl
        - Northeast & Mid-Atlantic
        - Steep vs. shallow slope
        - Seasonal
    - AIC values
        - Give directions on which are most significant
    - Multivariate analysis (various combinations of variables)
- For different fisheries, look at where in the net are marine mammals are caught *
- Look in detail at what is going on in places where analysis (with small dataset) shows some possible clues*
    - White-sided dolphin in bottom trawl -- low SST, mid-depth/deep (especially Northeast)*
    - White-sided dolphin in mid-water trawl – mid-Atlantic pair, mackerel, night trawls*
    - Mid-water trawl -- look at adequacy of observer coverage and placement for pair trawl (i.e., do we need observers on both vessels?)*
- Better define differences within the fisheries (characteristics)
    - Mid-water: pair & single
    - Bottom: northeast & mid-Atlantic
- In short term, show where and when for 2005/2006 data (distribution of animals, bycatch, fishing effort?)*
    - Show graphically*
- Describe fishing patterns: density of vessels in an area and the way they fish
- Split longfin & shortfin pilot whales for Science Review Group (SRG)
    - Get biopsy samples from 100% observed pilot whale mortalities onboard

SCIENTISTS

- Look at observer/catch data from JV and foreign fishing observer data to see what might come out, supplement what we have
    - Present readily available data*

FISHERIES COUNCILS & COMMISSION MEMBERS

- Incorporate/look at thermal fronts*
- Survey in regions/seasons where we don't have information from marine mammal surveys
- Compare seasonal distribution/density of mammals with seasonal distribution & density of effort
- Use acoustics to look at animals around nets
- Perform data analysis: did codend transfer occur during the tow (e.g., JV fishery)? Are we adequately describing the fishery process? How long did the codend sit in the water?
- Look at groundfish closures already in place and any required gear modifications and overlap of spatial/temporal distribution of takes of the three marine mammal stocks*
- Look at fish assemblages associated with targeted catch

Appendix D - Other Domestic Fisheries that Interact with Pilot Whales, Common Dolphins and White-sided dolphins B TBC B From SARs

Appendix E - Management Measures Considered and/or Discussed But Not Recommended for Inclusion in the TRP – TBC

Appendix F - List of Acronyms - TBC

ALWTRP B Atlantic Large Whale Take Reduction Plan
AOCTRP B Atlantic Offshore Cetacean Take Reduction Plan
ATCA B Atlantic Tunas Convention Act
BDTRP B Bottlenose Dolphin Take Reduction Plan
CFR B Code of Federal Regulations
EEZ B Exclusive Economic Zone
FR B Federal Register FMP B Fisheries Management Plan
GAMMS B Guidelines for Assessment of Marine Mammal Stocks
HMS B Highly Migratory Species
ICCAT B International Convention for the Conservation of Atlantic Tunas
KOM B Key Outcomes Memorandum
MAB B Mid-Atlantic Bight
MMC B Marine Mammal Commission
MMPA B Marine Mammal Protection Act
NED B Northeast Distant
NMFS B National Marine Fisheries Service
NOAA B National Oceanic and Atmospheric Administration
OY B Optimum Yield
PBR B Potential Biological Removal
ATGTRT B Atlantic Trawl Gear Take Reduction Team
PLTRP B Atlantic Pelagic longline Take Reduction Team
SAB B South Atlantic Bight
SAR B Stock Assessment Report
SEASWAP B Southeast Alaska Sperm Whale Avoidance Project
SED B Southeast Distant Water
SEFSC B Southeast Fisheries Science Center
SI B Serious Injury
TRP B Take Reduction Plan
TRT B Take Reduction Team
VMS B Vessel Monitoring System
ZMRG B Zero Mortality Rate Goal