

## NMFS NERO SEA TURTLE PROGRAM RESEARCH PRIORITIES

NOAA's National Marine Fisheries Service

Northeast Regional Office, Protected Resources Division

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**Background:** NMFS' Northeast Regional Office Sea Turtle Program works to conserve and rebuild populations of sea turtles, listed as threatened/endorsed under the Endangered Species Act, in Northeast and mid-Atlantic waters. Coordination between sea turtle research and management is critical to rebuilding populations. Threats to recovery in the marine environment include interactions with fishing gear (e.g., trawls, fixed gears, dredges), channel dredging operations, power plants, watercraft, and pollutants, among others. This matrix is intended to identify some of the research needed (based on NMFS NERO management priorities) to help recover and rebuild sea turtle populations. The matrix is divided into two sections – mortality reduction (fishery bycatch and other mortality sources) and biological information.

**Fishery Bycatch:** Sea turtles are known to be incidentally captured by multiple fishing gear types including, but not limited to, trawl, gillnet, dredge, longline, pot/trap, and pound net fisheries. These interactions may result in serious injury and mortality to sea turtles. The highlighted research needs will help NMFS identify strategies to reduce impacts from commercial and recreational fishing gear, and better quantify the impact of such fishing gear interactions on sea turtles.

**Other Mortality Sources:** Other sources of serious injury and mortality to sea turtles include interactions with channel dredging equipment and power plant operations. Research is needed into technologies and other mitigation measures for reducing mortality from these sources. In addition, research is needed on acoustics and pollutants in the marine environment with a focus on the impacts to sea turtles. While some research has been conducted, information on the effects is limited.

**Biological Information:** In many cases, increased knowledge on sea turtle biology may be used to help inform management decisions. For instance, a better understanding of sea turtle behavior in the water column and around fixed gear may be used in developing mitigation measures to reduce serious injury and mortality of sea turtles in this gear. In-water population studies may better inform decisions by increasing our understanding of the impacts of threats on the population as a whole. Therefore, research needs related to sea turtle biological information are also identified.

**For further information or questions:** Please visit our website at [http://www.nero.noaa.gov/prot\\_res/seaturtles/](http://www.nero.noaa.gov/prot_res/seaturtles/) or contact Carrie Upite, NMFS NERO Sea Turtle Recovery Coordinator, at [carrie.upite@noaa.gov](mailto:carrie.upite@noaa.gov) or 978-282-8475.

Research Topic	Research Activity (not listed in priority order)
<b>MORTALITY REDUCTION</b>	
<b>Fishery Bycatch</b>	Develop and test TEDs or other bycatch reduction alternatives in southern New England and mid-Atlantic trawl fisheries which are not currently regulated
	Identify, develop and test alternatives to reduce sea turtle bycatch in gillnet fisheries
	Identify, develop and test gear modifications or other measures that prevent or reduce sea turtle entanglements in the vertical line of fixed gear (e.g., pot/trap lines and gillnet end lines)
	Develop and test gear modifications that prevent or reduce sea turtle interactions in pots/traps (e.g., the pot itself or bridle line)
	Document, evaluate, and quantify extent of injuries associated with vertical line interactions, and associated post-release survival
<b>Other Mortality Sources</b>	Evaluate and improve current technology, or investigate alternate methods, to reduce sea turtle interactions with channel dredges and dredge related equipment
	Determine or clarify sea turtle auditory thresholds and investigate the effects of various acoustical impacts on turtle hearing and survival
	Investigate methods to further reduce impingement, entrainment and/or death or injury in power plants
	Investigate effects of contaminants (point and non-point sources) on sea turtle health and survival
	Document and quantify the source and magnitude of human interactions as found in stranded turtles
	Define the cause(s) of death and document wound vitality in stranded sea turtles with watercraft-inflicted injuries
	Initiate a large scale GIS study of existing stranding data throughout the East and Gulf coasts, documenting the location of strandings that involved known or suspected human interactions
	Investigate the levels of biotoxins in Northeast and Mid-Atlantic sea turtles
	Assess the prevalence and nature of marine debris ingestion and entanglement
	Analyze trends in cold-stun stranding events and develop predictive models for frequency and distribution of stranded sea turtles

Research Topic	Research Activity (not listed in priority order)
<b>BIOLOGICAL INFORMATION</b>	
	Develop and implement sampling protocols to estimate in-water seasonal abundance and determine trends, both at selected long term index sites and large scale surveys
	Identify distribution, including local and migratory movements and throughout the water column
	Investigate and characterize foraging, migrating and other behavior, including behavior around fixed gear
	Establish parameters for and determine wild populations' health status, and identify how anthropogenic actions (e.g., fishery bycatch) may affect various health parameters
	Investigate and determine length frequency, genetic origin, surfacing time, and feeding ecology in the Northeast and Mid-Atlantic
	Characterize turtle and turtle prey habitat needs and preferences (neritic and oceanic), and anthropogenic impacts on these habitats
	Identify turtle prey distribution and abundance, and turtle diet diversity and intake amount
	Determine demographic parameters, in particular survival rates, breeding rates, age at sexual maturity, clutch frequency and hatchling cohort production