Massachusetts Sea Turtle Disentanglement Network

Section 6 Final Report

June 1, 2007 – May 31, 2010

Photo credit: Kara Dodge

Submitted to NOAA Fisheries by

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Summary
Between June 1, 2007 and May 31, 2010 the Massachusetts Sea Turtle Disentanglement Network (MASTDN) received 41 reports of entangled sea turtles within the response area of coastal waters off Massachusetts. Through 36 dedicated on-water responses, network members disentangled 25 ESA-listed leatherback sea turtles and documented 6 entangled leatherback carcasses. Of the 36 responses mounted, we were able to identify the gear and gear-owner in 21 cases. Entanglement sightings were solicited through a variety of venues including dedicated outreach efforts to commercial and recreational fishermen; military, state and municipal staff; the research and naturalist community; as well as the general public. Entanglement responses were conducted within the context of a professionally trained network with nine training sessions held, reaching 78 individuals within or adjacent to the response area. Entanglement response tools were maintained at strategic sites within the response area. Primary information gathered through confirmed reports and/or entanglement responses was shared with all appropriate government agencies in a timely fashion and secondary information was shared within the network via updates to a network web site. Preliminary analyses of entanglement characteristics were presented at four professional conferences or workshops in an effort to share findings that enhance entanglement understanding or entanglement response within and outside the MASTDN response area.

Introduction
The Massachusetts Division of Marine Fisheries (DMF) and Provincetown Center for Coastal Studies (PCCS) expanded the Massachusetts Sea Turtle Disentanglement Network (MASTDN) for FY 2007, 2008, and 2009 with the assistance of funding from the NOAA Section 6 Program. The period of this project was from June 1, 2007 through May 31, 2010. The goal of the MASTDN is to promote conservation of sea turtle populations by: proactively decreasing the number of sea turtle mortalities due to bycatch in Massachusetts waters through professional entanglement response, to improve understanding of entanglements to inform entanglement prevention, and to collect data on these poorly-understood endangered species in Massachusetts waters. DMF contracted PCCS, a NOAA authorized disentanglement agency, to coordinate all sea turtle disentanglements within the Commonwealth of Massachusetts. The geographic scope of this project encompassed all areas of coastal Massachusetts. These authorized disentanglement responses offer the state a unique opportunity to contribute to bycatch reduction.

Reports and Responses
From June 2007 to May 2010 MASTDN received 41 confirmed cases (*see figure 1*) of entangled sea turtles (40 leatherback, 1 loggerhead). On-water, network responses were mounted for 36 cases ((24 were disentangled, 1 shed gear just prior to response, 5 carcasses were documented, 3 animals were not found despite searches and 3 were disentangled by boaters prior to arrival of network responders). In all 24 network responses to live entangled turtles the animal was relocated, assessed, documented, tagged when conditions permitted (PIT and flipper tags), and completely released of the entanglement. In the cases for which no network response was mounted: 2 cases involved sightings that could not be dealt with due to time of day and distance from shore and 3 cases involved *ad hoc* disentanglement attempts by well-intentioned mariners (due to lack of documentation it is difficult to determine whether these attempts were successful in removing the turtle from a life threatening entanglement before the animal was released, reinforcing the need for trained responders and a formalized network), . The majority of reports

were located in coastal waters, including Cape Cod Bay and the sounds south of Cape Cod (*see figure 2*).

Gear Involved in Entanglements

Identifying the gear involved in entanglements is an important step in fixing the problem. Armed with a better understanding of the type of gear (i.e. fishery, location, gear configuration, etc), we can start to look for ways to reduce the number and severity of these events. Whenever possible, the disentanglement collects the permit number and other information off the buoys, which helps DMF identify the fishery and gear type. DMF used the data collected to identify the fishery and gear owner in 21 of the entanglement cases that occurred during the 3-year project period.

Fishery	# of documented entanglements
Lobster	10
Conch/Fish Pot	9
Weir	2
Unknown buoyline	2

As you can see, lobster pots and conch/fish pots entangled approximately equal numbers of leatherbacks. However the geographic extent of these two gear types is not equal. Very little conch and fish pot gear exists in Massachusetts, but what does exist occurs mainly in Nantucket Sounds. In addition, while there isn't much lobster activity south of Cape Cod, a great deal of that gear lies north and east of the cape. The spatial range of leatherbacks in Massachusetts water is largely dependent on the location of their primary food supply, gelatinous zooplankton. Some areas have dense aggregations of gear but few turtles; while other have little gear but many turtles aggregating. We plan to explore this and other questions over the next 3 years in our recently-awarded Section 6 grant. DMF and CCS were awarded funds to continue our leatherback research and disentanglement program. A large part of this work will look at reducing the incidence and severity of turtle entanglements.

The information gathered over the past 3 years under NA07NMF4720052 has provided a solid baseline about the geographic distribution of entanglements, potential entanglement hotspots, the fisheries involved, and the typical entanglement configuration. This data has helped us develop preliminary strategies for reducing entanglement. Through our upcoming Section 6 grant, we will build off our initial work, analysis potential solutions, and implement strategies to reduce entanglement. We will do this by analyzing buoyline density data, entanglement hotspots, entangling gear, turtle movements, and other factors to further understand the causes and mechanics of leatherback entanglements. Some potential mitigation strategies we plan to explore include gear modifications in hotspot areas and reduction of the number of buoylines allowed in certain areas.

Network Training and Coordination

A key component of the stated goals of the Massachusetts Sea Turtle Disentanglement Network is the formation of a response network based on frequency of reports from regions within the state and availability, willingness, and resources of partner agencies. To meet these goals nine network training seminars were held training 78 individuals representing local, state, and federal partner agencies (this included 71 new responders and 7 individuals receiving renewed training):

2007 - Cape and Islands Harbormaster Association, Bourne, MA
Provincetown Center for Coastal Studies, Provincetown, MA
Plymouth Harbormaster Department, Plymouth, MA
Massachusetts Environmental Police – South Region, Bourne, MA

2008 - Provincetown Center for Coastal Studies, Provincetown, MA

2009 – New England Aquarium Rescue Team, Boston, MA
Northeast Fisheries Science Center, Woods Hole, MA

2010 – Nantucket Marine Resources Department, Nantucket, MA
Nantucket Stranding Team, Nantucket, MA
USCG Station Brant Point, Nantucket, MA

In addition to the dissemination of knowledge and expertise within the state, four training sessions were performed outside of the state of Massachusetts for responders from the Northeast region. In February of 2008 the MASTDN was invited to provide turtle disentanglement training to two agencies from the State of Maine, the Maine Marine Police and the Maine Department of Marine Resources, in support of the creation of a marine turtle disentanglement network in that state. The course was conducted in Rockland, Maine and covered reporting, response, and thorough data collection. In May of 2008 a training trip was conducted to Maryland and Delaware to train responders in both of those states. Coordinating with NOAA Fisheries and local stranding agencies, a training was performed on May 29 at the Maryland Department of Natural Resources Oxford Field Laboratory for Maryland responders. The next day a training for Delaware responders was held at the University of Delaware College of Marine Science in Lewes, Delaware. The final training for the northeast region was performed at the 2010 Northeast Region Stranding Conference held in Bar Harbor, ME in May of 2010. This conference workshop was attended by over 20 responders from nine states in the northeast region and focused on reporting, safety, response techniques, assessment, and documentation. The classroom portion was followed by a simulated response section demonstrating response procedures, with an emphasis on response safety.

Training seminars included classroom and on-water presentations. Each presentation was specifically tailored to participants level of experience with boat handling and turtle biology. Seminars were based on powerpoint presentations that emphasized: responder safety, animal safety, authorization, disentanglement techniques and documentation.

To maintain communication within the network the private MASTDN website (for an example page see figure 3) was maintained and updated during the contract period, representing all confirmed entanglement sightings. This website continues to be utilized as a reference and education tool for network responders, as well as responders and coordinators in other states starting networks, by cataloging confirmed entanglement reports and associated documentation. Forty-five web pages were created and added to the MASTDN website describing recent cases, techniques used, documentation (stills and video), as well as maps depicting the distribution of reports.

Entanglement Response Advancements

Throughout the support period a number of efforts were made to enhance entanglement response and the information that can be gathered during responses. These efforts aimed at increasing responder and animal safety and increasing our understanding of the details of entanglement. In 2007 PCCS, in conjunction with the Large Pelagics Research Center, the New England Aquarium and other collaborators, developed tools and techniques to significantly enhance our abilities to document entanglement configuration and associated injuries. This included the development of a lifting platform to haul entangled turtles aboard vessels, allowing for detailed examination and documentation of their entanglements. This data enhanced our ability to characterize entanglement-related injuries, and this information was shared with network members and stranding responders to clarify the pattern and type of injuries that may be associated with human interaction determinations (this information was shared during network trainings, as well as at the national stranding conference, referenced below, and will be further developed to be incorporated into entanglement assessments). For cases in which hauling an animal aboard was not possible, underwater video and helmet-cam proved invaluable. Higher resolution and more user-friendly cameras were obtained during the support period and significantly advanced the quality and quantity of case documentation. This technology also allowed for real time assessment of entanglements, further enhancing our abilities to efficiently develop disentanglement action plans. More minor disentanglement advancements included increasing control-line lengths in all network kits to increase effectiveness around evasive animals and the construction of a life-sized leatherback model to be used during on-water network trainings, enhancing network understanding of disentanglement techniques and documentation collection.

Outreach

Since a majority of entanglement reports have come from recreational boaters and fishermen (*see figure 4*) the Network focused on performing outreach events to inform the general public of the occurrence of sea turtle entanglement, how to report sightings of entangled turtles, and how important standing-by an entangled turtle is to a successful response. Targeted outreach events included a display booth at the Massachusetts Lobstermen's annual convention in 2008, 2009, and 2010 as well as a presentation to the Cape Cod Salties, a recreational salt water fishing club with over 150 members. In addition to the focused outreach 17 events for the general public were held reaching groups ranging from high school and college students participating in classroom at sea programs to Americorps Cape Cod and students and faculty of the University of Massachusetts - Dartmouth School for Marine Science and Technology.

Other tools for increasing awareness of turtle entanglements and publicizing the reporting hotline included distribution of over 5,000 decals through PCCS mailings, outreach events, marinas, harbormaster offices, and US Coast Guard stations (see figure 5). These decals help raise awareness and visibility of the Network. Media outreach was also conducted to local newspapers highlighting the need for prompt reporting and standing-by as well as advertising the hotline.

To disseminate the knowledge and experience gained by the MASTDN abstracts were submitted and accepted for presentation to international, national, and regional consortiums and meetings, and one paper is in review including:

Poster presentation - ***Understanding entanglement through disentanglement: a preliminary characterization of sea turtle bycatch in Southern New England, USA***, 28th International Sea Turtle Society Symposium - January 2008, Loreto, MX. (see appendix I)

Oral presentation – ***Sea Turtle Disentanglement Network Response and Equipment,*** Interactions Between Sea Turtles and Vertical Lines in Fixed Gear Fisheries Workshop – March 2008, Narragansett, RI

Oral presentation - ***Understanding entanglement through disentanglement: a preliminary characterization of sea turtle bycatch in Southern New England, USA***, Northeast Region Stranding Conference – April 2008, Warwick, RI

Oral presentation – ***Using patterns of injury to assess prior entanglement in leatherback turtles,*** National Marine Animal Health and Stranding Network Conference – May 2010, Shepardstown, WV.

Health Evaluation of Leatherback Turtles (*Dermochelys coriacea*) in the Northwestern Atlantic During Direct Capture and Fisheries Gear Disentanglement. Innis, C.; C. Merigo; K. Dodge; M. Tlusty; M. Dodge; B. Sharp; A. Myers; A. McIntosh; D. Wunn; C. Perkins; T. Herdt; T. Norton and M. Lutcavage. In review.

In an effort to improve data collection, sampling procedures, and restraint techniques during disentanglement operations, Brian Sharp participated as a member of the research team headed by the Large Pelagics Research Center at the University of New Hampshire during part of their 2008 field season based in Brunswick, Georgia.

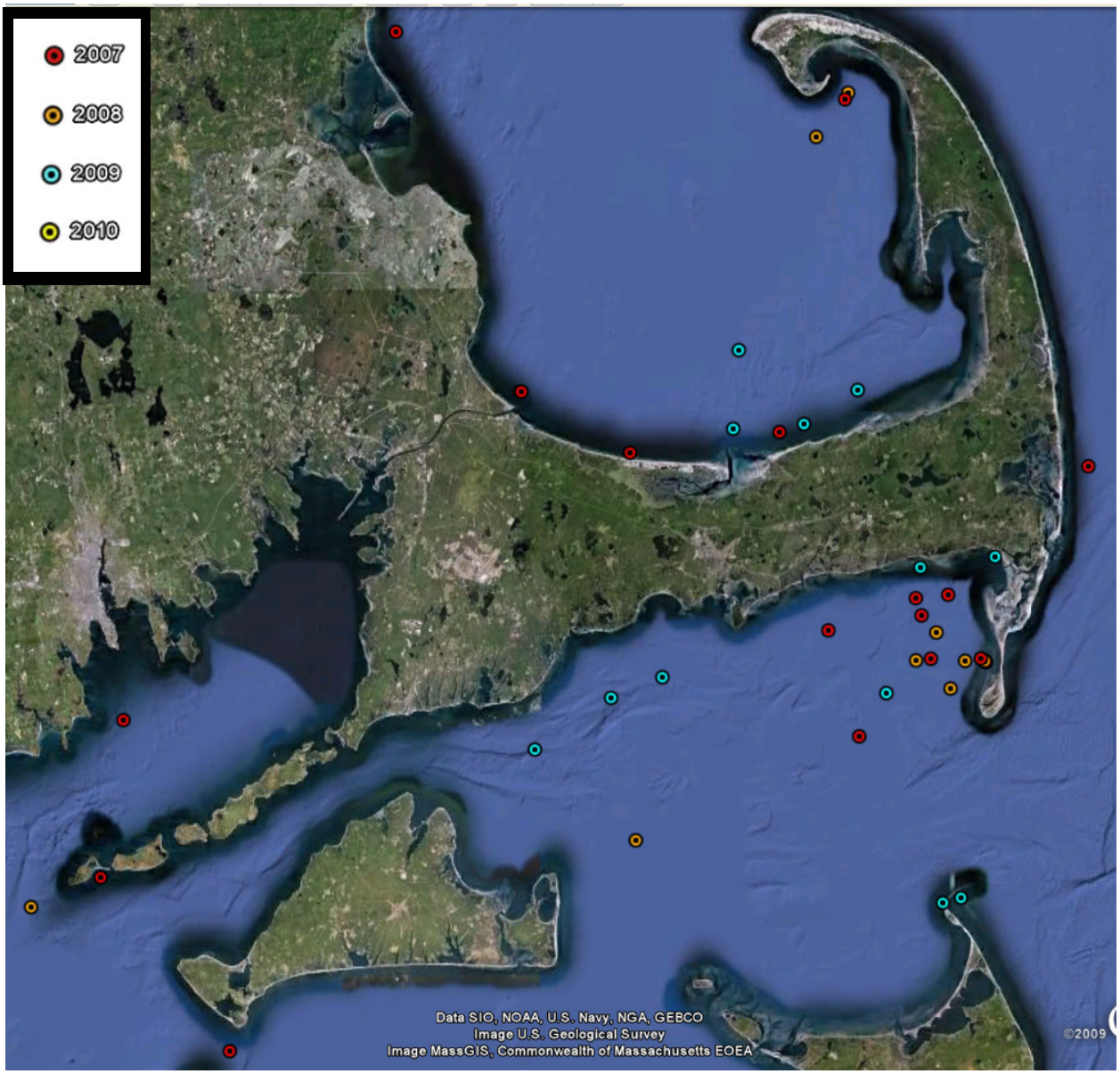
figure 1

MASTDN Entanglement Report Dispositions June 2007 - May 2010

Species	Date	Case #	Disposition (Alive or dead)	Network response	Outcome
leatherback	30-Jun-07	TD07-01Dc	alive	yes	disentangled
leatherback	2-Jul-07	TD07-02Dc	alive	no	ad hoc
leatherback	28-Jul-07	TD07-03Dc	alive	yes	ad hoc
leatherback	7-Aug-07	TD07-04Dc	alive	yes	shed gear
leatherback	11-Aug-07	TD07-05Dc	alive	yes	ad hoc
leatherback	12-Aug-07	TD07-06Dc	alive	yes	disentangled
loggerhead	13-Aug-07	TD07-07Cc	dead	yes	documented
leatherback	15-Aug-07	TD07-08Dc	alive	no	unable to relocate
leatherback	15-Aug-07	TD07-09Dc	alive	no	ad hoc
leatherback	19-Aug-07	TD07-10Dc	alive	yes	disentangled
leatherback	25-Aug-07	TD07-11Dc	alive	yes	unable to relocate
leatherback	29-Aug-07	TD07-12Dc	alive	yes	disentangled
leatherback	29-Aug-07	TD07-13Dc	alive	yes	disentangled
leatherback	1-Sep-07	TD07-14Dc	alive	no	ad hoc
leatherback	17-Sep-07	TD07-15Dc	dead	yes	documented
leatherback	20-Sep-07	TD07-16Dc	alive	yes	disentangled
leatherback	22-Sep-07	TD07-17Dc	alive	yes	disentangled
leatherback	1-Oct-07	TD07-18Dc	alive	yes	disentangled
leatherback	28-Jul-08	TD08-01Dc	alive	yes	disentangled
leatherback	2-Aug-08	TD08-02Dc	alive	no	unable to relocate
leatherback	3-Aug-08	TD08-03Dc	dead	yes	unable to relocate
leatherback	8-Aug-08	TD08-04Dc	alive	yes	disentangled
leatherback	5-Aug-08	TD08-05Dc	dead	yes	documented
leatherback	22-Aug-08	TD08-06Dc	alive	yes	ad hoc
leatherback	23-Aug-08	TD08-07Dc	alive	yes	disentangled
leatherback	24-Aug-08	TD08-08Dc	alive	yes	disentangled
leatherback	28-Aug-08	TD08-09Dc	alive	yes	disentangled
leatherback	29-Aug-08	TD08-10Dc	alive	yes	disentangled
leatherback	9-Jul-09	TD09-01Dc	alive	yes	disentangled
leatherback	10-Jul-09	TD09-02Dc	alive	yes	disentangled
leatherback	17-Jul-09	TD09-03Dc	alive	yes	disentangled
leatherback	20-Jul-09	TD09-04Dc	alive	yes	disentangled
leatherback	28-Jul-09	TD09-05Dc	alive	yes	disentangled
leatherback	1-Aug-09	TD09-06Dc	alive	yes	disentangled
leatherback	19-Aug-09	TD09-07Dc	alive	yes	disentangled
leatherback	31-Aug-09	TD09-08Dc	alive	yes	unable to relocate
leatherback	3-Sep-09	TD09-09Dc	alive	yes	disentangled
leatherback	20-Sep-09	TD09-10Dc	alive	yes	disentangled
leatherback	24-Sep-09	TD09-11Dc	dead	yes	documented
leatherback	5-Oct-09	TD09-12Dc	dead	yes	documented
leatherback	28-May-10	TD10-01Dc	alive	yes	disentangled

figure 2
Confirmed Entanglement Reports for Southeastern Massachusetts

June 2007 – May 2010



Two entanglement reports could not be depicted on the above map due to distance:

2 August 2008 – 80 miles south of Nantucket, MA

28 May 2010 – 1 mile southeast of Cape Ann, MA

figure 3

Entanglement Cases - Windows Internet Explorer

http://www.coastalstudies.org/_turtles/td0910dc.html

File Edit View Favorites Tools Help

Google Search Share Sidewiki Check Translate AutoFill

Convert Select

Norton

Entanglement Cases

Massachusetts
Sea Turtle Disentanglement Network

resources & links | tools & training | documentation

1 - 800 - 900 - 3622

Date and time: 20 September 2009 1030hr

Species: Leatherback

Location: 5.3 miles SW of Hyannisport, MA

41° 34.352'N x 70° 20.408'W

Field number: TD09-10Dc

Documentation type: Digital stills

Action taken: Disentangled

Narrative account: The Coast Guard forwarded a report from a recreational boater of an entangled turtle southwest of Hyannisport. The original report person was unable to stand-by until responders arrived on scene but did observe the turtle for approximately 30 minutes. Responders were initially unable to relocate the turtle but after a search of ~45 minutes the turtle was sighted. The turtle was successfully disentangled, documented, and released.

Gear collected? Yes

Length: 5.5' estimated

http://www.coastalstudies.org/_turtles/turtles.htm

Internet

figure 4

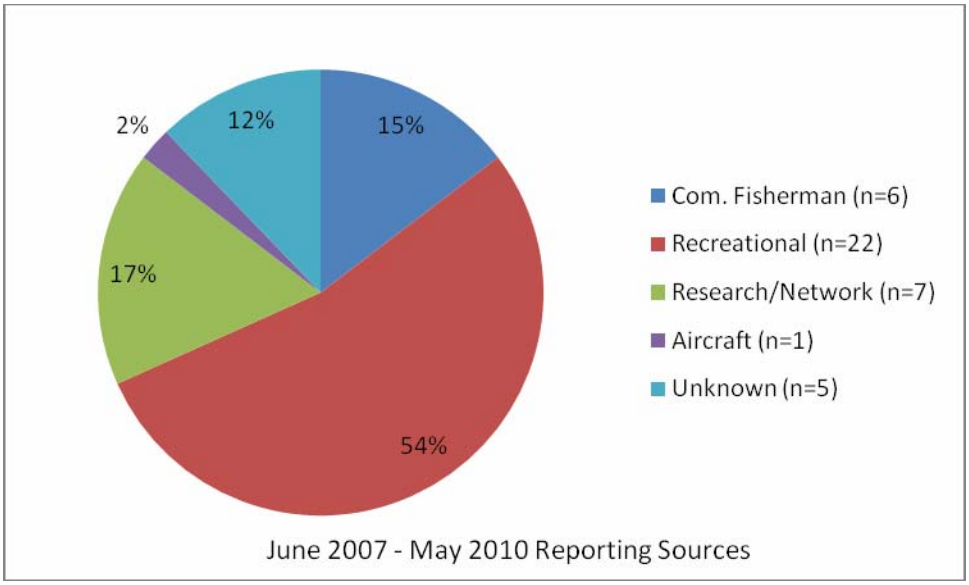

2%
12%
15%
17%
54%
Com. Fisherman (n=6)
Recreational (n=22)
Research/Network (n=7)
Aircraft (n=1)
Unknown (n=5)
June 2007 - May 2010 Reporting Sources

figure 5

MARINE ANIMAL
DISENTANGLEMENT
HOTLINE
1-800-900-3622
Or USCG on VHF 16