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Bottlenose Dolphin Take Reduction Team

A Summary of the Eighth Meeting

Sheraton Annapolis Hotel
Annapolis, Maryland
June 19–20, 2007

Prepared by The Keystone Center

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Bottlenose Dolphin Take Reduction Team Meeting
June 19–20, 2007
Annapolis, Maryland
Meeting Summary¹

Summary

The Bottlenose Dolphin Take Reduction Team (BDTRT) met on June 19–20, 2007 in Annapolis, Maryland to monitor the effectiveness of the Bottlenose Dolphin Take Reduction Plan (BDTRP), published on April 26, 2006 (71 FR 24776) and effective May 26, 2006. The last BDTRT meeting was held in Virginia Beach, Virginia on January 13–14, 2005.

To achieve the meeting goals, a large part of the meeting was spent providing the BDTRT with necessary updates (see meeting agenda, Appendix 1). Specifically, the meeting included a review of the BDTRP; accomplishment reports about implementation of various non-regulatory measures, including gear research updates; status updates on coastal bottlenose dolphin stock structure, abundance and distribution, and mortality estimates per management unit; and fishery updates on the North Carolina beach seine fishery and spiny dogfish fishery. The BDTRT also revised its meeting ground rules and reviewed the procedures for nominating and designating an alternate member to the team. At the request of two BDTRT representatives, an item was added to the second day of the agenda to discuss the current proximity requirement restrictions in the Northern Migratory Management Unit affecting the Virginia black drum fishery and a potential amendment to those restrictions for this fishery.

The BDTRT also considered potential alternative mitigation measures to reduce serious injuries and mortalities to bottlenose dolphins in the Summer Northern North Carolina Management Unit because the best available data showed mortality estimates were over the potential biological removal (PBR) level. The BDTRT also examined long-term approaches for take reduction and whether current strategies contained in the plan and the metrics being used to evaluate the success of the plan are effective.

The team generally felt the BDTRP's current non-regulatory measures and efforts to be on the right path and should be continued, especially those geared towards improving and enhancing the observer program. Gear research updates revealed some strategies that may reduce interactions with bottlenose dolphins, including alterations to bait wells in crab pots and, in the case of gillnets, removing bridles (i.e., lines connecting the gillnet panel floatline and leadline to the anchor) and increasing twine size. Additional gear research was suggested at this meeting, especially pertaining to the Summer Northern North Carolina Management Unit (see Key Outcomes number 4 below). Research updates on bottlenose dolphin abundance and stock structures suggests that there may be some overlap or association of dolphins among some

¹ Prepared by The Keystone Center. This memorandum summarizes the highlights and key outcomes from the June 2007 Bottlenose Dolphin Take Reduction Team meeting. It is not intended to be a transcript of the meeting.

management units. Subsequent analysis will be important, as the delineation of stock structures may affect the calculation of PBR levels and influence management and regulatory regimes.

Working first in subgroups and then in plenary, the BDTRT reached several areas of consensus (see Key Meeting Outcomes below) relating to, among other things, the: 1) North Carolina beach seine fishery; 2) Medium mesh gillnet restrictions in the Winter-Mixed Management Unit; 3) Gear and dolphin research; 4) Improving and enhancing monitoring efforts and the observer program; 5) Education and outreach efforts; and 6) Virginia black drum fishery.

During the course of the meeting, team members raised questions regarding the data used in the mortality estimates and alternative mitigation scenarios, and it became clear that there remains some uncertainty about the exact status of the Summer Northern North Carolina Management Unit with respect to PBR. After prolonged discussions, National Marine Fisheries Service (NMFS) scientists acknowledged that the data can be analyzed in different ways and requested any suggestions about how to improve the model used to estimate dolphin mortality. Despite the uncertainty on the exact value for the Summer Northern North Carolina Management Unit's mortality estimate, the BDTRT agreed that the mortality estimate for this area is so close to PBR and of greatest concern, and provided general recommendations to help reduce dolphin/fishery interactions.

BDTRT representatives from Virginia presented to the BDTRT for consideration a proposal that would exempt the black drum fishery from gillnet nighttime proximity requirements for the Northern Migratory Management Unit. The BDTRT decided that more information is needed on observer coverage and interaction rates before further action on the request can be taken.

Key Meeting Elements

The following are the main elements reviewed/discussed at the meeting. Please see Appendix 1 for the full meeting agenda.

- Reviewed final Bottlenose Dolphin Take Reduction Plan
- Described accomplishments in implementing non-regulatory measures
- Provided updates on the Western North Atlantic coastal bottlenose dolphin stock structure, abundance estimates, and mortality estimates
- Discussed mortality estimates and potential alternative mitigation measures for the Summer Northern North Carolina Management Unit
- Provided fishery/gear updates for the North Carolina beach seine and spiny dogfish fisheries
- Discussed ways to continue monitoring the effectiveness of the BDTRP at meeting its goals based on information provided, including the data and model used to estimate mortality pre- and post-plan

Key Meeting Outcomes

At the meeting, the BDTRT discussed and reached consensus on the following:

- (1) Adopt revisions to meeting ground rules and procedures for nominating and approving BDTRT alternates.
- (2) North Carolina Beach Seine Fishery:
 - Support the North Carolina Department of Marine Fisheries (NCDMF) proposed regulations for the beach seine definition and striped bass fishery designations to address beach seine fishery issues. Receive updates and monitor progress of NCDMF's proposed beach seine regulations at the post-scientific review group (SRG) conference call.
 - *Observer Program:*
 - Expand the observer program for the North Carolina beach seine fishery to enhance coverage.
- (3) Medium Mesh Restrictions for the Winter-Mixed Management Unit:
 - Extend the current sunset clause provision (expires on May 26, 2009) for an additional three years.
 - Provide updates on the spiny dogfish fishery in two years at the BDTRT meeting and revisit next steps.
- (4) Summer Northern North Carolina Management Unit:
 - *Gear Research:*
 - Implement a pilot research study to examine whether pingers can be used to deter dolphins from nets without increasing depredation rates.
 - Examine the ratio of the net height (gillnet depth from top to bottom line) versus the water depth for the Spanish and king mackerel fisheries.
 - *Observer Program:*
 - Identify, prioritize, and focus observer effort for the fisheries in this management unit.
- (5) Gear Research (Note: see also Key Outcomes number 4 for other gear research recommendations):
 - Support of Virginia Aquarium continuing research on modified leaders for the Virginia pound net fishery.
- (6) Dolphin Research:
 - Clarify stock structure by integrating available genetics, telemetry, and photo-identification data. Revise PBR estimates, if necessary.
 - Provide this information for review at the January 2008 SRG meeting and hold a BDTRT conference call following the meeting to apprise team members of updates on stock structure, mortality estimates, and status of stocks with respect to PBR.
- (7) Enhanced Monitoring Strategies and Observer Program (Note: see also Key Outcomes numbers 2 and 4 for other observer recommendations):
 - Request observers to provide detailed records on datasheets of where in the net dolphins are entangled and analyze trends.
 - Develop better measures of fishing effort (e.g., compare landings data versus existing measurements of effort to evaluate accuracy).
- (8) Education and Outreach:
 - If a management unit reached the zero mortality rate goal (ZMRG), it is important to highlight it as a success story.
- (9) Virginia Black Drum Fishery:

- During the post-SRG conference call or the next full BDTRT meeting, reconsider request to amend proximity restrictions currently affecting the black drum fishery in the Northern Migratory Management Unit. BDTRT members request that updated information on the percent of observer coverage and interaction rates for this fishery be distributed prior to the call, as well as whether Virginia will provide additional observer coverage if restrictions are exempted.

(10) Non-Regulatory Conservation Measures:

- BDTRT agrees NMFS is on the right track to implementation of measures.

Other suggestions from the BDTRT made during the meeting, but not agreed by consensus, included:

- Calculate mortality estimates based on takes only using the last five years of data (e.g., 2001–2006).
- Report mortality estimates since the implementation of the BDTRP.
- Better inform the public regarding the fishing industry’s voluntary measures for take reduction.

I. Meeting Goals, Participants, and Procedural Matters

A. Purpose

To monitor the effectiveness of the final Bottlenose Dolphin Take Reduction Plan.

B. Meeting Goals

- (1) Evaluate short-term goal for all management units, and identify conservation measures or information necessary for reducing serious injuries and mortalities in the Summer Northern North Carolina Management Unit below PBR.
- (2) Determine whether we are approaching the long-term goal of reducing estimated mortalities and serious injuries to insignificant levels approaching a zero mortality and serious injury rate within five years of the plan’s implementation for the remaining management units;
- (3) Identify any changes/modifications to the plan to meet mandated goals; and
- (4) Identify mechanisms for continuing to monitor the effectiveness of the plan.

C. Meeting Participants

BDTRT members attending the eighth meeting included: Melissa Andersen, Mike Baker, David Beresoff, Paul Biermann, Dean Cain, Hugh Carberry, David Cupka, Joe DeAlteris, Laura Engleby, Lewis Gillingham, Mike Greco, Elizabeth Griffin, Chris Hickman, David Laist, Rick Marks, Bill McLellan, Red Munden, Mike Peele, Larry Pieper, Tom Pitchford, Andy Read, Joe

Speight, Mark Swingle, Chris Walker, Rob West, David Woolman, Nina Young, and Sharon Young.

Alternates attending the meeting included: Greg DiDomenico (alternate for Richard Luedtke), Edward Ellwell (alternate for Robert Munson), Joey Frost (alternate for Douglas Guthrie), Doug Haymans (alternate for A. G. Woodward), Jessica Koelsch (alternate for Vicki Cornish), Nicole Mihnovets (alternate for Gordon Colvin), William Reid (alternate for Peter Nixon), and Randall Wells (alternate for John Reynolds).

Presenters and facilitators were: Barbie Byrd, Stacey Carlson, Lance Garrison, Doug Haymans, David Hilton, Wayne McFee, Red Munden, Debi Palka, Mike Peele, Andy Read, Patricia Rosel, Marjorie Rossman, Joe Speight, Teresa Thorpe, and Mike Tork. The meeting facilitators were Doug Thompson and Caelan McGee.

Observers who registered at the meeting were: Kevin Brown, Chris Hager, Elia Herman, Amanda Johnson, Gretchen Lovewell, Katie Moore, D. Ann Pabst, Victoria Thayer, Danielle Waples, and Nancy Young. Also present for some portions of the meeting were Alexa Cole and Steven Niemi.

Public comments at the meeting were received from Ernest Bowden.

D. Membership Changes

BDTRT membership changes made prior to and at the meeting include: Melissa Andersen (replacing Kristy Long, NMFS); Dean Cain (replacing David Cupka, South Carolina Department of Natural Resources); Hugh Carberry (replacing Bruce A. Halgren, New Jersey Division of Fish and Wildlife); Vicki Cornish (replacing Nina Young, Ocean Conservancy); David Cupka (replacing Margaret Murphy, South Atlantic Fishery Management Council); Greg DiDomenico (replacing Kevin Wark as alternate for Richard Luedtke); Laura Engleby (replacing Vicki Cornish, NMFS); Elizabeth Griffin (replacing Charlotte Hudson, Oceana); David Laist (replacing Tim Ragen, Marine Mammal Commission); Kristy Long (replacing Donna Wieting as alternate for Melissa Andersen); Sean McKeon (replacing Jerry Schill, North Carolina Fisheries Association); Melissa Paine (replacing Elizabeth Griffin, Atlantic States Marine Fisheries Commission); Tom Pitchford (replacing Butch Rommel, Florida Fish and Wildlife Conservation Commission); William Reid (replacing Chris Ludford as alternate for Peter Nixon); Joe Speight (new member as a beach seine fishery representative); and Nina Young (changing membership status to Orcas Consulting).

E. Meeting Materials

Each BDTRT member received via mail three weeks prior to the meeting a tabbed three-ring binder of meeting materials. The materials consisted of a copy of the final BDTRP and proposed rule, information regarding bottlenose dolphin takes, updates and reports concerning various elements of gear research, stranding information, an observer fact sheet, background information about various beach and coastal fisheries, relevant and recent literature, a list of BDTRT members, and outreach and education materials.

F. Revision of Meeting Guidelines

The meeting facilitators reviewed meeting guidelines (ground rules) that reflected a condensed and simplified version of what had been in use at previous BDTRT meetings. These were:

- *During the Meeting*
 - Listen to understand
 - Share the floor
 - Seek to address not only your interests but those of others
 - Feel free to explore without committing
 - Respect meeting and agenda timeframes
 - Be hard on the problem and soft on the people
 - Acknowledge the past but do not rehash it
 - Use microphones
 - Turn off gadgets not necessary for the meeting
 - Let expertise inform, not constrain (“beginners mind”)

- *After the Meeting*
 - The BDTRT owns the meeting summaries; respond promptly to the draft.
 - The final meeting summary will speak for the BDTRT; facilitators will speak for the process; individual members may speak for themselves. A contact list of BDTRT members will be provided.

The BDTRT endorsed these meeting guidelines for purposes of this meeting.

G. Nominating/Designating Alternates to the Take Reduction Team

The meeting facilitators reviewed the following procedures for nominating and designating alternates for team members:

General Guidelines Regarding Alternates

- An alternate is not required, but ensures a constituency’s voice is heard if the BDTRT member is not able to attend a meeting.
- Only the BDTRT member *or* the alternate has a seat at the table during BDTRT meetings and receives meeting travel reimbursement.
- To ensure continuity, substitutes for alternates cannot be designated.
- If both the member and the alternate cannot attend, another individual may attend as an observer.

Process for Permanently Designating/Nominating an Alternate

- BDTRT member submits a request and brief statement of the proposed alternate’s qualifications to NMFS at least one month prior to the next BDTRT meeting.
- Qualifications for proposed alternates include:
 - Represents same organization or constituency as primary member;

- Has expertise in conservation or biology of bottlenose dolphins, or the fishing practices which result in the incidental mortality and serious injury of coastal bottlenose dolphins;
- Willing and able to speak for and represent constituency; and
- Committed to work collaboratively towards a consensus agreement through open and honest communication.
- NMFS evaluates proposed alternate based on the above criteria and notifies the BDTRT member of its decision.
- BDTRT member notifies proposed alternate of selection decision.

Process for Replacing an Alternate

- For permanent replacement of an alternate, BDTRT member notifies NMFS at least one month prior to the next BDTRT meeting; it may be a formal or informal notification.
- Member provides NMFS with name and contact information of proposed alternate, brief statement of qualifications, and reason for replacement.
- NMFS evaluates request using above qualification criteria and informs member of decision.
- Member notifies both the previously-designated alternate and the proposed alternate of NMFS' decision.

II. Review of Final BDTRP

Stacey Carlson, NMFS, presented an overview of the final BDTRP.² She described the statutory basis (§118 of the Marine Mammal Protection Act (MMPA)) for development of the BDTRP and the progression from the November 2004 draft plan to the April 2006 final rule, with particular attention to the modifications made to the plan. Specifically, the BDTRP does not contain proposed gear marking and beach seine requirements. Instead, gear marking requirements in coastal states from New Jersey to Florida were examined and determined to be sufficient, and additional information was needed before proceeding with proposed beach gear requirements. Important components of the BDTRP to meet required short- and long-term goals that were finalized include regulatory conservation measures for small, medium, and large mesh gillnets and non-regulatory conservation measures.

She also reviewed the goals of the BDTRP. The short-term goal is to reduce serious injury and mortality of coastal bottlenose dolphins to below PBR within six months of implementation. The long-term goal is to reduce serious injury and mortality to insignificant levels approaching zero (ZMRG, defined as 10% of a stock's PBR; 69 FR 43338, July 20, 2004).

Carlson also reviewed the amendment to the mid-Atlantic large mesh gillnet rule that was finalized concurrently with the BDTRP, but is not part of the final BDTRP. This amendment was finalized under the regulatory authority of the Endangered Species Act for protecting threatened and endangered sea turtles in the same rulemaking process as the BDTRP. As with the final BDTRP, she reviewed the progression of the mid-Atlantic large mesh gillnet rule from

² See full presentation at: http://www.keystone.org/BDTRT/docs_images/day1-0900-Carlson.pdf

proposed to final amendment, and described the elements that were not finalized (e.g., extension of the seasonally-adjusted closures into North Carolina and Virginia state waters with conditional exemptions) and why. The final amendment to the mid-Atlantic large mesh gillnet rule included a change to the large mesh gillnet size restriction from greater than 8-inches stretched mesh to 7-inches stretched mesh or larger. This was amended to provide more consistency between state and federal regulations.

Questions and discussion points raised included:

Q. When is the effective date of the rule?

A. May 26, 2006

Q. Is it working?

A. That's why we are here—to discuss that question.

Q. How is it working in Virginia?

A. Let's discuss this after Marjorie Rossman's presentation.

III. Accomplishments Towards Implementing Non-Regulatory Measures

Barbie Byrd, Stacey Carlson, and Mike Tork, NMFS, presented updates concerning non-regulatory measures pursuant to the BDTRT.³ These updates focused on outreach and education measures, efforts to enhance monitoring (stranding program, alternative platform program, and traditional observer programs), research, and compliance. Some highlights follow:

Outreach and Education Efforts

- Information for fisherman about new or existing regulations:
 - Developed and distributed compliance guides
 - *Commercial Fishery News* included compliance guide inserts
 - Dock side and fish house visits by NMFS staff
 - BDTRP placards developed and posted
 - Observer program fact sheet developed and distributed
 - Fishery liaison position continued
- Supply stranding contact information and protocols
 - Stranding fact sheet and instruction guide developed and distributed
 - Stranding decal with phone numbers distributed
- Development of user friendly educational materials that encourage and facilitate the use of gear modifications (e.g., step-by-step instructions for use of an inverted bait well)
- Developed a Web site to host information regarding the BDTRP (<http://www.nmfs.noaa.gov/pr/interactions/trt/bdtrp.htm>)

Monitoring Efforts: Stranding Program

³ See full presentations at: http://www.keystone.org/BDTRT/docs_images/day1-0900-Carlson.pdf and http://www.keystone.org/BDTRT/docs_images/Day1-0930-1-2-Carlson.pdf

- Stranding network coverage and response has and will continue to be enhanced and expanded through participation in and funding of conferences, as well as continued partnerships with the U.S. Coast Guard (USCG).
- Human interaction trainings continue to be provided for improvements to post-mortem assessments.

Monitoring Efforts: Observer Program

- Implement alternative monitoring programs
 - Two field coordinators were hired to develop the North Carolina Alternative Platform Program (APP). The goals of this platform were to develop a database of fisherman and implement the APP in North Carolina for small gillnet vessels.
 - There have been 126 data entries and 36 observed trips from March 2006 to March 2007.
 - No bottlenose dolphin or sea turtle interactions were observed.
- Dedicated beach surveys and observers will be assigned in areas and times lacking coverage.
- Coordination efforts continue in order to develop statistically-viable sample sizes for all fisheries interacting with dolphins.
 - An additional 117 traditional observer days were funded by NMFS, Southeast Regional Office (SER) and allocated in the Winter-Mixed Management Unit during November 2006 through April 2007. There was a 100% accomplishment rate for these sea days.

Research

- Continuing research on bottlenose dolphin populations include information on (see Section V of this summary for details):
 - Stock structure
 - Abundance estimates
 - Assessments of depleted status
- Fishing gear research (see Section IV of this summary for current project updates):
 - Out of 13 research priorities, six were completed and three are ongoing.
 - Two additional gear research studies were conducted. These studies were developed based on public requests/comments.

Compliance Efforts

- Outreach/education for fisherman
- Educational information for enforcement agents
- Enhanced monitoring efforts
- Coordination with the National Oceanic and Atmospheric Administration (NOAA) Office of Law Enforcement and Office of General Counsel, and the USCG

Questions and discussion points raised included:

Q. Is the Alternative Platform Program an attempt to monitor several boats in one day/monitoring attempt, or is it designed to monitor full trips on a single boat?

A. NMFS personnel responded that observers are using the same datasheets as the traditional observer program and monitoring full trips when possible. This helps keep data consistent with other monitoring efforts and the Northeast Fishery Observer Program.

Q. Can you clarify whether the target species listed in the back of the document is the Spanish mackerel?⁴

A. Yes, the target species listed on the back of the document is referring to the Spanish mackerel.

Q. How has the cooperation been from fisherman, especially as compared to the past?

A. Compliance and cooperation on observer programs by fisherman has been very good. It continues to improve and has contributed to monitoring program successes.

Q. Have you been able to increase the diversity of coverage of New Jersey fisheries?

A. Not as much as we would like.

Q. Have you ever considered using side-scan sonar to detect dolphins in large areas?

A. Side scan sonar may be a useful observation and monitoring tool to detect the presence of bottlenose dolphins entangled in gillnets; however this technology also has limitations. It is currently cost prohibitive. Also, if a large animal is detected in a net, a camera or diver must be available to confirm and identify the animal, or an interaction cannot be verified until the fisherman hauls in the gear.

Q. Some TRTs have compliance problems. Will we discuss the rate of compliance vis-à-vis the plan, so we can decide if we are not meeting the plan's goals because the plan is not working or because of non-compliance?

A. The first year's focus is on outreach and education; NMFS General Counsel does not have a measure of compliance. However, the USCG also gathers information. The USCG has not cited anyone to date; this means 100% compliance for the vessels that were observed but may not mean full compliance for all vessels. (Alexa Cole, NOAA Office of General Counsel for Enforcement and Litigation; and Katie Moore, U.S. Coast Guard).

Q. How does compliance for this plan compare to other fishery compliance efforts?

A. Overall, we have upwards of 95% compliance with regard to FISHERIES management measures for protected species. In the mid-Atlantic, our boarding rate compliance ratio is approximately 12:1 for fisheries boardings (meaning 1 violation per 12 compliant). This plan is challenging to enforce, and as with other take reduction plans, we should not really rely on citations or violations as the sole measure of plan compliance. (Katie Moore, U.S. Coast Guard).

Comment (BDTRT member): New Brunswick County, NJ is one place where the diversity of sampling and observation is low. Most efforts focus on single or few fishermen.

⁴ http://www.keystone.org/BDTRT/docs_images/06-19-07_Bottlenose_Dolphin_Days.pdf

IV. Gear Research Updates

A. Inverted Crab Pot Bait Well Research

- Doug Haymans, Georgia Department of Natural Resources, updated the BDTRT about modified bait well crab pot/trap research conducted in 2004–2005.⁵ Key points included:

Study Objectives

- Studied three alternative bait well designs for crab pots/traps: bottom opening, recessed, and inverted.
- Tested whether each bait well resulted in fewer interactions with dolphins.

Results/Recommendations

- Of the three types, inverted bait wells seemed to show improvement (fewer interactions with dolphins and less damage to the whole pot), while the other two did not. These findings were based on somewhat limited data.
- Inverted bait wells substantially increased handling time and maintenance of crab pots (an additional 45–60 seconds/trap), and may not be advisable for fishermen experiencing few dolphin interactions with their pots.
- A step-by-step guide has been developed to instruct fisherman on how to construct inverted bait wells. This guide can be downloaded at:
http://www.keystone.org/BDTRT/docs_images/How To Make An Inverted Bait Well.pdf.
- General observations regarding crab pot and dolphin interactions not related to this study:
 - From 1999 to 2003, Georgia set four consecutive record low harvests in its blue crab fishery. As a result, in 2003 and without funds, Georgia Coastal Resources Division began placing observers on crab vessels.
 - This same observer can serve as an observer for other marine mammal interactions/takes.
 - Since December 2003, a total of 8,133 pots have been observed during 124 evenly distributed trips along the Georgia coast. No dolphin entanglements have been recorded.

B. Crab Pot/Trap Buoy Lines and Entanglement Study

Wayne McFee, NOAA National Ocean Service, presented the results of an analysis of approaches to reduce the probability of dolphin entanglement in buoy lines.⁶ Key points included:

Study Objectives

- Phase 1: Pilot study

⁵ See full presentation at: http://www.keystone.org/BDTRT/docs_images/Day1-0930-6-Haymans.pdf

⁶ See full presentation at: http://www.keystone.org/BDTRT/docs_images/Day1-McFee.pdf. Note that the presentation during the meeting included viewing three videos.

- Examine different strategies in terms of method of buoy line deployment, type of rope, and conditions of deployment (water depth, current strength, tidal strength, length of line).
- Determine the behavior of the buoy line in the water at various tidal stages, current strengths, lengths of line, and water depth.
- Determine if lead-core rope was a better alternative to nylon rope.
- Determine if the manner of deployment of the gear affected the suspension of the line in the water and on the bottom.
- Phase 2: DST milli-loggers
 - Create buoy line profiles of three different ropes varying in degree of stiffness using depth loggers.
 - Determine which line profile is least likely to pose a risk to entanglement based on set criteria.
- Determine effects of water current velocity, water depth, and tidal change on line types.

Results/Recommendations

- Pilot study results
 - The method of deployment is important in reducing the amount of fouling of the rope.
 - Stronger currents (>0.20m/s this study) produced little arcing of the ropes.
 - Slack tide is a period of increased risk of entanglement as the rope waves in the water column.
 - Rope lengths of ≥ 50 feet deployed in <10 feet of water produced waving in the water column and arcing on the bottom.
 - Poly lead-core rope was not a good alternative to nylon rope unless in deep water with strong water current velocities.
- Recommendations
 - Reduce the length of rope to less than 50 feet when deploying in water less than 10 feet deep.
 - Deploy crab pots on an ebbing or flooding tide when water current velocities are stronger.
 - Avoid deploying crab pots at slack tide.

Questions and discussion points raised included:

Comment: The different types of rope analyzed were brand-new. The stiffness of the ropes had an effect on the degree of arcing and coiling. This raises questions as to how new ropes may be related to ropes that have been used in fishing practices on a daily basis.

C. Monitoring Bycatch in Stop Net Fisheries in North Carolina

Andy Read, Duke University, presented information regarding a study of bycatch in North Carolina's stop net fishery.⁷ The project was funded by NMFS and conducted as an outgrowth of comments raised during the public comment period that decreasing the mesh size in the first

⁷ See full presentation at: http://www.keystone.org/BDTRT/docs_images/Day1-1045-2-Read.pdf

100 yards of the suds section, as NMFS proposed, would increase finfish and other marine bycatch. Key points of the study included:

Study Objectives

- Compare fish bycatch rates in two net types—those with 4-inch stretched mesh in the “suds” portion of the net, and those with 8-inch stretched mesh in the suds portion.
- Record the behavior of bottlenose dolphins around nets and document any entanglements.

Results/Recommendations

- No dolphin bycatch observed. One green sea turtle was released alive. Three birds (two common loons and one double-crested cormorant) were entangled during the research.
- Higher bycatch of bony fish in 4-inch nets.
- Higher bycatch of skates, rays, and sharks in 8-inch nets.
- More marketable fish are captured as bycatch in 4-inch nets than in 8-inch nets.
- Few differences observed in general when compiling 2005 and 2006 data. However, in the suds section, there was significantly greater bycatch in the 4-inch versus 8-inch stretched mesh nets.
- Half the suds portions of the nets were not in the water at low tide, making it difficult to estimate what fish bycatch would entirely be in nets of 4-inch stretched mesh compared to 8-inch stretched mesh.
- Dolphins were typically observed in deeper water outside the suds portion. Overall, it was difficult to draw conclusions from limited data on effect of mesh size on the potential for dolphin bycatch in the stop net fishery.

D. Effects of Twine Size and Bridle Elimination on Gillnets

Theresa Thorpe, Center for Marine Science at the University of North Carolina – Wilmington, described research in the spot and Spanish mackerel gillnet fisheries that assessed the effect of the presence or absence of bridles in gillnets, and whether the size of twine used in net construction affects marine mammal interactions.⁸ Key points included:

Study Objectives

- Compare bridle vs. non-bridle gillnets for:
 - Catch rates of target species and bycatch
 - Catch rates along the gillnet
 - Structural integrity
 - Buoyancy - is additional flotation required?
- Compare three twine sizes for:
 - Catch rates of target species and bycatch
 - Processing time for fishermen
 - Gross physical damage to fish

⁸ See full presentation at: http://www.keystone.org/BDTRT/docs_images/Day1-1045-3-Thorpe.pdf. Note that this presentation also included deploying a sample net in the meeting room for the BDTRT to examine.

Results/Recommendations

- Removing bridles does not affect catch rate of target species, other marketable finfish, or non-fish bycatch.
- Additional buoyancy not required on non-bridle gillnets to maintain structural integrity.
- Twine size tested did not affect catch rates for either fishery. In the Spanish mackerel fishery, haul time significantly increased as twine size decreased because it took longer to remove fish from the nets.
- Recommended twine sizes are the two larger sizes tested: 208/10 and 117/8.
- 600-lb. weak links remained intact and did not damage fishing gear.

Questions and discussion points raised included:

Comment: These results and recommendations may not be universal. Given different boat sizes, location relative to shore, techniques of deploying and hauling gillnets, anchor configurations, and so forth, the applicability of these results may require more investigation.

V. Western North Atlantic Coastal Bottlenose Dolphin Stock Research Updates

A. Genetic Analysis of Stock Structure

Patricia Rosel, NMFS, described the current thinking regarding the genetic characteristics of coastal bottlenose dolphin stocks in the Northwest Atlantic.⁹ The initial null hypothesis was that coastal bottlenose dolphins in the Atlantic off the coast of North America derived from the same stock and population. Key points included:

- Initial hypothesis: One large ranging stock
- Genetic and other analyses reveal multiple stocks
- The sample size for the area north of Chesapeake Bay has increased since last presentation
- Included for comparison are samples taken from a stock in the Gulf of Mexico; these data were included to help measure and compare the degree of difference among stocks
- Samples (n=550) come from:
 - Biopsies
 - Strandings showing evidence of human interaction
 - Live captures
 - Stranded animals with a sighting history
- Locations of samples come from:
 - Northern North Carolina and Virginia
 - Central North Carolina
 - Southern North Carolina
 - Charleston, South Carolina and surrounding areas

⁹ See full presentation at: http://www.keystone.org/BDTRT/docs_images/Day1-1300-1-Rosel.pdf

- Georgia
- Jacksonville
- Gulf of Mexico
- Analytical method consisted of mitochondrial DNA and micro-satellite analyses
- Mitochondrial DNA analysis: Mitochondrial DNA has an elevated mutation rate allowing differences to accrue relatively fast. Moreover, mitochondrial DNA is matrilineal and thus offers information on the movement and mating behavior of females.
- Micro-satellite analysis utilizes genetic markers found throughout the nuclear genome which are contributed by both parents.
 - Initial micro-satellite analysis for bottlenose dolphins utilized 7 markers. With refined analysis, 19 markers are now available.
- Mitochondrial DNA analysis
 - Pair-wise comparisons show a significant difference among all the stocks/management units
- Micro-satellite DNA analysis
 - An observed lack of statistically significant differentiation between the Southern North Carolina stock and the Virginia and north stock.
 - An observed lack of statistically significant differentiation between the Southern North Carolina stock and the Georgia stock.
- Sample size could affect these results. Southern North Carolina has one of the smallest sample sizes. Telemetry data could show some migration and movement and clarify interactions, if any, among these stocks.
- Ongoing research will compare inshore estuarine versus coastal stocks at the same latitude.

Questions and discussion points raised included:

Q. It is not clear how much genetic exchange there is between estuarine and near-shore coastal bottlenose dolphins.

A. Additional biopsy sampling has been ongoing at three independent sites to address this question (including different times of the year, i.e., winter versus summer). Analysis of this question should be completed by next summer.

Q. Are biopsies targeted to certain individuals, so that photo identification can be used?

A. Photos are now taken with every biopsy. Some of the samples used in this analysis did not have photo identification but were nevertheless included.

Q. Regarding samples in Charleston Harbor, how much difference is there among the samples? Within-group and between-group differences?

A. Good question. There is a long-term photo identification study underway in the area. A joint project is being developed to identify animals and populations that have a strong affiliation to geographic regions such as specific rivers, the coastline, and the like. It has yet to be determined “how fine is fine,” or how finely to parse data and therefore stocks. Attempts are made throughout sampling to avoid errors such as double-counting (e.g., by sampling the same animal twice or by sampling both a mother and her calf) thereby minimizing the possibility of detecting family structure rather than stock structure. There are plans to look at Charleston Harbor and

Stono River for more fine-scale study of animals within that area. This will help determine where that “fine” line is when looking at delineations.

Q. Is there a plan to bring the new stock information to the team? This information has implications for decision-making.

A. We will present it at the next meeting. It is conceivable to provide the team with a summary prior to that.

Comment: The more offshore movements of coastal animals are consistent with information/trends seen in research conducted by Duke University—we call these the “shelf” animals. If there is longshore movement of “shelf” animals, the assignation of bycaught animals into estuarine versus coastal is further complicated.

B. Satellite Telemetry Analysis of Movement and Stock Structures

Lance Garrison, NMFS, presented information related to the movement patterns of the dolphin populations in question. The primary purpose of the study was to identify migratory movement using long-term tag deployments.¹⁰ Key points included:

Methodology

- Coastal bottlenose dolphins were captured and tagged at two locations:
 - September 2002–2003: Cape May, New Jersey (four animals)
 - November 2004: Holden Beach, North Carolina (two animals)
- The duration of tag life was between 7 and 13 months
- Health assessment data and tissue samples collected from all animals

Results

- Telemetry data suggests some overlap among the following stocks:
 - Northern Migratory
 - Northern North Carolina
 - Southern North Carolina
- Stocks also delineated as summer/winter with each season defined as six-month increments. Much of the overlap occurs in the transitional months (spring and fall) and thus some of the overlap in data could be due to the definition of seasonal stocks.

Current Information

- Migratory stocks:
 - Northern migration stock has information from genetic samples, year-round tagging, and seasonal spatial distribution
 - Southern migration stock has limited tagging information (two animals)
- Estuarine stocks:
 - Genetic comparisons based on estuarine samples
 - Lack of photo identification matches in estuarine sites
 - Stable isotope signatures in Pamlico Sound

¹⁰ See full presentation at: http://www.keystone.org/BDTRT/docs_images/Day1-1300-2-Garrison.pdf

- Tagging studies showing estuarine residents
- Coastal resident stocks:
 - The question remains as to whether there is a year-round presence in coastal habitats.

New Research Questions

- Is there an exchange between estuarine and potential coastal resident stocks and, if so, does it vary seasonally?
 - Suggest comparison between estuarine and coastal samples in Georgia and South Carolina during winter and summer
- What is the distribution of the proposed southern migratory stock during summer months? How far south do dolphins “normally” go in the winter?
 - New tagging studies and genetic sampling will be required to answer these questions.
- Are there multiple “coastal resident” stocks?
 - Answering this question would likely require additional samples in winter and summer but can partially be addressed with recent samples.
- Does water temperature variation affect movement and estimations of stock structure?

Effects on Estimated PBR Levels

- If stocks overlap or are deemed to be the same stock, then calculations of PBR and therefore management strategies would be affected.

Questions and discussion points raised included:

- Q. What month was data gathered off of Cape May, and was it collected ocean side?
 A. Animals were tagged in September on the ocean side; tags remained active for nine months.
- Q. Was there dolphin contact during the shad migration in February?
 A. It was difficult to find many dolphins north of Chesapeake Bay in the months of February through April.
- Q. Will there be more tagging in the southern migratory group?
 A. While desirable and likely informative, there are no current plans for additional tagging.

Comment: Suggest that the results of this study should be combined with photo identification, especially for coastal animals.

C. Updates on Abundance and Spatial Distribution of Coastal Morphotype Bottlenose Dolphins

Lance Garrison, NMFS, presented information and modeling results regarding abundance and spatial distribution for the bottlenose dolphin populations of interest.¹¹ Key points included:

¹¹ See full presentation at: http://www.keystone.org/BDTRT/docs_images/Day1-1300-3-Garrison.pdf

Issues for Abundance Estimation

- The coastal and offshore morphotypes overlap spatially along the continental shelf between Florida and North Carolina.
 - Statistical models were used to predict the proportion of dolphins that are from the coastal morphotype as a function of spatial location (depth, distance from shore).
 - Model uncertainty was high due to relatively low sample sizes in the water depths 20m–100m.
 - Since 2002, approximately 360 additional samples were collected.
- Aerial surveys conducted in 2002 (summer and winter) corrected for visibility bias and covered strata from 0–40m depth
 - Aerial data provides a “snapshot” of abundance and spatial distribution
 - Winter surveys in 2002 did not cover Florida management units
 - New surveys were conducted in summer 2004 and winter 2005

Findings

- In 2002, there appears to be a higher density of animals than in 2004.
- In 2004, results show not only a low density in areas around the Carolinas, but what appears to be bunching around Florida’s coast.
- Northern migratory animals appear to be moving south.
- There are limitations and potential biases introduced into results based on variations in things such as turbidity.
- Comparisons of sea temperatures and aerial survey data may suggest a correlation, but additional study is necessary.

Questions and discussion points raised included:

Q. Coastal animals found further offshore, yet we now hear they are perhaps less far offshore?

A. The additional information we have corresponds with what we originally found. Because we can fit a more complex curve, it means we can remove some coastal animals from this area.

D. Coastal Bottlenose Dolphin Bycatch Mortality 2001–2006

Marjorie Rossman, NMFS, provided an overview of bottlenose dolphin bycatch mortality for the 2001–2006 time period.¹² Key points included:

Methodology for Estimating Bycatch Rate

- N=9245 with 17 takes
- Bycatch rate = number of dead animals/unit of fishing effort (metric tons of fish landed) based on observer data
- Expand bycatch rate to entire fishery within the defined management units
 - Calculated bycatch rate is extrapolated based on total effort for the entire fishery
 - Vessel trip report, dealer, NCDMF, and Virginia Marine Resources Commission (VMRC) data used for total effort

¹² See full presentation at: http://www.keystone.org/BDTRT/docs_images/Day1-1300-4-Rossman.pdf

General Findings

- Observed takes decreased with the exception of the Summer Northern North Carolina Management Unit. This unit is over PBR with the most significant contributor being the small mesh category.
- The five-year mean mortality is 23.3 animals per year.

Moving Forward

- Model parameters may be improved in terms of changing model specification to address over-dispersion.
- Build a new model with the goal of improving model fit and also address new developments in stock structure research.
- Investigate viability of using alternative unit of effort to estimate bycatch rates (e.g., soak duration or other appropriate unit in place of metric tons of fish landed).
- Due to rareness of observed takes model updates with new data will occur every five years.

Questions and discussion points raised included:

Q. Going back to the slide of metric tons of fish landed, is that for gillnet gear or all gear?

A. Just gillnet gear.

Q. This is the only take reduction team that is using extrapolations by landings. How can we make a recommendation to improve that?

A. The Atlantic Coastal Cooperative Statistics Program (ACCSP) is predominantly populated by NMFS data. Few states collect the information we need (e.g., soak duration) so it is difficult to compare but looking for ideas on how to fix this. There may be no viable method.

Q. Did you check observed takes for the potential bias that could result from a mammal in the net affecting catch rate? This might bias bycatch rates. You want to make sure to use trips with takes that have normal catch.

A. No, we did not check for this as a possible bias.

Q. How much data are there since the plan was implemented? How many takes were post-plan implementation?

A. We have data only through October 2006, so not much since the plan was in effect.

Comment: The binder has the take breakdown. There have been two takes since the plan was implemented.

Q. What takes went into the northern migratory stock's 9.4 mean rate?

A. The bycatch rate is being estimated from the last 11 years of data. Old takes influence rates from the recent period. We added a time period variable in the model so we can distinguish between the two time periods (1996 to 2002 and 2001 to 2006).

Q. Is it appropriate to estimate the bycatch rate based in part on data from a fishery that has gone away? If you have seen no takes in the five-year period, would it not make sense to say the number of takes is zero?

A. It does utilize all take data from the period of analysis, but the model includes a variable that tries to make an adjustment for the time periods that are before and after the spiny dogfish fishery management plan (FMP) restrictions that are partly responsible for the reduced number of observed takes.

Q. Are you treating all gillnets the same with respect to the potential risk of entanglement?

A. No, not all are treated the same.

Q. We requested a separate tier analysis to pull out the individual gillnet fisheries if there is no interaction.

A. The tier analysis is a different process. Under the MMPA List of Fisheries, we have the mid-Atlantic gillnet fishery. Most fishermen are in it and the regulations affect them. Within discussions, once everyone is at the table here at the BDTRT, each variable (catch, target species, etc.) is analyzed to break it down more finely. This is the basis for the mortality estimates, with a separately modeled bycatch rate for each combination of the model's four variables (management unit, water body, mesh category, time period). Additionally, on the List of Fisheries, bottlenose dolphins are not the only species encountered by mid-Atlantic gillnets, and we need models for each, and integrate them.

Comment: We would like to see a more fine analysis that distinguishes among different fisheries.

Response: If we have observers, we are able to divide the fisheries up more finely.

Q. In the winter-mixed stock, I am puzzled by declines in other fish species (croakers and striped bass). Is it true to say that the changes we are seeing are due to fisheries management practices?

A. We are seeing a decline across all North Carolina fisheries—fewer participants, less fish on the market, lost consumer base, demographics are changing, declines in fish houses.

Comment: Differences in striped bass fishery due to how the fisheries are managed. In Virginia ocean waters, the quota dropped steeply. This scenario is unlikely to change, given the FMP.

Comment: In the winter-mixed North Carolina stock, state waters slide, the spike in dogfish landings in 2004 is because North Carolina was allocated extra from the quota.

E. Summary of Additional Fishery and Other Human Caused Mortality

Lance Garrison, NMFS, discussed the current state of knowledge regarding the various human induced causes of dolphin mortality.¹³ Key points included:

¹³ See full presentation at: http://www.keystone.org/BDTRT/docs_images/Day1-1300-5-Garrison.pdf

General Considerations

- When calculating and estimating mortality, all known human caused mortalities for each management unit must be considered.
- Research-related mortalities are also counted against PBR but are not extrapolated like commercial fishery-related mortalities.
- For strandings, determining cause of death and/or which management unit the dolphin came from can be complicated.
- When an animal is recovered in or attached to fishing gear, the cause of death is clear, but evidence of gear-related takes is only available for a portion of the total strandings that occur.

Virginia Pound Net Strandings

- These are confirmed mortalities with animals removed from the pound net gear.
- There have been 20 mortalities since 1997; 16 of them have occurred since 2002.
- These dolphins were recovered near Virginia Beach or Northampton Beach during the summer months (May–September).
- There were an additional five dolphins disentangled between 1996 and 2005.
- This represents an underestimate of the true number of takes in this fishery.

Confirmed Bottlenose Dolphin Strandings Due to Crab Pot Entanglement

- Total of nine mortalities were documented from 1992 to 2006, with three since 2002.
- In all cases, gear was recovered on the animal, most with the float line wrapped around the fluke.
- 20 additional entanglements resulted in a live release, 11 since 2002.
- All confirmed gear types were commercial, but some were unknown.
- This also represents an underestimate of the true number of takes in this fishery.

Research-Related Takes

- Total of 12 mortalities since 1996, this includes one mother/calf pair, so actually 13 animals total.
- There have been nine mortalities since 2002, occurring in Southern North Carolina, Northern North Carolina, South Carolina, and Georgia Management Units.
- Most (seven) were in trammel nets or other research trawl.
- Three takes associated with NOAA live capture studies.
- These takes are not extrapolated; instead, they are simply added to the total estimated number of takes.

Questions and discussion points raised included:

Q. Do you know the approximate number of necropsies from animals with recreational gear (i.e., showing hooks, gear on/in the dolphins)?

A. Not on the Atlantic side but we know there are many in the Gulf of Mexico.

Q. Does this mean that there are more takes from research than from fishing?

A. For research, these numbers represent *all* of the takes. The fisheries takes are only the *observed* takes, so many more actual takes from fishing may be unobserved.

Q. The five takes in the shark driftnet—all older than three years, yes?

A. Nothing within two or maybe three years.

Comment: It appears that gear modifications have helped considerably.

Q. What is the approximate number of the whole dolphin population?

A. While problematic to aggregate management units because of double-counting risks and other complexities, if one adds across all summer management units, the approximate total population is 40,000 dolphins.

VI. Mortality and Mitigation Alternatives for the Summer Northern North Carolina Management Unit

Debi Palka, NMFS, described potential mitigation measures for gillnets in the Summer Northern North Carolina Management Unit.¹⁴ The purpose of the work described is to use observer data to estimate through a simulation process the potential benefit that might be achieved were certain gear modifications in place. Key points included:

Assumptions and Methods

- Data used from 2001 to 2006.
- Future bycatch rates estimated based on use of gear characteristic being investigated.
- Assume affect of gear modification relates directly with bycatch rate.
- Assume future bycatch rates for all hauls will be from the gear characteristics being investigated.
- Assume same level of fishing effort as before.
- Model observer data in same way as done for bycatch estimation process with addition of variable of interest (i.e., a specific gear modification) to estimate direction and magnitude of change.

Questions and discussion points raised included:¹⁵

Comment: We need to focus on these: state waters, summer, north of Cape Lookout, small mesh (Spanish mackerel and bluefish), and medium mesh (king mackerel, shark).

Comment: The alternative looking at hang ratio may be wrong because you can't have a hang ratio of 0.8.

¹⁴ See full presentation at: http://www.keystone.org/BDTRT/docs_images/Day1-Effects of alternative gear mods.pdf

¹⁵ Some of these comments and questions immediately followed Debi Palka's presentation at the conclusion of the first day; others were made in response to an invitation from the facilitator for reflections or comments at the outset of the meeting's second day.

Response (NMFS): Will check this alternative to verify if it truly reflects actual practice.

Q. Looking at state versus federal for small versus medium mesh—in small mesh, state waters, you had one take in 2003 Spanish mackerel in 2,400 feet of net. That length is no longer legal. Why do you apply that rate to the catch if you can no longer use that gear?

A. What you mean is how do you modify the model for predictions. You need to find what has changed since the rule and modify the model, adding a variable with what has changed.

Comment (team member): How do we incorporate a variable in the model that does not include bycatch rates from before the plan was implemented?

Response (team member): This is an exploratory exercise and the two recent takes were in legal nets. So, if we only included those two takes, the bycatch rates would be high.

Q. Regarding “anchored gillnet”—if it is not actually an anchor, but something else holding it down, is that considered an anchored gillnet? What is recorded on the observer sheet?

A. Four gillnet types are recorded by the observer program: sink anchored, float gillnet (anchored, but off the bottom), drift, and drift sink (not really anchored, but weighted so it touches the bottom).

Comment (USCG): We need to keep the ability to enforce in mind when considering creative alternatives.

Note: The following questions and comments were raised at the outset of day two of the meeting.

Comment: Saying that Florida shark driftnetters have had five takes in the last five years bothers me. My fishery has worked hard to modify the gear, and we have had no takes in the last three years.

Comment: I am dissatisfied with using the take in the 2,400 foot Spanish mackerel net. The take is being used to make an adjustment to the mortality estimates now, even though that gear is not used anymore.

Response: That animal was used in the past bycatch rate. It is not included in the predictions for the future.

Comment: The 2002 take was illegal (GPS showed it to be outside the three mile line).

Response: The take doesn't go away, because it actually happened. It is still recorded for what happened in the past. For the future, it would be included because the assumption is that there will still be some illegal takes, but if the gear type is no longer allowed, the take in that gear is not included.

Comment: Regarding the Virginia dogfish fishery—you are using takes that occurred in a fishery that has been shut down to calculate a take rate. There are no takes at all anymore. Yet, there is still an estimated take above zero, even though there have been no takes in the last five years.

Response: We used the old data to help create a “status quo” fishery. This means in the “status quo” fishery the dogfish observed hauls were removed to “simulate” the current lack of a fishery. Thus, we predict there will be not takes in the now-closed dogfish fishery.

Q. For the observer program in the summer northern North Carolina area, do you attempt to cover all fisheries (based on target species) or do you randomly get on whatever boat you can get on? For example, there was only one observed trip for croaker, which is too few to really have an idea of what is going on. You need to actually cover the fisheries based on how much it is prosecuted.

A. We randomly sample vessels, but in proportion to effort in that time and area.

Q. Is there a bias if you see a take?

A. No, we don't re-direct observer effort.

Q. What is the total abundance of bottlenose dolphins?

A. We have abundance per stock, which correspond to both geographical area and time of year. PBRs are annual or half-year to account for season. We'll defer to Lance (Garrison) to provide a total estimate of abundance (Lance was not present at the time).

VII. Fishery/Gear Updates

A. North Carolina Beach Seine Fishery

David Hilton (NMFS SER Fishery Liaison), Joe Speight (North Carolina beach seine fishermen), and Mike Peele (North Carolina beach seine fishermen) provided an overview of beach seine fishing practices in North Carolina, including a discussion of fishery practices. This information was provided because regulations for North Carolina beach gear were included in the proposed BDTRP but not finalized because additional information was needed. Key points included:

Overview of Beach Seine Fishing Practices (Hilton)

Hilton provided an historical overview of small and large mesh beach gear fishing practices, as well as current practices and regional distribution of beach gear fishing along North Carolina's coast. This was based on document 06-19-07p; hard copies were provided at the meeting.¹⁶

Northern Outer Banks Beach Gear Fishing Practices (Speight)

- Presented a video of how small mesh net is set and retrieved
- Two men typically in the dory
- If one net is set and the wind shifts it is manageable, but if two are set then the gear may be damaged.

Southern Outer Banks Beach Gear Fishing Practices (Peele)

- Must have a permit to drive on the beach

¹⁶ Document located at: [http://www.keystone.org/BDTRT/docs_images/06-19-07p_NC Beach Seine Characteristics.pdf](http://www.keystone.org/BDTRT/docs_images/06-19-07p_NC_Beach_Seine_Characteristics.pdf)

- We set some from the beach out to 150–200 yards—any further than that and sharks will interfere.
- Striped bass season is only two or three days long.
- Since I started fishing—which is nearly all my life—I have only seen one porpoise caught.
- Difficult to get nylon nets, nylon companies have downsized
- Fuel costs more, nets are expensive, trucks and boats need constant repairs—everything costs more except the cost of the fish.

Questions and discussion points raised included:

Q. What are the target species?

A. Mulletts and, in the fall, spots.

Q. Are there issues with tourists and others on the beach?

A. By early June we are run off the beach, as all the access is public parking and getting gear across the beach with all the people there is tough.

Q. Is this problem new along the North Carolina beaches?

A. Pretty much, yes. People who have built new homes on the beach generally do not like the practice.

Q. Do you do anything to try and communicate with people and the community?

A. It seems like a new crowd every week.

Q. Any dolphin captures?

A. There is one documented take in a small mesh net (1998) and one in a large mesh net (2000). This year, a take occurred during a NCDMF research project.

Q. How about non-target species like skates?

A. Yes, we get a few of those and now we put them back in the ocean.

Q. Your small mesh net is fished like a gillnet?

A. Yes, but it is not a wall of webbing. The net is not hauled ashore like Joe Speight's because fish houses here do not accept sandy fish like in northern North Carolina. We go under the net with a dory to pick fish out and discard what we cannot sell.

Q. It is designated a beach seine because of how it is deployed, but it is really a gillnet?

A. Yes. It is the same net as a seine, just fished differently.

Q. Then a better designation for the gear and the way you use it is “beach-set gillnet”?

A. Yes.

Q. How is your fishery observed?

A. A NOAA observer has come to the beach and watched us fish. We set it about 100 yards out and then dogleg it another 100 yards. They also measure and sample at the fish house.

Q. Are there certain restrictions during striped bass season?

A. Yes, during striped bass season certain rules are applied.

Comment: Fish often school heavily and it does not take long to meet quota.

Comment: During the beach seine fishery period of the striped bass fishery, nets are deployed and fished in a certain way. During gillnet season, we use the same net but deploy it differently.

Comment: We have a problem with society accepting traditional fishery practices and to survive we need to increase the acceptability of traditional fisheries.

Q (NOAA Law Enforcement). Have there been any arrests because of user conflict?

A. There were two arrests on Atlantic Beach, NC, with fishermen hit by a rod and reel.

B. North Carolina Division of Marine Fisheries Proposed Regulations for Beach Seine Fishery

Red Munden, NCDMF, walked participants through a copy of the *Proposed Rules Defining a Beach Seine and Specifying Minimum Mesh Sizes*¹⁷ and *Proposed Rules to Implement Gear Specific Permits to Take Striped Bass from the Atlantic Ocean*,¹⁸ hard copies of which were included with the meeting materials (Tab 7). The draft rule contains no proposed mesh sizes as currently proposed. The Marine Fisheries Commission, comprised of nine appointees, is responsible for adopting rules and the NCDMF is the agency that implements them.

Questions and discussion points raised included:

Q. Does the proposed beach seine definition affect small mesh as well as other mesh sizes?

A. Yes, it applies to all. We had comments from some that their fisheries do not interact with mammals; these comments will be considered.

Q. Are you trying to illuminate the “double-dipping” issues and provide a more equitable framework?

A. Yes.

Q. It is unclear that the provision under item “I” works in the case of multiple people. What stops one person from getting a beach seine permit and another gillnet permit and continuing to double-dip?

A. Not sure the rule explicitly prohibits that, but we could require everyone in the fishery to have a license. North Carolina has one of the most flexible approaches to managing fisheries and people who worked on the statute have given it some thought.

Comment: You might want to think about addressing the issue under §F, definitions.

¹⁷ For handout, see: [http://www.keystone.org/BDTRT/docs_images/06-19-07h_NCDMF Proposed Rule For Beach Seine Def.pdf](http://www.keystone.org/BDTRT/docs_images/06-19-07h_NCDMF_Proposed_Rule_For_Beach_Seine_Def.pdf)

¹⁸ For handout, see: [http://www.keystone.org/BDTRT/docs_images/06-19-07i_NCDMF Proposed Rule for Striped Bass Gear Specific Permits.pdf](http://www.keystone.org/BDTRT/docs_images/06-19-07i_NCDMF_Proposed_Rule_for_Striped_Bass_Gear_Specific_Permits.pdf)

Comment: It looks like participation is increasing in the haul seine category, but most of those people don't actually fish. One guy fishes, but he's only allowed to land a certain number of fish, so he calls his friend with licenses to sell them. Effort isn't increasing, since there are the same number of dories and nets.

C. Spiny Dogfish Fishery

Red Munden, NCDMF,¹⁹ and Marjorie Rossman, NMFS,²⁰ presented an historical overview of the spiny dogfish fishery and described the landings, management actions, and gear characteristics for 1990–2006. These presentations covered, among other things, the following topics.

- Historical overview of spiny dogfish landings from the 1880s until the present
- Geographic range.
- The types of gear used for spiny dogfish over time.
- Fishery management issues.
- Seasonal migrations, harvesting periods and quota.
- Comparison of landings and management actions among states (especially MA and NC).
- Economic and financial returns from fish/fishery over time including recent market factors and fluctuations.
- Comparison of gear characteristics and fishing practices between the time periods of 1996 and 2000, and 2001 and 2006. Changes from the earlier to later time period show an overall decrease in the mean and median soak times and gear lengths.²¹

Questions and discussion points raised included:

Q. Should we expect any changes in the spiny dogfish fishery in the next three to five years?

A. There should not be; although, the next stock assessment report for spiny dogfish has not yet been received to confirm. It was a surprise that the Federal FMP did not take corrective action to account for the ASFMC's increase in quota this year. However, they are probably awaiting the new stock assessment report before any actions are taken.

Comment: Any spiny dogfish effort will probably be short-lived.

VIII. Monitoring Effectiveness of the Bottlenose Dolphin Take Reduction Plan

The BDTRT, informed by the updates and discussion that had occurred earlier in the meeting, turned to assessing the effectiveness of the BDTRP from both a short-term and long-term

¹⁹ Document available at: http://www.keystone.org/BDTRT/docs_images/06-19-07s_spiny_dogfish_review_1990-2006.pdf

²⁰ See full presentation at: http://www.keystone.org/BDTRT/docs_images/Day2-1045-2-Rossman.pdf

²¹ See full presentation at: http://www.keystone.org/BDTRT/docs_images/Day2-1045-2-Rossman.pdf

perspective. In order to frame and organize the discussion, four guiding questions were posed for consideration:

- Are we reaching the mandated short-term goal and approaching the long-term goal for each management unit?
- Are the non-regulatory measures helping to meet the plan's mandated goals?
- How can we continue to monitor the effectiveness of the plan?
- What changes to the plan are necessary to reach the mandated goals?

For purposes of addressing the most pressing issues relating to the four guiding questions and based on the information presented during the meeting, the BDTRT decided to break into four smaller, mixed groups to optimize discussions. These groups discussed specific topics that were determined to be the most pressing issues for ensuring the plan meets the mandated goals and provided recommendations under each of these topics. The topics were listed on a flip-chart for each group's discussions and included the following:

- What recommendations do you have to reduce takes and mortality in management units near or below PBR, especially the Summer Northern North Carolina Management Unit?
- What, if anything, should be done with respect to the sunset provision for the medium mesh gillnet restrictions for the Winter-Mixed Management Unit?
- Is the BDTRP generally on the right track?
- How can mortality, takes, and PBR be better measured and estimated?

A. Small Group Reports

Group 1

- North Carolina is currently developing definitions dealing with issues in these fisheries. Let the state take the lead and work the issues out.
- Remove the sunset provision completely in the medium mesh gillnet restrictions for the Winter-Mixed Management Unit.
- We need to meet annually and anticipate having better information at the next meeting.
- Look at Spanish mackerel fishery (e.g., observer coverage)
- Clarify why Northern North Carolina migratory unit has observed no takes over the past five years but has a mortality estimate of 9+/year.
- With regard to pound nets in Virginia, support the efforts currently underway by Virginia Aquarium to work with Virginia pound net fishermen to solve the problem of an increase in dolphins being recovered dead from pound net gear.

Group 2

- With respect to beach seine questions, recommend that:
 - Continue federal observer coverage for all North Carolina beach-based fisheries.
 - Monitor and distribute the future actions of the North Carolina Marine Fisheries Commission regarding fishery management. The Marine Fisheries Commission meeting will take place in late June.

- In terms of medium mesh fishery in Winter-Mixed Management Unit, recommend:
 - Extend the current regulation that prohibits nighttime sets from beyond May 26, 2009 through May 26, 2014, with annual review.
- With respect to the Summer Northern North Carolina Management Unit and use of medium/small mesh gillnets, identify and prioritize observer coverage in the fisheries that occur in this unit.
- More gear research
 - Gillnet depth from top to bottom line exploration and net height vs. water depth x ratio of net height vs. water depth in Spanish and king mackerel fisheries.
- Observer protocol should include noting where in the net panel any takes occur and whether close to top line or close to bottom line.
- Non-regulatory measures
 - Education and outreach for voluntary measures conducted by the industry
 - Benchmark assessment
- There remains an underlying question: Is it really possible to achieve take reduction goals while still maintaining profitable fisheries?

Group 3

- Support the NCDMF proposal—beach seine fishery easy to observe and changes likely won't make a difference as to how much gear is in the water.
- With regard to medium mesh issues, future management changes could result in increased participation in the spiny dogfish fishery. Recommend:
 - Push back sunset clause for a year (to 2010 and revisit as necessary)
- Northern North Carolina Unit has seen but two takes since TRP, which indicates a need to readdress PBR. Other aspects:
 - Not possible to change Spanish small mesh fishery
 - Concern over seeing more inefficient gear or longer soak times
 - Recommend implementing a pilot study to test feasibility of pinger use to determine effectiveness of dolphin deterrence while reducing depredation
 - Measure holes in nets and depredated fish heads
 - Consider operational feasibility, cost, scale of experiment, and number of participants, ensuring feedback of lessons learned
 - Recommend best practices of limiting soak times, more monitoring, and better collection of observer information (e.g., location of animal in net)
 - Recommend a target date for analysis of most recent data sets to determine PBR, stock structure, and mortality estimates in time of review by the SRG in January so as to best prepare for the next BDTRT meeting
- Gear research: Refer to above recommendations, should be good potential for testing different experimental models and obtaining different money sources
- Monitoring strategies:
 - More detailed record keeping by observers
 - Model estimates based on most recent (last five years) of mortality data
 - Determine more appropriate metric to measure effort (e.g., feet of net per hour soaked) to be compared to bycatch data (soak time, gear length, number of nets)

- Look at the state programs' data elements and contrast those data with landings, which can then be compared by NMFS

Group 4

- Recommend following the North Carolina proposal with respect to the beach seine issues.
- Recommend extension of sunset date for dogfish by two years to 2011, with annual reviews.
- Recommend continued increased observer coverage, including noting where and how the animals are being caught with respect to North Carolina small mesh nets.
- Recommend conducting an evaluation of pingers as a potential way of reducing interactions as well as conducting research on dolphin behavior around nets equipped with pingers and other gillnet gear design and/or operation factors. Further recommend increased outreach education about the problem and pinger research.
- Research recommendations:
 - Clarify stock structure with DNA, all telemetry work, photo identification (specifically integrate all available information)
 - Examine alternative estimation methodologies for takes, in particular the use of landings vs. a more appropriate unit of effort such as set or soak duration. While not all states collect all the required data to support this analysis, Virginia and North Carolina apparently do. Consider using ACCSP data.

B. Discussion

When discussing the four breakout groups' recommendations, the BDTRT noted considerable convergence and generally agreed on the following points based on each group's recommendation listed above (for a complete list of consensus recommendations, please see the Key Outcomes section on pages 2–3).

- To endorse and monitor the approach currently being taken by the NCDMF with respect to beach seine fisheries and receive updates during the post-SRG conference call.
- To extend the sunset clause date associated with the medium mesh gillnet restriction in the Winter-Mixed Management Unit. All groups agreed to extend the expiration date, but there was discussion over the length of time that it should be extended or whether it should be removed completely. Ultimately, it was decided to extend the sunset clause for three years rather than remove the expiration date because it forced the BDTRT to revisit the issue and re-examine the potential for the spiny dogfish fishery to reemerge.
- To generally endorse recommendations from each of the breakout groups regarding ways to enhance monitoring of the BDTRP's effectiveness, observer coverage, and pursue gear research, especially pertaining to the Summer Northern North Carolina Management Unit.
- To continue with implementation of the non-regulatory conservation measures.

During the discussion of recommendations for the Summer Northern North Carolina Management Unit, BDTRT members expressed confusion and concern as to whether this

management unit is below or above PBR. Questions and discussions also continued about the data used for the mortality estimates and mitigation alternatives. Questions stemmed from the difference between the mortality estimate of 23.3 presented to the BDTRT, indicating that bycatch is over PBR for this management unit, versus the “predicted” mortality estimates showing values under PBR. The “predicted” mortality estimates represent various potential mitigation alternatives used as examples to show the impact of potential mitigation measures on the mortality estimates.

The mortality estimate (23.3) presented to the team is a five-year average for this management unit for the recent time period of 2001 through October 2006.²² It is an average of single-year mortality estimates derived from a model incorporating all the data collected from 1996 through October 2006. Alternatively, the mitigation alternative analysis for “predicted” mortality estimates uses the same model, but incorporates only the data from 2001 through October 2006, assuming that gear practices have changed over time and the more recent time period reflects current gear practices.²³ The model was then modified by adding mitigation variables to predict the effect on dolphin bycatch rates if those mitigation measures were implemented in the future. Specifically, the BDTRT discussed whether the “predicted” mortality estimate of 18.9 for the scenario of requiring string lengths less than 1,200 feet more accurately reflected the current fishing practices, given that all string lengths are already required to be less than 1,000 feet since the BDTRP’s implementation, and was therefore “actual” and not “predicted.”

NMFS explained that while the most up-to-date information was used for these analyses, there may be additional methods for analyzing the data. The present analysis should be considered preliminary as it has not been fully reviewed at this point. NMFS scientists requested suggestions on ways to improve the analysis to ensure it is representative of the time prior to and following the BDTRP’s implementation. There was discussion of whether using an estimate based only on data since the BDTRP’s implementation, as opposed to a five-year average, makes sense in this case because we are trying to answer whether or not we have met our goals within the first six months of the plan’s implementation. Alternatively, five-year averages of mortality estimates are generally used and beneficial because of small data sample sizes and mortalities fluctuate greatly inter-annually. One BDTRT member specifically requested a calculation of the bycatch rate for the Summer Northern North Carolina Management Unit using only data gathered since the plan’s implementation. NMFS scientists applied a ratio estimator to just the observer data collected since the implementation of the plan (May 2006–October 2006), and the estimated mortality from this method was 50 animals, which is significantly above PBR. This approach was unlike prior estimation methods of using a pooled data set over several years in a generalized linear model framework to estimate mortality bycatch rates. The point was raised that using a pooled data set was prudent because it addresses extreme inter-annual variability of mortality estimates when the take data are sparse. Utilizing a pooled data set also takes into consideration all data from previous management measures that were recommended for implementation.

²² See full presentation at: http://www.keystone.org/BDTRT/docs_images/Day1-1300-4-Rossman.pdf

²³ See full presentation at: http://www.keystone.org/BDTRT/docs_images/Day1-Effects of alternative gear mods.pdf

Although confusion remained on whether bycatch of bottlenose dolphins within this management unit is currently over or under PBR, the BDTRT did agree that the most current information available reveals that mortality estimates are hovering close to PBR. Therefore, the team recommended that mitigation measures continue to be applied and further attention should be paid to this management unit.

C. Consensus Recommendations

For the detailed list of consensus recommendations based on the above discussions and group recommendations, please see the Key Outcomes section on pages 2–3 of this document.

IX. Virginia Black Drum Fishery

A. Summary

Virginia BDTRT representatives asked the team to consider the specific circumstances of the Virginia black drum fishery and determine whether it might be suitable for exemption from nighttime gillnet proximity restrictions that begin June 1, annually, in the Northern Migratory Management Unit. Letters to/from the Virginia Commissioner and Dr. Bill Hogarth were distributed by the Virginia representatives, as well as a table showing gillnet harvests and trips from the Virginia black drum fishery for the month of June from 2001 to 2006.²⁴

Lewis Gillingham, VMRC, provided background information on the Virginia black drum fishery, the meeting between VMRC and NMFS in February 2005, and the request for exempting this fishery. Key points follow:

- This large mesh gillnet fishery begins at the end of April, peaks in May, and may stretch into the beginning of June.
- It operates mostly in the Chesapeake Bay, with some coastal fishing.
- This is a limited-entry fishery with 58 participants, and is quota-managed.
- It is almost a subsistence fishery, with catch consumed locally, and it is culturally important.
- The fishery has had observer coverage, with over 100 trips observed through 2004 with no interactions.
- During the BDTRP and mid-Atlantic large mesh gillnet rule proposed rule public comment period, VMRC staff met with NMFS staff to discuss the rule. VMRC believed that by voluntarily enacting regulatory actions for the conservation of sea turtles and bottlenose dolphins, NMFS would grant exemptions from the bottlenose dolphin regulatory measures for limited coastal striped bass and black drum fisheries.
- Virginia passed what it considered the “conservation equivalents” of what was in the proposed BDTRP for the June ocean black drum fishery and the fall striped bass fishery.

²⁴ http://www.keystone.org/BDTRT/docs_images/06-19-07_BlackDrumFisheryInfo_VMRC.pdf

- When no exemptions were granted in the final rule for the BDTRP portion of the rule, Mr. William Pruitt, VMRC Commissioner, wrote a letter to Dr. Bill Hogarth, NOAA Assistant Administrator for Fisheries, requesting a review of the rule and a reconsideration of the exemptions.
- A reply from Hogarth indicated that the intent of the meeting with VMRC was to discuss potential state regulations for sea turtle conservation measures relative to the measures included in the mid-Atlantic large mesh gillnet rule. Specific regulations to protect bottlenose dolphins were not discussed at the meeting, and the next BDTRT meeting would review all data and the effectiveness of the BDTRP.

Questions and discussion points raised included:

Q. Does the VMRC letter accurately reflect what happened?

A (NMFS). No.

Q. So NMFS did not agree to compromises?

A (NMFS). North Carolina and Virginia did enact additional restrictions and management regimes on sectors of large mesh gillnet fisheries for sea turtle conservation under the mid-Atlantic large mesh gillnet rule. We did consider these restrictions, and they were the basis of our retraction of the sea turtle component of the final rule package under the Endangered Species Act. What we did not do was modify the bottlenose dolphin-oriented regulations. NMFS did invite this issue to be re-opened and discussed by the BDTRT.

Q. What is the limited entry tool?

A. For the black drum fishery, to get a license you had to participate prior to 1993.

Q. Looking at the table showing Virginia's black drum harvest and trips from 2000 to 2006, it looks like black drum fishing occurs inside and outside of the COLREGS, mostly just east of the line.

A. We can't really move inside because it's shallow, and also because there would be high discards of large coastal sharks.

Q. Is the impact to the fishery that medium and large mesh gillnets must be tended at night from June to October?

A. We are requesting just an exemption for June, dependent on water temperature.

Q. What is the proposed solution?

A. An exemption just for black drum, just in June, from the nighttime tending requirements. We view Virginia's other new regulations as a conservation equivalent.

Q. Why is night tending a problem?

A. That's when they catch black drum, and the fishermen don't want to stay out all night. Plus, it precludes them from setting more than one or two nets.

Note: Ernest Bowden, VMRC, gave public comment on this issue. Please see the Public Comment section on page 35 of this document for his comments.

B. Proposed Language

Following these discussions, the BDTRT requested that language for the proposed exemption be developed and presented by the proponents. The following language was presented to the team for discussion:

Proposed Rationale for Amending the BDTRP Final Rule to Allow Virginia Black Drum Fishing Without Proximity Restrictions for the Month of June:

Virginia black drum fishery is conducted with large mesh gillnets in the coastal waters of the eastern shore of Virginia during the May–June time period. The present BDTRP requires night tending of large mesh gillnets within a distance of 0.5 miles outside the COLREG line in June. Current regulations allow overnight setting of small mesh gillnets during the same time period. The fishery currently includes 58 permits and typically six or fewer fishermen participate in the ocean fishery in the month of June. The fishery has been observed extensively both in the traditional manner and with the alternate platform. No takes have been observed in this fishery. The purpose of the proposed amendment is to eliminate the night tending requirement in the month of June for black drum permit holders. The commonwealth of Virginia has established specific requirements for the gear—it must be a suspended, sink gillnet, with a maximum length of 1,200 feet. The reason for the requested exemption is that it is unproductive to fish this gear during the day, and fishermen believe that it is unsafe to fish this large mesh gear at night. The fishery is quota managed, so the exemption would only last as long as the quota lasts. This request is predicated upon the assurance of observer coverage at a rate specified by the BDTRT.

C. Discussion and Next Steps

- The group discussed the possibility of recommending the black drum fishery be excluded from the nighttime gillnet tending rules that start June 1 in the Northern Migratory Management Unit.
- Several team members expressed support for this idea, suggesting that it is not a common occasion that “success” can be achieved in a management unit where mortality estimates are well below PBR, and that fisheries can be removed from restrictions, freeing up local business opportunities.
- Other team members had reservations because of the lack of detailed information provided to consider fully this request as other recommendations have been considered. Specifically, information was requested by the BDTRT about whether the fishery is sufficiently observed in the nearshore ocean waters and what the percentage of observer coverage is; what the interaction levels are with marine mammals; an updated analysis by NMFS scientist; as well as whether Virginia would agree to provide additional observer coverage upon removal of any restrictions. There was also a concern that it may not be possible to develop management measures according to target species, since the same gear may also be used for other species.
- The BDTRT agreed not to act on this proposal at this meeting and to reconsider the request during a conference call after the 2008 SRG meeting or at the next full BDTRT

meeting. NMFS will assist Virginia in obtaining the requested information and providing it to the BDTRT.

Additional questions and discussion points raised included:

Q. Was the tending requirement based on the bottlenose dolphin take in the smooth dog fishery in 2000 in medium mesh gillnet gear?

A. There was also a take in New Jersey ocean waters in 1999 in the shark fishery using large mesh gillnet gear.

Q (from observer). Clarification asked of BDTRT on their recollection of why June 1 was designated as the start time for the nighttime gillnet tending requirement. Two thoughts were provided as possibilities based on recalled discussions of the previous BDTRT meetings: (1) to allow for exemption of the black drum fishery; and (2) because of the documented smooth dogfish take.

A. No clarifications were provided from team members.

Comment (from BDTRT member): The idea behind the tending requirement was to reduce soak time and amount of gear in the water at one time.

Comment: Side conversations with the U.S. Coast Guard revealed that black drum fishing gear is easily identifiable by a black drum permit to determine if it is legal versus non-legal gear.

Comment: In referring to Virginia black drum landings from 2001 to 2006, it does not look like 2006 annual black drum landings decreased despite a decrease in effort because of the June proximity requirement in the BDTRP regulations. It also does not look like this request is based on an issue of economic need.

X. Public Comment

Public Comment: Ernest Bowden, Virginia Marine Resources Commission Member.

- I have been a part of the discussions with NMFS regarding the black drum fishery for some time. The last meetings appeared to be very productive and moving towards an agreement, but once the final Take Reduction Plan was released, the progress made in discussions didn't seem to be incorporated into the plan. I think that in Virginia, we had jumped to the conclusion that we'd reached agreement about this unique fishery.
- The black drum fishery is a traditional fishery, a cultural event on the Virginia's eastern shore in which fish are consumed locally and fishing effort is capped.
- The Take Reduction Team should know that Virginia's black drum management plan is designed to keep the fishery from expanding and from shipping further outside of the area. New participants are not let into the fishery except on a one-out, one-in basis. Recreational fishing has been limited greatly to one fish per license.
- In this region, at this time of year, this is the most desirable fish. The fishery is local, and the fish and the market for the fish stays very local.

- There has never been a dolphin take recorded in this fishery. Ocean quotas have been removed partly as an effort to reduce dolphin takes. A turtle entanglement resulted in a live release. The nets used in this fishery are suspended some two to three feet from the surface and takes up less than half the water column; it is not a float net, though they are floating-suspended, which increases the chance that an entanglement can result in a live release.
- The state of Virginia and VMRC have a history of being very active in conservation and management efforts, such as the coastal shark management plan. We pledge to continue these efforts. The BDTRT should look at the coastal shark management plan because shifting black drum fishing inside the COLREGS line creates a bycatch problem in the shark fishery.
- We think we have addressed the bottlenose dolphin issue through our regulations that are functionally equivalent to the BDTRP's requirements, but we are willing to do more. The black drum fishery is a priority issue for VMRC, and we hope the Take Reduction Team will consider lifting some restrictions on this vital local fishery.

Appendix 1: Agenda for the BDTRT meeting

Bottlenose Dolphin Take Reduction Team 2007 Meeting June 19–20, 2007

Agenda

Meeting Purpose

To monitor the effectiveness of the final Bottlenose Dolphin Take Reduction Plan (BDTRP)

Meeting Goals

- (1) Evaluate short-term goal for all management units, and identify conservation measures or information necessary for reducing serious injuries and mortalities in the Summer Northern North Carolina Management Unit to below PBR.
- (2) Determine if we are approaching the long-term goal of reducing estimated mortalities and serious injuries to insignificant levels approaching a zero mortality and serious injury rate within five years of the plan's implementation for the remaining management units.
- (3) Identify any changes/modifications to the plan to meet mandated goals.
- (4) Identify mechanisms for continuing to monitor effectiveness of the plan.

June 19, 2007

- 8:30 a.m. Welcome and Introductions** (Keystone)
- The Keystone Center team
 - New team members
- 8:45 a.m. Getting Started** (Keystone)
- Review meeting purpose, objectives, and agenda
 - Meeting guidelines
 - Framing key issues
- 9:00 a.m. Review of Final BDTRP** (Carlson)
- Regulatory measures
 - Non-regulatory measures
- 9:30 a.m. Implementation Status**
- Outreach and education (Carlson)
 - Monitoring:
 - Stranding Program (Carlson)
 - Alternative Platform Program (Byrd)
 - Traditional Observer Program (Tork)
 - Compliance efforts (Carlson)
 - Gear research updates:
 - Crab pot: *An investigation of bottlenose dolphin interactions with blue crab traps with three bait well designs* (Haymans)

10:30 a.m. Break

10:45 a.m. Continued: Implementation Status

- Continue gear research updates:
 - Crab pot: *Investigation of crab pot buoy lines in the water column to assess degree of risk of entanglement to bottlenose dolphins* (McFee)
 - Stop net: *Monitoring Bycatch in North Carolina Stop Net Fishery* (Read)
 - Gillnet: *Effects of twine size and bridle elimination on the structural integrity and target catch efficiency of coastal anchored gillnets* (Thorpe)

12:00 p.m. Lunch

Participants have one hour for lunch. There are several restaurants within walking distance of the hotel, as well as a restaurant in the hotel. A list of nearby restaurants will be provided at the meeting.

1:00 p.m. Continued: Implementation Status

- Stock structure updates:
 - Genetics (Rosel)
 - Tagging (Garrison)
- Abundance/PBR (Garrison)
- Mortality:
 - Review mortality estimates per management unit (Rossman)
 - Summary of other human-caused and stranding mortalities (Garrison)

3:00 p.m. Break

3:15 p.m. Mortality and Mitigation Discussions

- Review updated alternatives for the Summer Northern North Carolina Management Unit (Rossman)
- Group discussion (Keystone)

4:45 p.m. Summary

5:00 p.m. Adjourn for the Day

June 20, 2007

8:30 a.m. Housekeeping for BDTRT

(Keystone)

- Review agenda for Day 2 and questions from Day 1
- Feedback on travel, meeting location, and meeting timing
- Suggestions for next year's meeting

9:00 a.m. Fishery/Gear Updates

- North Carolina Beach Seine Fishery:
 - Discuss current fishery practices (Hilton)
 - Northern Outer Banks (Speight)
 - Southern Outer Banks (Peele)

- NCDMF proposed regulations and research (Munden)
 - Beach seine definition
 - Striped bass designations
 - Beach gear research
- Questions and topics for this afternoon’s discussion (Keystone)

10:30 a.m. Break

10:45 a.m. *Continued: Fishery/Gear Updates*

- Spiny Dogfish Fishery:
 - Review past and present fishery status (Munden)
 - Documented changes in fishing practices (Rossman)
 - Questions and topics for this afternoon’s discussion (Keystone)

12:00 p.m. Lunch

Participants have one hour for lunch. There are several restaurants within walking distance of the hotel, as well as a restaurant in the hotel. A list of nearby restaurants will be provided at the meeting.

1:00 p.m. Monitoring Effectiveness of the BDTRP

- Guiding Questions:
 - Are we reaching the mandated short-term goal and approaching the long-term goal for each management unit?
 - Are the non-regulatory measures helping to meet the plan’s mandated goals?
 - How can we continue to monitor the effectiveness of the plan?
 - What changes to the plan are necessary to reach the mandated goals?

3:00 p.m. Break

3:15 p.m. *Continued: Assessing BDTRP*

4:30 p.m. Summary, Meeting Outcomes, and Next Steps (Keystone)

5:00 p.m. Public Comment

5:30 p.m. Adjourn