

SUMMARY OF 2010 WORKSHOP ON MITIGATING SEA TURTLE BYCATCH IN THE  
MID-ATLANTIC AND SOUTHERN NEW ENGLAND TRAWL FISHERIES

Joseph DeAlteris Ph.D.  
DeAlteris Associates Inc.  
P.O. Box 251  
Jamestown, RI 02835  
Tel: 401-741-1129  
E-mail: [jdealteris@uri.edu](mailto:jdealteris@uri.edu)

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Woods Hole, MA 02543

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## **Overview:**

The National Marine Fisheries Service (NMFS), Northeast Fisheries Science Center (NEFSC), Protected Species Branch sponsored a 2-day workshop to review progress on bottom trawl gear research conducted since 2006, and to receive input from the fishing industry, scientists, and other interested parties on future research to mitigate sea turtle bycatch in mid-Atlantic and southern New England bottom trawl fisheries. In January 2007, NMFS NEFSC sponsored a similar workshop and the report summarizing the proceedings of that workshop is available at [http://www.nefsc.noaa.gov/read/protssp/PR\\_gear\\_research/](http://www.nefsc.noaa.gov/read/protssp/PR_gear_research/). This 2010 workshop was facilitated by Dr. Joe DeAlteris, a Professor at the University of Rhode Island (URI) and President of DeAlteris Associates Inc (DAI). The workshop was held at the Clarion Fontainebleau Hotel in Ocean City, MD on 26-27 October 2010, (a copy of the agenda is included in Appendix 1). Approximately 50 individuals participated in the workshop, including representatives of the fishing industry, NMFS, the fishery management councils, conservation community, and others. The first day of the workshop started with presentations by NMFS staff who provided updates on management efforts and sea turtle interactions in trawl fisheries in the northeast region. This was followed by presentations from scientists on the results of research efforts since January 2007. Brief summaries of each presentation are provided below. The presentations and most technical reports referenced in the presentations are available at: [http://www.nefsc.noaa.gov/read/protssp/PR\\_gear\\_research/](http://www.nefsc.noaa.gov/read/protssp/PR_gear_research/). On the second day, all participants, especially fishing industry representatives, were asked to contribute to discussions of future directions and needs for gear research, and to establish priorities for this research.

## **Summary of First Day, 26 October 2010 1:00 to 6:00 PM:**

Joe DeAlteris, URI & DAI, and Henry Milliken, NMFS gave welcoming and introductory remarks

Individual participants introduced themselves. (See Appendix 2 for a participant list.)

A brief review of results of the 2007 meeting was provided by Joe DeAlteris. Specifically, the fishing industry requested that additional research be conducted in the summer flounder and scallop trawl fisheries to better understand the effects of turtle excluder devices (TEDs) on the catch of target species, and recommended cooperative research as the best way to accomplish the work.

An update of the status of management efforts regarding sea turtles and trawl fisheries affecting the northeast region was presented by Ellen Keane, NMFS Northeast Regional Office (NERO). She provided a description of Endangered Species Act (ESA), the listed turtle species, and their recovery plans. She highlighted some of the conservation measures required to protect sea turtles. She described the Announcement of Proposed Rulemaking (ANPR), the Notice of Intent to prepare an Environmental Impact Statement (EIS), and the Scoping Hearings that have been conducted. Finally, she described the NMFS sea turtle strategy that established priority fishing gears, and the results of a recent National research Council (NRC) study.

- Comments:
  - A question was asked about separation between the Atlantic and Gulf strategy, and it was clarified that they are the same.
  - A comment was made that the fishing industry has no confidence in the submission of comments to proposed rules. It was suggested that NMFS needs to look at the number of comments received from the industry and figure out how to help the industry be more involved in public comment process.
  - A final comment noted concern with the weight of comments –serious, thoughtful comments versus “spam” comments. NMFS staff responded that of 40,000 comments received on the recent FR notice on loggerhead Distinct Population Segments (DPS), 8,000 were individual comments, and that substantive comments are reviewed more closely than each copy of the generic form letters..

An update on the behavior, interaction rates, bycatch and mortality of sea turtles in Mid-Atlantic waters was presented by Heather Haas, NMFS NEFSC. She noted that estimated interaction rates between loggerheads and bottom otter trawl gear were highest in warm, shallow, southern waters. She further pointed out that target fish species was not included in the bycatch rate model (because it did not explain enough variation). However, for the years analyzed, hauls targeting croaker, summer flounder, and scallop had the highest number of observed turtle interactions. She noted that estimated sea turtle interactions are now about one half (about 300 for 2005-2008) of those estimated in 2007 (about 600 for 1996-2004), primarily due to reductions in fishing effort in areas with estimated high bycatch rates. Finally, she pointed out that recent research reveals loggerheads are diving to the sea floor and foraging in waters at 10° C (see tracking of fourteen loggerheads at [seaturtle.org](http://seaturtle.org)).

- Comments: none

A summary of results of 2007 TED research in summer flounder trawl fishery, comparing a certified NMFS TED to a control trawl was presented by Joe DeAlteris, URI & DAI. The project evaluated summer flounder catch retention using a 32” x 51” TED with 4” bar spacing and a small escape opening versus a naked net. The result was an average 35% reduction in targeted summer flounder, and was significantly from 0. However, there was no change in length frequency of flounder. A report by D. Lawson, J. DeAlteris and C. Parkins in 2007 entitled “An Evaluation of the Catch Efficiency of the NMFS Certified, Standard Turtle Excluder Device (TED) Required in the Mid-Atlantic Summer Flounder Fishery”, is available at the NMFS NEFSC Protected Species Branch (PSB) Protected Species Gear Research website: [http://www.nefsc.noaa.gov/read/protsp/PR\\_gear\\_research/](http://www.nefsc.noaa.gov/read/protsp/PR_gear_research/).

- Comments:
  - Jim Ruhle made some comments regarding the experiments that were thought to have been misinterpreted by some participants. On 4 December, Joe DeAlteris spoke with Captain Ruhle in order to clarify those comments. The following is a summary of Jim’s clarified comments. He notes that some of the tows in the study, especially off the Delmarva, were done under expected high bycatch conditions that would be typical of the inshore fishery in the area

in the late spring and early summer as water temperatures warmed. He continued that the tows off southern Long Island that were conducted in the second trip, were also representative of conditions in the fishery further north and later in the season. In all, he believes that all the tows conducted aboard the FV Darana R in 2007 in that experiment were representative of what the inshore fishery would experience in the time and place that the tows were conducted, and that the resulting loss of summer flounder with the TED-equipped trawl was representative of what the fishery would experience. He further noted that North Carolina trawl fishermen fish north of the existing line rather than use TEDs in the inshore fishery off North Carolina.

A summary of results of 2006 TED research in scallop trawl fishery comparing a whelk TED to a control (naked net) trawl, and 2009 TED research in scallop trawl fishery comparing a larger flounder TED to a control (naked net) trawl was presented by Joe DeAlteris, URI & DAI. The 2006 project evaluated scallop catch retention using a 36 x 48" (bottom) 36 x 37" (top) trapezoidal whelk TED with 4" bar spacing versus a naked net using both scallop and flounder trawls. There was 7-8% loss of targeted scallops, and it was significantly different from 0. There was no difference in length-frequency distribution of the scallop catch. A report by D. Lawson and J. DeAlteris in 2007 entitled "Evaluation of the catch performance of a NMFS certified whelk TED in the scallop trawl fishery" is available at the NMFS NEFSC PSB website. The 2009 project evaluated scallop catch retention using a 43.37" x 51" TED with 4" bar spacing versus a naked net. There was a 7% loss of targeted scallops, and it was significantly different from 0. There was no observed difference in length-frequency distribution of the scallop catch. A report by J. DeAlteris and C. Parkins in 2009 entitled "Evaluation of the Catch Performance of the NMFS Flounder Turtle Excluder Device (TED) with a Large Opening in the U.S. Mid-Atlantic Scallop Trawl Fishery" is available at the NMFS NEFSC PSB website.

- Comments:
  - A participant asked if the tests were conducted with the large or small opening; and it was clarified that the 2006 tests were with a small opening, and the 2009 tests were conducted with a large opening.
  - DeAlteris also noted that Eddie Newman, the captain of the vessel used in the research in 2006 and 2009, was concerned that the TEDs were cumbersome to handle, and that there was serious chaffing of the extension sections that would make the gear more expensive to maintain.
  - A final question was asked if there many scallop trawl vessels left in the fishery. Participants indicated that the scallop trawl fleet was small compared to the dredge fleet. Information that is more precise could be obtained from NMFS if necessary.

A summary of results of TED research in 2009 comparing larger NMFS certified TED to a control trawl (naked net) in the summer flounder trawl fishery was presented by Steve Eays,

GMRI. The project tested summer flounder catch retention using a 43.37" x 51" TED with 4" bar spacing versus a naked net. A 27.8% loss of legal sized summer flounder was observed based on May tows and this loss was significantly different from 0. The loss of legal sized summer flounder in July was 16%, but not significant, and the loss in September was 1.8% and again not significant. In aggregate, the loss of legal sized summer flounder was 13.9%, but only May had high power and significance. A report by D.J. Salerno and S. Eayrs in 2010 entitled "Study on Catch Retention using a Larger TED and Opening in the Summer Flounder Trawl Fishery" is available at the NMFS NEFSC PSB website.

- Comments:
  - There was a question on whether the escape cover was too tight for dogfish to escape.
  - It was noted that some species referred to as bycatch are actually part of the marketable catch at certain times of the year, depending on market availability.

A presentation on the development of the Northeast Modified Articulating TED (NE modified TED) and the 2009 evaluation of the Northeast Modified TED in the summer flounder trawl fishery compared to the smaller NMFS-certified TED was made by DeAlteris, URI & DAI. The project began with the development and evaluation of the TED design at the flume tank at Memorial University in St. Johns, Newfoundland. This was followed by the certification of the NE modified TED using the small turtle test in Panama City, Florida. Finally, a field evaluation of summer flounder catch retention was conducted using a 32" x 51" TED with 4" bar spacing versus the NE modified TED with 6" bar spacing. A 12% improvement in summer flounder catch retention was observed, but it was not significantly from 0. There was no difference in length-frequency distributions of the target species. A draft report by J. DeAlteris and C. Parkins in 2010 entitled "Development, certification, and field evaluation of the Northeast Modified Turtle Excluder Device (TED) for the summer flounder trawl fishery" is available from the authors. The final report when approved will be available on the NMFS NEFSC PSB website.

- Comments: none

A summary of results of TED research comparing the NE modified TED to the larger (43" x 51") NMFS certified TED in 2009 was presented by Sara Mirabilio, UNC Sea Grant. The results of the project documented a 6% increase in summer flounder catch with the NE modified TED as compared to the NMFS certified TED, but it was not a significant difference. There was no substantive difference in length-frequency of summer flounder captured with the two TEDs. A draft report by S. Mirabilio, J. DeAlteris, C. Parkins, and T. Daniels in 2010 entitled "Test of Summer Flounder Catch Retention using a 43.37" x 51" TED with 4" Bar Spacing Versus the NE Modified Articulating TED," is available from the primary author. The final report when approved will be available at the NMFS NEFSC PSB website.

- Comments: none

A presentation on TED development and a summary of research and usability testing in the Mid-Atlantic Fly Net fishery was made by John Mitchell, SEFSC. He also discussed the Flexible

Flatbar Flynet (FFF) TED, and recent experiences with a Cable TED. The test of the FFF TED resulted in a 3.9 % loss of targeted croaker, and it was not significantly different from 0. A report by J.L. Gearhart in 2010 entitled “Evaluation of a Turtle Excluder Device (TED) Designed for Use in the U.S. Mid-Atlantic Croaker Fishery” is available as NOAA Technical Memorandum NMFS-SEFSC-606 at <http://www.sefsc.noaa.gov/seaturtletechmemos.jsp>

- Comments:
  - NMFS is working on both the Cable TED and FFF TED for the flynet fishery.
  - Billy Carl Tillet noted that the Flexible Flatbar Flynet TED is cumbersome, heavy and dangerous. He also expressed concern about the costs of the FFF TED, and suggested that the cable TED might be the best option, as the cable TED goes on and off the reel easily.
  - The horseshoe crab trawl fishermen indicated that the large TEDs would not physically fit on their net reels.
  - NMFS indicated that it is trying to improve construction elements of the cable TED before specifying it for the regulations.
  - Jim Ruhle indicated that the European net manufacturers are working on developing solutions to exclude marine mammals in high volume fisheries, and that rigid TEDs are not being used overseas for a number of reasons including safety and durability.
  - Steve Eayrs asked if there is a problem with the deformation of the cable resulting in variable spacing in the cable TED. NMFS responded that a stiffer cable would hopefully resolve the problem.

A summary of results of 2009 TED research in southern New England whiting and squid trawl fisheries was presented by Joe DeAlteris, URI & DAI. The whiting catch retention study evaluated a 43.37” x 51” TED with 4” bar spacing versus a naked net. A 22% loss of whiting was observed and was significantly different from 0. Interestingly, a 27% loss of loss of flounder complex that was significantly different from 0 was also observed. A report by J. DeAlteris and C. Parkins in 2009 entitled “Evaluation of the Catch Performance of the NMFS Flounder Turtle Excluder Device (TED) with a Large Opening in the Southern New England Whiting Trawl Fishery” is available from the NMFS NEFSC PSB website. The evaluation of longfin squid catch retention was conducted using a 43.37” x 51” TED with 4” bar spacing versus a naked net. Before addition of small mesh skirt, the project documented a 55% loss of targeted squid that was significantly different from 0. After the small mesh skirt was added, the project documented a 10% loss of targeted squid, which was not significantly different from zero. A report by J. DeAlteris and C. Parkins in 2009 entitled “Evaluation of the Effect on Catch Performance of the NMFS Flounder Turtle Excluder Device (TED) with a Large Opening in the Southern New England Long Fin Squid Trawl Fishery” is available at the NMFS NEFSC PSB website.

- Comments:
  - DeAlteris noted again that the small mesh skirt behind the rings helped reduce catch loss, and Jon Knight suggested that the small mesh skirt should be added in all small species fisheries, as well as a smaller mesh extension section for the TED.

A presentation on the development of a topless trawl and the 2010 evaluation of the topless trawl in the summer flounder trawl fishery compared to a traditional trawl was presented by Chris Parkins, URI. The design and construction of topless trawl was completed by Trawlworks. The field evaluation of the catch performance of the topless trawl as compared to a conventional trawl was conducted, and a 6% loss of summer flounder was observed in the topless trawl as compared to the conventional trawl, but it was not significantly different from 0. There was no substantive difference in length-frequency distributions of the summer flounder captured by the two nets. A draft report by C. Parkins and J. DeAlteris in 2010 entitled “Evaluation of Topless Trawl in the Summer Flounder Trawl Fishery” has been submitted to NMFS NEFSC for review, and the draft is available from DeAlteris at URI (contact: [jdealteris@uri.edu](mailto:jdealteris@uri.edu)).

- Comments:
  - Jim Ruhle noted that in his view this is the solution to the sea turtle interaction problem from North Carolina northward.
  - Another comment addressed the turtle certification of the topless trawl, and noted a difference in sizes and behaviors of captive-reared and wild turtles.

A presentation on the development of a tow time data logger was made by Henry Milliken, NMFS. During the presentation he provided a drawing that demonstrated how the data would be recorded and how the triggers and alarms are set. Additionally a prototype data logger was passed around the room. At this time, the NEFSC has twelve data loggers and intends to test these on commercial vessels to ascertain their ruggedness and determine if there are any problems with the data collection. They will provide to any interested bottom trawl fisherman both the data logger, installation instructions and a wheelhouse data sheet to be filled in by the fishermen

- Comments: none

**Summary of day two discussions 27 October 2010 8:00 AM – 13:00 PM:**

The morning session was moderated by Joe DeAlteris, URI & DAI, who encouraged the participants to focus on three questions (What have we learned in the last three years? What has worked and why? And what has not worked and why?) in relation to topics discussed during the research presentations from the previous day. Discussion topics included the scallop trawl fishery, fluke fishery, NE Modified TED, large TED in squid and whiting fisheries, topless trawl, and tow time data logger.

Heather Haas gave a review of the update on the behavior, interaction rates, bycatch and mortality of sea turtles in Mid-Atlantic waters. In particular, she reviewed the environmental characteristics associated with high bycatch rates. Estimated interaction rates were highest in warm, shallow, southern waters. Middle latitude zones have relatively moderate fishing effort and interaction rates, but have the highest magnitude of estimated loggerhead interactions. Heather also clarified the definitions of the seasons used on slide 16 of her presentation. Winter (1 Dec – 15 Apr), spring (16 Apr – 15 May), summer (16 May – 31 Oct), and fall (1 Nov – 30 Nov). The moderator encouraged the participants to use the review to think about what strata

have the highest bycatch rates or magnitude because this could help inform how participants would prioritize gear research efforts. A broad discussion followed Heather's review:

- A participant commented on the decreasing effort in bottom trawl fisheries. In response, Heather reviewed slide 20, which illustrated the decrease in commercial fishing effort.
- Jack Forrester noted that gear solutions to turtle bycatch will come from the industry, and more people have to get involved to help come up with solutions. He suggested that now is the time for the industry to bring things to the table.
- Greg DiDominico asked if we would ever get to a time where we get to real time management based on SST. Greg noted that there is adequate real time ocean observation but questioned whether we can get to a point where fishermen can avoid bycatch problems based on environmental factors.
- Jim Kendall suggested that NMFS should consider dynamic and seasonal area management approaches used to address large whale bycatch.

Scallop trawl fishery:

- It was suggested that limiting tow time might be a better option as compared to towing a TED, and that the topless trawl might be another solution.
- It was again noted that scallop trawl effort has been greatly reduced in the last five years.
- A comment was made regarding options other than TEDs, and it was again suggested that tow times and the topless trawl might be workable solutions.
- It was suggested to use a temperature trigger for regulations in the scallop trawl fishery, rather than specific seasonal dates

Flounder fishery:

- Jim Ruhle noted that TEDs in the bottom trawl will be difficult to use because of rocks and skate and ray bycatch
- A question was asked if the flexible TED is a viable solution in the flounder fishery.
- Steve Eayrs suggested that there might be a problem with the attachment of the cover. In particular, he noted that in other fisheries it has proven important for the cover to fit tight over the escape opening but readily move aside to allow turtles and other large bycatch to escape.
- Billy Carl Tillet indicated that he believes that the high volume catch in the flounder fishery cannot physically fit through a TED without catch loss.
- Jack Forrester indicated he believes that flounder gear has changed since the development of the TED. It has increased in size, so the TEDs must also be larger.
- Jim Ruhle noted that the inshore fishery does not exist except in New Jersey and New York. The fishery has changed due to regulations, and fishermen moved north of the TED line to avoid having to use a TED. It was also noted that what works in one area might not work in another due to differences in debris, bycatch, discards, and bottom type.
- Jack Forrester suggested that it might be worth further evaluating bottom shooting TEDs, given that there is currently so much interest in fluke TEDs.
- Discussion occurred about the process for allowing additional TEDs to be certified for use. The small turtle test and the wild turtle test were very briefly discussed.



There was a question asking why the north would have the same process as the south when turtle sizes are different between the regions. NMFS was asked if they are going to use the same small turtle test for certification in the Northeast.

#### NE Modified TED:

- Jim Ruhle again mentioned that the NE Modified TED was the best design industry could develop.

#### Large TED in squid and whiting:

- The large TED had ~20 percent loss of whiting but not much loss of squid.
- The need for underwater data to document fish behavior ahead of the TED was discussed. The difficulty with underwater imagery was briefly discussed.
- Jim Ruhle noted that the work was too inconclusive to make a determination, as the sample size was too small. He also suggested that the NE modified TED might be an option to test in these fisheries in the future.
- Jon Knight again noted that the extension mesh size should be smaller than the 3.5” used to retain squid and whiting.

#### Topless trawl:

- Jim Ruhle noted that the topless trawl works well when the net is outfitted with 16 floats. Average height was less than 5’, and he estimates that there was 12’ difference (setback) between footrope and headrope.
- Jim Ruhle noted that the next step is the turtle certification of the topless trawl using a wild turtle test protocol.
- Participants briefly discussed the possibility that further modifications could perhaps be made to the current topless trawl design to further increase the turtle conservation value without decreasing its finfish catch efficiency.
- Others noted that the topless trawl might be suitable in the horseshoe crab and skate fisheries.
- Industry requested support for turtle testing and then to reconfigure or redesign the topless trawl if the turtle testing is unsuccessful.
- A question was asked about turtle behavior in front of and around the trawl gear. John Mitchell stated that the data were inconclusive and that sometimes animals remained on the bottom, while others shot to the top with bottom disturbance from trawl gear. There was discussion about whether turtle behavior in front of approaching trawl gear was not more indicative of how long it had been since the turtle had last surfaced for air.
- Discussion followed about the need to test topless trawls with wild turtles to learn more about turtle behavior in this trawl type.
- Further discussion followed about past wild turtle testing, and the statistical validity of the current TED certification program that relies on turtles that are smaller than those encountered in the fishery in the mid-Atlantic and Southern New England waters.

Tow time data logger:

- Jeff Euster indicated a possible corrosion problem with housing, and suggested using stainless versus galvanized steel, or using rubber to protect the housing.
- One participant thought the data logger might work in the horseshoe crab fishery and was willing to fish with a logger to test whether it works.
- A suggestion was made that any requirement to use data loggers should be tied to temperature as determined by satellite imagery, rather than a fixed time period.
- Several people noted that managing based on the tow time data logger might be considered for the horseshoe crab and Atlantic sea scallop fisheries.
- Comments from individual participants also suggested that the alarm lights should be visible through the casing so that enforcement officers can see the alarm without having to break the tamper resistant seal. Participants also suggested that a wireless download should be considered.
- Jim Ruhle suggested that the data logger should continue to be mounted to doors (the position in which it was tested) and noted that NMFS needs to develop tow times based on temperature and satellite imagery.
- One participant noted managing based on tow times might not be an appropriate alternative to TEDs because data from Sasso and Epperly (2007) suggest even 15-20 minute tows might cause significant physiological changes in sea turtles. Heather Haas replied that those data are being re-examined. Subsequently, Heather Haas noted it is unlikely that tows longer than an hour would be appropriate for turtles. She stressed that NMFS has not developed a policy about possible future tow time restrictions. Hence, it is not known whether NMFS would manage fisheries based on tow times in the future, nor is it clear what tow time limit, if any, would be acceptable in the Mid-Atlantic bottom trawl fisheries.

The preceding discussions on the research presented in day one identified several key areas of interest

- Applicability of small turtle test to NE region
- Operational and safety concerns of TEDs
- Potential opportunity for managing by environmental factors (SST)
- Hotspot analysis by NMFS to identify areas of likely turtle interactions
- Effort shifts and reduced effort in several fisheries
- Need to tune TEDs and TED openings (also cable TEDs) for optimal performance
- Need for turtle exclusion testing for topless trawl.

There was brief discussion of the mid-Atlantic horseshoe crab trawl fishery. It was noted that the horseshoe crabs are harvested for bait and for blood. A representative from the horseshoe crab biomedical industry discussed the biomedical applications of the horseshoe crab biomedical harvest. This discussion highlights the issue of secondary and tertiary effects of regulations in bottom trawl fisheries. Similar secondary and tertiary effects exist for nearly all harvested species (such as the live summer flounder market for sushi grade fish), but detailed discussion of these effects are outside of the scope of this workshop and report.

After discussing the previous day's research, the moderator posed a new set of questions for the participants to discuss:

- What do you think are the next steps to develop a technological solution to mitigate sea turtle bycatch in trawl fisheries?
- What fisheries have to be addressed that have not?
- What other alternatives are there, if any?
- Are there priorities or short-term versus long-term goals?

The group discussion of these questions was moderated by Joe DeAlteris. Participants discussed issues that were directly related to the posed questions as well as issues that were only peripherally related. Highlights of the discussion are as follows:

- Steve Eayrs noted that not all bycatch is bad, smooth dogfish are often retained. There was also concern over the loss of horseshoe crab.
- It was pointed out that testing over a longer period (e.g., many seasons versus ten days) is necessary to truly evaluate the performance of a new gear design.
- It was noted that there is a turtle certification protocol using wild turtles, and it is referred to as the Canaveral Protocol. John Mitchell stated that application of Canaveral Protocol (Paired trawl comparisons) to a single trawl/alternate haul could be problematic.
- It was again noted that the croaker fishery is often a multi-species fishery, and the question was raised; should regulations be applied to specific fisheries or to high bycatch areas?

A final list of research suggestions was developed toward the end of the meeting, and included the following:

- Test the topless trawl for turtle exclusion
- Test a flexible TED in high volume fisheries
- Further test the tow time logger in the commercial fishery
- Develop an industry-based hotspot analysis for potential use in dynamic management. Investigate existing industry-based programs as a prototype.
- Undertake further NMFS hotspot analysis for potential use in dynamic management
- Explore other technologies (e.g., sonar, noise) to avoid sea turtle capture
- Improvement current TED rigging
- Research the behavior of turtles near trawl gear

This list was further divided into low and high cost investments for the top priority research suggestions:

- Low investment
  - Tow time data logger testing in the field
  - Hot spot analysis for interactions
- High investment
  - Topless trawl turtle certification
  - Development of the cabled TED

The prioritized research list was developed and discussed at the meeting, though no formal consensus was sought from the participants. Overall, the workshop provided a venue for productive conversations between participants. It also allowed representatives from NMFS to hear input from some of their constituents.

## **References**

DeAlteris, J.T. 2007. Summary Report: Workshop to Discuss Bycatch Reduction Technologies to Reduce Sea Turtle Bycatch In Southern New England And Mid-Atlantic Inshore Trawl Fisheries. Report available at: [http://www.nefsc.noaa.gov/read/protsp/PR\\_gear\\_research/](http://www.nefsc.noaa.gov/read/protsp/PR_gear_research/)

## Appendix 1

### 2010 WORKSHOP: MITIGATING SEA TURTLE BYCATCH IN THE MID-ATLANTIC AND SOUTHERN NEW ENGLAND TRAWL FISHERIES

The National Marine Fisheries Service, Northeast Fisheries Science Center, Protected Species Branch is sponsoring a 2 day workshop to review progress on gear research conducted since the January 2007 workshop, and to receive scientist and fishing industry input on directions for future research to mitigate sea turtle bycatch in Mid-Atlantic and Southern New England trawl fisheries. The workshop is being conducted by Dr. Joe DeAlteris, a Professor at the University of Rhode Island, and President of DeAlteris Associates Inc (DAI). DAI has received support from NMFS, NEFSC to host the workshop, and can provide travel reimbursement and a stipend to a limited number of invited fishing industry participants.

General Agenda: NMFS will provide updates on management efforts, and sea turtle interactions in trawl fisheries in the northeast region. Scientists will provide summaries of research conducted since 2007 on evaluations of sea turtle bycatch reduction technologies. Finally, all participants, especially fishing industry representatives will be asked to contribute to discussions of future directions and needs for gear research, and the setting priorities for this research.

#### 26 October 2010 1:00 to 6:00 PM

- |             |  |
|-------------|--|
| 1:00 – 1:30 | Introduction and welcoming remarks, Joe DeAlteris, DAI, and Henry Milliken, NMFS; introductions of participants, Review of results of 2007 meeting   |
| 1:30 – 1:50 | Update of the status of management efforts regarding sea turtles and trawl fisheries affecting the northeast region. NMFS  |
| 1:50 – 2:10 | Update of sea turtle – trawl interaction rates, and estimated mortality attributed to trawl fisheries. NMFS  |
| 2:10 – 2:30 | Summary of results of 2007 TED research in summer flounder trawl fishery, comparing a certified NMFS TED to a control trawl. DeAlteris, URI  |
| 2:30 – 3:00 | Summary of results of 2006 TED research in scallop trawl fishery comparing a whelk TED to a control trawl, and 2009 TED research in scallop trawl fishery comparing a larger flounder TED to a control trawl. DeAlteris, URI |
| 3:00 – 3:20 | Break: cookies and sodas; new TED designs on display   |
| 3:20 – 3:40 | Summary of results of TED research in 2009 comparing larger NMFS certified TED to a control trawl in the summer flounder trawl fishery. Eayrs, GMRI  |

3:40 – 4:00	Development and summary of results of 2009 evaluation of the Northeast Modified TED in the summer flounder trawl fishery, comparing this TED to the smaller NMFS certified TED tested in 2007. DeAlteris, URI
4:00 – 4:20	Summary of results of TED research comparing the Northeast modified TED to the larger NMFS certified TED in 2009. Sara Mirabilio, UNC Sea Grant
4:20 – 4:40	TED development and summary of research and usability testing in the Mid-Atlantic Fly Net fishery. John Mitchell, SEFSC
4:40 – 5:00	Summary of results of 2009 TED research in southern New England whiting and squid trawl fisheries. Parkins, URI
5:00 – 5:20	Development and summary of 2010 research results on a topless trawl in the summer flounder trawl fishery, comparing a topless trawl to a traditional trawl. Parkins, URI
5:20 – 6:00	Questions and discussion of results of specific studies previously presented
6:00	Adjourn for evening
<u>27 October 2010</u>	<u>8:00 AM – 13:00 PM</u>
8:00 – 0830	Continental breakfast, new TED designs on display
8:30 – 9:00	Summary of research presentations from the previous day: What have we learned in the last three years? DeAlteris, URI
9:00 – 10:00	Learning from experience. What has worked and why; and what has not worked and why? Group discussion moderated by DeAlteris, URI
10:00 – 12:00	Given the current regulatory timeline, what are the next steps to develop a technological solution to mitigate sea turtle bycatch in trawl fisheries? What fisheries have to be addressed that have not? What are the alternatives, if any? Are there priorities, short-term versus long-term goals? Group discussion moderated by DeAlteris, URI
12:00 – 13:00	Meeting summary and thank-you to participants, Milliken, NMFS
13:00	Adjourn

**Appendix 2:** List of Workshop Participants:

Name	Contact Information, if provided
Henry Milliken	henry.milliken@noaa.gov
Joe DeAlteris	jdealteris@uri.edu
Jim Kendall	NBSC@comcast.net
Heather Haas	heather.haas@noaa.gov
Jamie Testa	jschofield@dnr.state.md.us
Mike Pegg	mikepegg@wakousa.com
Jim Brindley	brindley4@yahoo.com
Eric Matzen	Eric.Matzen@noaa.gov
M. Denise Wolf	mary.wolf@lonza.com
Brenda Kibler	bkibler@dnr.state.md.us
Gwynne Schnaittacher	gwynne.schnaittacher@noaa.gov
Mark Swingle	mswingle@virginiaaquarium.com
Sue Barco	sgbarco@virginiaaquarium.com
Ellen Keane	ellen.keane@noaa.gov
Mary Colligan	mary.a.colligan@noaa.gov
Luke Szymanski	LukeS@aisobservers.com
Sean McKeon	NCFA, no email provided
Billy Carl Tillett	info@moontillett.com
Jennifer Dittmar	jdittmar@aqua.org
Jeff Eustler	tandje@verizon.net
Jon Knight	superiortrawl@aol.com
Mary O'Rourke	LN4999@verizon.net
Edna Stetzar	Edna.Stetzar@state.de.us
Steve Eayrs	Steve@gmri.org
John Mitchell	John.Mitchell@noaa.gov
Jack Forrester	Jack.H.Forrester@noaa.gov
Cindy Driscoll	Cdriscoll@dnr.state.md.us
Allen Burgensen	allen.burgenson@lonza.com
Howard King	hjbking@verizon.net
Talia Bigelow	tbigelow@nefmc.org
Caroline Whalen-Strollo	AKAFRANNY@gmail.com
Marjorie Rossman	marjorie.rossman@noaa.gov
Melissa Warden	melissa.warden@noaa.gov
Mike Daniels	NCcroakerjoe@yahoo.com
Red Munden	red.munden@ncdenr.gov
Buffy Baumann	bbaumann@oceana.org
Greg DiDominico	gregdi@voicenet.com

Blake Price	Blake.Price@noaa.gov
Jim Ruhle	FVDaranaR@aol.com
Mike Barnette	Michael.Barnette@noaa.gov
Sara Mirabilio	saram@csi.northcarolina.edu
Andrew Jackson	ajoc@comcast.net
Chris Parkins	Cparkins@mail.uri.edu
Fella Daniels	oldpointfella@hotmail.com
Marydele Donnelly	marydele@conserveturtles.org
Alexis Gutierrez	Alexis.Gutierrez@noaa.gov
Rich Seagraves	rseagraves@mafmc.org
Steve Docta	MD/DNR, no email provided
Jim Fletcher	NC consultant, no email provided