Proposed Action	NOAA's National Marine Fisheries Service, Office of Protected Resources Coordination and Continued Operation of the Sea Turtle Stranding and Salvage Network
Type of Statement	Final Environmental Assessment
Date	April 28, 2025
Lead Agency	U.S. Department of Commerce National Oceanic and Atmospheric Administration National Marine Fisheries Service Office of Protected Resources
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Location	U.S. Atlantic, Gulf of America, and U.S. Caribbean Territories

Abstract: NOAA's National Marine Fisheries Service (NMFS), Office of Protected Resources (OPR) leads the administration and coordination of the National Sea Turtle Stranding and Salvage Network (STSSN). The STSSN currently responds to, and documents, sick, injured, and dead sea turtles found in coastal and marine areas under U.S. jurisdiction along the Atlantic Ocean, Gulf of America, and U.S. Caribbean territories. Although the STSSN has been in operation for several decades, the National Coordination role formally shifted to OPR in 2022, which prompted an evaluation of STSSN operations and development of a formal STSSN Operating Procedures Handbook, which are subject to National Environmental Policy Act (NEPA) review. The Action under review is the Operation of the STSSN under the coordination of NMFS OPR, pursuant to the Final STSSN Operating Procedures Handbook (April 2025).

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CHAPTER 1 INTRODUCTION AND PURPOSE AND NEED

This Environmental Assessment (EA) analyzes the continued operation of the Sea Turtle Stranding and Salvage Network (STSSN) under the coordination of the National Marine Fisheries Service (NMFS), Office of Protected Resources (OPR). NMFS has conducted an environmental review of NMFS OPR's coordination role related to the STSSN and the formalization of their program protocols and roles with the STSSN Operating Procedures Handbook, and determined an EA is appropriate for this action.

OPR began National Environmental Protection Act (NEPA) review of STSSN operations on June 29, 2022[1]. Although the STSSN has been in operation for several decades, the National Coordination role formally shifted to OPR in January 2022, which prompted an evaluation of existing STSSN operations. Through that evaluation, OPR developed the STSSN Operating Procedures Handbook (see Appendix A) to formalize the roles and responsibilities with state and other partner agencies. OPR is preparing this EA under NEPA to evaluate the environmental impacts of continuing operations of the STSSN program under the newly developed operating procedures.

NEPA, 42 U.S.C. 4321 et seq (2023), and National Oceanic and Atmospheric and Administration (NOAA) policy and procedures, NOAA Administrative Order [NAO] 216-6A and the Companion Manual for the NAO 216-6A, require all proposals for major federal actions to be reviewed with respect to environmental consequences on the human environment. NMFS determined that an EA was the appropriate level of NEPA analysis for this action. This chapter presents a summary of NMFS' authority pursuant to the Endangered Species Act (ESA) to lead and coordinate the STSSN (Section 1.1), a summary of STSSN Activities (Section 1.2), and identifies NMFS' proposed action and purpose and need (Section 1.3). This chapter also explains the environmental review process (Section 1.4) and provides other information relevant to the analysis in this EA, such as the scope of the analysis (Section 1.5).

The remainder of this EA is organized as follows:

[1] OPR submitted a "Report a Major Federal Action" form on the NOAA NEPA intranet on June 29, 2022, memorializing its determination that it needed to prepare an environmental assessment to evaluate the environmental effects of the operations of the STSSN. However, development of this EA did not begin until July 2023. A NEPA memo, dated March 25, 2025, extended the deadline for NEPA review to June 30, 2025.

- Chapter 2 describes the STSSN activities and the alternatives carried forward for analysis as well as alternatives not carried forward for analysis;
- Chapter 3 describes the baseline conditions of the affected environment;
- Chapter 4 describes the direct, indirect, and cumulative impacts to the affected environment, specifically impacts to the 5 species of sea turtles associated with NMFS OPR's proposed action and alternatives;
- Chapter 5 lists document preparers and agencies consulted; and
- Chapter 6 lists references cited.

1.1 Overview of the Endangered Species Act and Relevant Authorities

The ESA establishes a national policy for conserving threatened and endangered species of fish, wildlife, plants and the habitat they depend on. An endangered species is any species in danger of extinction throughout all or a significant portion of its range, other than a species in the Class Insecta that is determined to be a pest. A threatened species is one that is likely to become endangered within the near future throughout all or in a significant portion of its range. The U.S. Fish and Wildlife Service (USFWS) and NMFS jointly administer the ESA and are responsible for listing species as either threatened or endangered, as well as designating critical habitat where applicable, developing recovery plans for these species, and undertaking other conservation actions pursuant to the ESA.

All species of sea turtle found in U.S. waters are listed as endangered or threatened under the ESA. Section 4(f) of the ESA (16 U.S.C. 1533(f)) provides for the creation of Recovery Plans for endangered and threatened species and provides NMFS and USFWS with authority "to procure the services of appropriate public and private agencies and institutions and other qualified persons" in order to implement those plans. To advance the conservation and recovery of listed sea turtles, each Recovery Plan[2] developed jointly by NMFS and USFWS identifies and highlights the need to maintain an active stranding network.

1.2 Sea Turtle Stranding and Salvage Network Summary

The STSSN is a cooperative effort to reduce causes of morbidity and mortality in sea turtles by responding to and documenting sea turtles, found either dead or alive (but compromised), in a manner sufficient to inform conservation management and recovery. The STSSN accomplishes

[2] Sea Turtle Recovery Plans are available through the following link. At this link, click on "Read our Recovery Plans": https://www.fisheries.noaa.gov/national/endangered-species-conservation/recovery-species-under-endangered-species-act

this through (1) collection of data in accordance with STSSN protocols; (2) improved understanding of causes of death and threats to sea turtles in the marine environment; (3) monitoring of stranding trends; (4) provision of initial aid to live stranded sea turtles; (5) provision of sea turtle samples/parts for conservation-relevant research; and (6) availability of timely data for conservation management purposes.

The STSSN, operating in the Gulf of America (formerly Gulf of Mexico) and along the U.S. Atlantic coast (and later U.S. Caribbean territories), officially came into existence in the early 1980s, with the formal coordinating role assumed by NMFS Southeast Fisheries Science Center (SEFSC), Miami Laboratory. Prior to NMFS OPR taking on the national coordination role, sea turtle stranding data were collected and maintained by some of the southeastern states, and some of those data were maintained by the University of Miami (RSMAS). Today, the states along the Atlantic and Gulf coasts, Puerto Rico, and the U.S. Virgin Islands (USVI) comprise the STSSN in a formal network structure.

In accordance with the 2015 Memorandum of Understanding (MOU) between NMFS and USFWS, NMFS has lead responsibility for sea turtles in the marine environment and USFWS has lead responsibility on the nesting beaches (NMFS and USFWS 2015b[3]). Sea turtle stranding response and rehabilitation have traditionally operated with a shared jurisdictional responsibility between the two agencies. The MOU establishes NMFS as the lead for, and coordinator of, the STSSN to attend to stranded turtles in the marine environment or when washed ashore from the marine environment. Coordination by NMFS of the STSSN may include coordinating the placement of stranded turtles at approved rehabilitation facilities. USFWS authorizes stranding response and rehabilitation, and within its capacity, USFWS shall assist the STSSN, including within the National Wildlife Refuge system. NMFS shall share STSSN information with USFWS to promote the recovery and conservation of sea turtles. USFWS shall serve as the lead for and coordinator of authorized facilities holding sea turtles for rehabilitation or captive display. USFWS shall share information with NMFS on captive sea turtles and coordinate with NMFS on guidelines and standards for such facilities.

With most sea turtle strandings in the 1970s and 1980s occurring in the southeast U.S., the role for national coordination of the network was undertaken by staff at NMFS SEFSC in the early 1980s. Since then SEFSC staff played an important role in establishing the network, maintaining

[3] 2015 Memorandum of Understanding between NMFS and USFWS can be downloaded here: https://www.fisheries.noaa.gov/resource/document/noaa-fisheries-and-us-fws-memorandum-understanding-sea-turtles

the STSSN database, and providing STSSN summary data in response to data requests. In the early 2000s, NMFS OPR began providing overarching support to the network and established a Veterinary Medical Officer position in 2012. After the Deepwater Horizon Oil Spill in 2010, which caused catastrophic impacts to sea turtles, OPR staff designed and are currently implementing the Deepwater Horizon Sea Turtle Early Restoration Project, which includes enhancements to the STSSN across the Gulf of America. Coordination of the STSSN aligns with OPR's national scope of work as it requires working with partners in multiple regions. On January 1, 2022, the responsibility for administering and coordinating the STSSN was transferred from SEFSC to OPR.

1.3 Proposed Action and Purpose and Need

NMFS' proposed action is the formalized continued operation of the STSSN under the coordination of NMFS OPR and the publication of the Final STSSN Operating Procedures Handbook. The proposed activities considered in this EA are limited to the coordination role that OPR holds, activities NMFS OPR staff will conduct in the field related to stranding coordination, response, and mortality investigation, and direct takes of sea turtles while responding to stranding incidents that have occurred because of human activity or natural causes of illness, injury or mortality. Incidental takes are not authorized for the STSSN.

The purpose of NMFS' proposed action is to facilitate ongoing and improved stranding response and communication with the goal of reducing morbidity and mortality in order to achieve conservation and recovery of listed sea turtles. Additionally, this action will maintain NMFS compliance with the 2015 MOU with USFWS.

The need for NMFS' Proposed Action is to meet NMFS obligations under Section 4(f) of the ESA, which provides for the creation of Recovery Plans and provides NMFS and USFWS with authority "to procure the services of appropriate public and private agencies and institutions and other qualified persons" in order to implement those plans. Each sea turtle species Recovery Plan identifies and highlights the need to maintain an active stranding network.

1.4 Environmental Review Process

Under NEPA, federal agencies are required to examine the environmental impacts of their proposed actions within the United States and its territories. An EA is a concise public document that provides an assessment of the potential effects a major federal action may have on the human environment. Major federal actions include activities that federal agencies fully or partially fund, regulate, conduct or approve. Since NMFS OPR is the lead for and coordinator of

the STSSN pursuant to the 2015 MOU between NMFS and USFWS, NMFS considers the operation of the STSSN a major federal action subject to NEPA; therefore, NMFS analyzes the environmental effects associated with the coordination and implementation of the STSSN and prepares the appropriate NEPA documentation. In addition, NMFS, to the fullest extent possible, integrates the requirements of NEPA with other regulatory processes required by law or by agency practice so that all procedures run concurrently, rather than consecutively. This includes coordination within NOAA (e.g., the Office of the National Marine Sanctuaries) and with other regulatory agencies (e.g., the USFWS), as appropriate, during NEPA reviews prior to implementation of a proposed action to ensure that all applicable requirements are met.

1.4.1 Compliance with Other Laws

NMFS must comply with all applicable federal environmental laws, regulations, and Executive Orders (as applicable) necessary to implement a proposed action. NMFS' evaluation of and compliance with environmental laws and regulations is based on the nature and location of NMFS' proposed action. Therefore, this section only summarizes environmental laws and consultations applicable to NMFS' consideration of continuing to coordinate the STSSN.

Compliance with ESA: Section 4(f) of the ESA (16 USC 1533(f)) provides for the creation of Recovery Plans for endangered and threatened species and provides NMFS and USFWS with authority "to procure the services of appropriate public and private agencies and institutions and other qualified persons" in order to implement those plans. Both NMFS and USFWS have promulgated regulations that provide an exception to the prohibitions on take and allow for response to stranded sea turtles in water and on land, based on their specific jurisdictional responsibility.

In 2005, NMFS published the final rule under 50 CFR 222.310: "Sea Turtle Conservation; Exceptions to Taking Prohibitions for Endangered Sea Turtles." This rule is a programmatic permit by regulation pursuant to ESA section 10(a)(1)(A) to authorize any agent or employee of NMFS, USFWS, the U.S. Coast Guard, or any other federal land or water management agency, or any agent or employee of a state agency responsible for fish and wildlife who is designated by his or her agency for such purposes, when acting in the course of his or her official duties, to take *endangered* sea turtles if such taking is necessary to aid a sick, injured, entangled or stranded endangered sea turtle or dispose of such specimen or salvage such specimen which may be useful for scientific and educational purposes.

Additionally, 50 CFR 223.206(b) provides an exception to the prohibitions on taking of *threatened* sea turtles. The regulation states that: "If any member of any threatened species of sea turtle is found injured, dead, or stranded, any agent or employee of the National Marine Fisheries Service, the Fish and Wildlife Service, the U.S. Coast Guard, or any other federal land or water management agency, or any agent or employee of a state agency responsible for fish and wildlife who is designated by his or her agency for such purposes, may, when acting in the course of his or her official duties, take such specimens without a permit if such taking is necessary to aid a sick, injured, or stranded specimen or dispose of a dead specimen or salvage a dead specimen which may be useful for scientific study." The regulations authorize an unspecified annual take because there is no method for projecting or anticipating how many turtles may need to be responded to in any one area or region. The USFWS has codified regulations similar to NMFS. Specifically, sections 17.21(c)(3) and 17.31(b) provide exceptions to the prohibition on take of endangered and threatened species, including sea turtles identified in 17.42(b)). These regulations allow USFWS and NMFS personnel to respond to strandings on land.

On July 27, 2016, NMFS issued a biological opinion under the authority of Section 7(a)(2) of the ESA regarding the effects of NMFS Permit by Regulation, 50 CFR 222.310: "Sea Turtle Conservation; Exceptions to Taking Prohibitions for Endangered Sea Turtles," which authorizes response to stranded endangered sea turtles in the marine environment. In this opinion, NMFS concludes that the operation of the STSSN, including actions to aid stranded turtles, and salvage and dispose of dead carcasses, is not likely to jeopardize the continued existence or recovery of green, hawksbill, Kemp's ridley, leatherback, loggerhead, or olive ridley sea turtles and is not likely to destroy or adversely modify designated critical habitat.

Compliance with the Magnuson-Stevens Fishery Conservation and Management Act (MSFCMA): Under section 305(b)(2) of the MSFCMA (16 USC 1855(b)(2)), federal agencies are required to consult with the Secretary of Commerce with respect to any action authorized, funded, undertaken, or proposed to be authorized, funded or undertaken, by such agency which may adversely affect essential fish habitat (EFH) identified under the MSFCMA. NMFS OPR determined the ongoing operation of the STSSN and coordination of the STSSN by NMFS OPR will not adversely affect EFH for any species.

1.4.2 Public Involvement

The STSSN is inherently a public program. It is led by federal and state partners, but involves local organizations and volunteer individuals to respond to stranded sea turtles. The draft STSSN

Operating Procedures Handbook was shared with appropriate federal, state, and private partners directly associated with the STSSN.

Although agency procedures do not require publication of the EA prior to finalizing an EA, NMFS is substantially relying on the public involvement and coordination within the STSSN to develop and evaluate environmental information relevant to an analysis under NEPA. The EA and the corresponding public comment period are instrumental in providing the public with information on relevant environmental issues and offering the public a meaningful opportunity to provide comments for our consideration in both the ESA and NEPA processes. A Federal Register notice was published to inform the public of the availability of, and request comments on, the draft EA on December 30, 2024 (89 FR 5106439). The public comment period ended on January 29, 2025, and three comment letters were received. The comments received and their accompanying responses are located in Appendix B. Comments received were considered and any revisions needed to address comments have been incorporated in this final EA.

1.5 Scope of the Environmental Assessment

This EA was prepared in accordance with NEPA (42 USC 4321, et seq.) and NOAA policy and procedures (NOAA Administrative Order [NAO] 216-6A and the Companion Manual for the NAO 216-6A). The analysis in this EA addresses potential direct, indirect, and cumulative impacts to loggerhead, green, Kemp's ridley, leatherback, and hawksbill sea turtles resulting from NMFS' proposed action to continue to coordinate and administer the STSSN. The scope of this analysis is limited to the decision for which NMFS is responsible (*i.e.,* Continued Operation of the STSSN). Under NMFS Coordination, Guided by the Final STSSN Operating Procedures Handbook. This EA is intended to provide focused information on the primary issues and impacts of environmental concern.

The Action Area for this EA includes the coastal and marine areas of the U.S. Atlantic, Gulf of America, and U.S. Caribbean Territories. All activities will occur in coastal and marine areas, or at existing NMFS facilities, which are defined in section **3.1 Physical Environment**. This EA does not provide a detailed evaluation of the effects to the elements of the human environment listed in **Table 1** below, as the environmental analysis demonstrated that there would be negligible impacts to the Human Environment from the proposed action.

The No Action Alternative is anticipated to result in long-term, minor-to-major adverse impacts if the STSSN ceases to exist or is modified in a way that response to strandings is no longer feasible.

Table 1: Elements of the human environment not further evaluated in this EA.

Biological	Physical	Socioeconomic/Cultural
● Benthic Communities ● Coral Reef Systems ● Fisheries Resources ● Humans ● Invertebrates ● Invasive Species ● Marine and Coastal Birds ● Marine Mammal Species ● Threatened and Endangered Fishes ● Essential Fish Habitat	● Air Quality ● Farmland Geography ● Geology/Sediments ● Land Use ● Oceanography ● State Marine Protected Areas ● Federal Marine Protected Areas ● National Estuarine Research Reserves ● National Marine Sanctuaries ● National Wildlife Refuge ● Park Lands ● Water Quality ● Wetlands ● Wild and Scenic Rivers	● Indigenous Cultural Resources ● Low-Income Populations ● Military Activities ● Minority Populations ● Other Marine Uses: Military activities, shipping marine transport, and boating ● Recreational Fishing ● Public Health and Safety

CHAPTER 2 ALTERNATIVES

As indicated in Chapter 1, NMFS' proposed action is the continuation of operation of the STSSN, under the coordination and direction of the NMFS OPR STSSN Coordination Team and finalizing the STSSN Operating Procedures Handbook as guidance for the role. In accordance with NEPA, NMFS is required to consider a reasonable range of alternatives to a Proposed Action as well as the No Action Alternative. Reasonable alternatives means a reasonable range of alternatives that are technically and economically feasible, and meet the purpose and need for the proposed action. The evaluation of alternatives under NEPA assists NMFS with assessing

alternate ways to achieve the purpose and need for their proposed action that may result in less environmental harm. Reasonable alternatives are carried forward for detailed evaluation under NEPA, while alternatives considered but determined not to meet the purpose and need are not carried forward. For the purposes of this EA, an alternative will only meet the purpose and need if it satisfies the needs outlined in each sea turtle species Recovery Plan for maintaining an effective stranding network for achieving sea turtle conservation and recovery as described under the ESA. Therefore, NMFS applied the screening criteria and considerations outlined in Section 2.1 to the alternatives to identify which alternatives to carry forward for analysis. Accordingly, an alternative must meet these criteria to be considered "reasonable".

2.1 Considerations for Selecting Alternatives

Section 4(f) of the ESA (16 USC 1533(f)) provides for the creation of Recovery Plans for endangered and threatened species and provides NMFS and USFWS with authority "to procure the services of appropriate public and private agencies and institutions and other qualified persons" in order to implement those plans. To advance the conservation and recovery of ESA-listed sea turtles, each sea turtle Recovery Plan developed jointly by the NMFS and USFWS identifies and highlights the need to maintain an active stranding network. Each sea turtle ESA Recovery Plan identifies the need for a stranding network to achieve the conservation and recovery goals of the plan.

2.2 Description of Activities in the STSSN

The STSSN is a cooperative effort to reduce causes of morbidity and mortality in sea turtles by responding to and documenting sea turtles, found either dead or alive (but compromised), in a manner sufficient to inform conservation management and recovery. The STSSN accomplishes this through (1) collection of data in accordance with STSSN protocols; (2) improved understanding of causes of death and threats to sea turtles in the marine environment; (3) monitoring of stranding trends; (4) provision of initial aid to live stranded sea turtles; (5) provision of sea turtle samples/parts for conservation-relevant research; and (6) availability of timely data for conservation management purposes.

As mentioned above, the current STSSN operates along the U.S. Atlantic and Gulf of America coastlines, and in the U.S. Caribbean Territories. The STSSN is organized through a structure of Regional and State Coordinators, State Liaisons, and responders. The network consists of trained volunteers, municipal, state and federal employees and their designated agents who operate under the direction of the state and national coordinators. Although the STSSN has historically responded to entangled turtles in the marine environment, in response to the high number of

leatherbacks found entangled in fishing gear (primarily pot gear) along the U.S. northeast Atlantic coast, NMFS established the Northeast Atlantic Coast Sea Turtle Disentanglement Network (STDN) in 2002. The STDN is a component of the larger STSSN program, and the NMFS Greater Atlantic Regional Office oversees and is responsible for collecting entanglement data under the STDN program.

The types of events that render turtles in need of aid in the marine environment are varied and include cold stunning; disease and health related issues; entanglement in and impingement on active or abandoned commercial and recreational fishing gear; ingestion of pollutants or marine debris; and traumatic injuries, including vessel strikes and shark attacks. Typically, these events are reported through a NMFS-dedicated phone line or through each state's STSSN phone line for reporting sick, injured, entangled or stranded wildlife. Alternatively, STSSN responders may encounter turtles in the water when acting in the course of their official duties. Periodically, a member of the public reports a sick, injured or entangled sea turtle in the marine environment, and an immediate response is necessary to prevent further injury or death to the turtle. In these events, NMFS and authorized STSSN personnel may grant authority and give specific instructions to the person at the scene to safely and properly aid the sea turtle.

When a sea turtle is encountered in the water, the STSSN responder determines if the turtle is alive or dead. The response protocol is based upon this first determination. Activities on live animals will be short in duration (maximum 10 minutes). Animals will be lifted into the boat manually or with small dip-nets. No large nets or gear (e.g., trawling gear) would be used. For live turtles, the treatment is based upon the circumstances surrounding the event. For example, when sea temperatures drop below a certain level, sea turtles become lethargic or comatose, a condition known as cold stunning. For these cold stunning cases, the most immediate response is to remove the turtle from the water, provide a cover for the animal and transport it to a rehabilitation facility for veterinary care. For entanglement events, removal from the water is not always the best response and can be dangerous for responders and/or result in further injury for the turtle. The STSSN responder assesses the amount and type of gear that is involved and examines where and how the turtle is entangled in the gear. Depending on this assessment, additional assistance may be required. The turtle may be disentangled and released on site, recovered for transport and treatment, or the carcass salvaged.

The action reviewed in this EA is the continued coordination of the STSSN by NOAA/NMFS OPR and the review of program protocols and best practices, which have been consolidated and updated in the Final STSSN Operating Procedures Handbook.

2.3 Alternatives

This EA evaluates two alternative actions. NOAA/NMFS considered several other alternative actions, but none were considered reasonable action alternatives. The alternatives considered, but determined to be not feasible include OPR continuing to manage and coordinate the STSSN, but without the new Operating Procedures Handbook. This alternative was not considered further, as the need for the Handbook has been continually raised by the STSSN participants, and is a necessary component to OPR's new role as it seeks to provide clarification on overarching authorizations for the STSSN, contact information, roles, responsibilities, procedures, and general protocols, forms, and expectations for stranding response, mortality investigation, and emergency events. Another potential alternative could be for the NMFS SEFSC to reinstate their coordination role over the STSSN. However, this was also determined to be not feasible, as the SEFSC has reallocated staff to other projects and does not currently have funding or capacity to serve that role. As such, the two alternatives considered are described below.

2.3.1 Alternative 1 - No Action

No Action: Under the No Action Alternative, NOAA/NMFS would absolve its role coordinating the STSSN. Under this alternative, the STSSN would continue to operate as prescribed in the species Recovery Plans, but only under existing state programs that are permitted through the USFWS permit authority, or through direct permits to stranding response organizations and rehabilitation facilities. Stranding response activities would be maintained, but without NOAA/NMFS involvement.

This alternative would remove OPR's role coordinating the STSSN and also discontinue OPR's role with mortality investigation (necropsy) and stranding response in several states. NMFS OPR currently serves as the State Coordinator for the STSSN in Louisiana, Mississippi, and Alabama, and this role would need to transfer to other entities, potentially the relevant state agencies or USFWS.

2.3.2 Alternative 2 - Proposed Action

Continued Operation of the STSSN Under NMFS Coordination, Guided by the Final STSSN Operating Procedures Handbook: Under Alternative 2, NOAA/NMFS would continue to coordinate the STSSN and would finalize the STSSN Operating Procedures Handbook as a guide for the continued operation of the STSSN. The STSSN has been in operation for decades, and the Operating Procedures seeks to provide clarification on overarching authorizations for the STSSN, contact information, roles, responsibilities, procedures, and general protocols, forms, and expectations for stranding response, mortality investigation, and emergency events. The

STSSN Operating Procedures Handbook is intended to formalize and summarize the inner workings of the STSSN, outline NOAA/NMFS roles and the collaborations and responsibilities of our partners. The Final STSSN Operating Procedures Handbook is summarized in the sections below.

2.3.2.1 Overview of STSSN Operating Procedures Handbook

The drafting of the STSSN Operating Procedures Handbook was initiated after OPR assumed a more formal coordination role over the STSSN in January 2022. The authority for NOAA/NMFS OPR to assume this role comes from Section 4(f) of the ESA (16 USC 1533 (f)), which provides for the creation of Recovery Plans for endangered and threatened species and provides NMFS and USFWS with authority "to procure the services of appropriate public and private agencies and institutions and other qualified persons" in order to implement those plans.

The purpose of the STSSN Operating Procedures is to: 1) provide the background and history of the STSSN, 2) outline the roles and responsibilities of all STSSN coordinators, liaisons, and participants, and 3) consolidate current STSSN operating procedures into one reference document to ensure program-wide consistency.

The document is organized into eight chapters, and seeks to provide clarification on overarching authorizations for the STSSN, contact information, roles, responsibilities, procedures, and general protocols, forms, and expectations for stranding response, mortality investigation, and emergency events.

The chapters are as follows:

1) Introduction and Background
2) STSSN Contact Information
3) Process for Establishing a State Coordinator
4) Process for Selecting State Liaisons
5) Stranding Response
6) Data Management
7) Mortality Investigation
8) Emergency Events

The STSSN is a network of federal and state agencies, authorized non-governmental entities, and individual volunteers that respond to and document sea turtles found dead or stranded in coastal and marine areas under U.S. jurisdiction along the Atlantic Ocean, Gulf of America, and the U.S.

Caribbean territorial sea. NOAA/NMFS coordinates the Network. The stranding networks in Maine through Virginia are managed by a NMFS Regional Coordinator, who is located in the NMFS Greater Atlantic Regional Fisheries Office (GARFO), and by designated State Liaisons. State, territory, or federal marine resource agency staff serve as State Coordinators in North Carolina through Texas. Entities seeking to participate in sea turtle stranding response and/or rehabilitation should contact the appropriate regional or state coordinator to discuss their interest in participating in the STSSN.

The NMFS Regional Coordinator and/or the relevant State Coordinators coordinate with the USFWS to determine if there is a geographic, temporal, or capacity need for stranding response or rehabilitation in a specified area. Authorized stranding responders and rehabilitation facilities must comply with all requirements specified in their federal and/or state authorizations. Additionally, sea turtle rehabilitation facilities must comply with the USFWS Standard Conditions for Care and Maintenance of Captive Sea Turtles[4].

The STSSN Operating Procedures Handbook details a process for establishing and selecting State Coordinators and State Liaisons. Through its role coordinating the STSSN, NMFS OPR has developed procedures related to the selection and replacement of State Coordinators who serve with the approval of their host agency.

The STSSN Operating Procedures Handbook details the NOAA/NMFS role related to stranding response. As part of NMFS OPR's role in coordinating the STSSN, OPR develops and makes training materials available to the STSSN State Coordinators/Liaisons to facilitate standardized data collection across the network. NMFS OPR staff manage and direct the use of STSSN forms and management of the pursuant data.

As part of a Deepwater Horizon Sea Turtle Early Restoration Project task related to the enhancement of the STSSN in the Gulf of America, OPR developed a new STSSN data application to improve data quality, data entry efficiency, and data access for management purposes. The new data application was implemented in the Gulf of America in 2020, in the northeast states in 2021, and in the southeast states in 2022. OPR will ensure the new STSSN data application is supported and maintained for STSSN use into the future.

[4]USFWS. 2019. U.S. Fish and Wildlife Service's Standard Conditions for Care and Maintenance of Captive Sea Turtles are available here: https://www.fws.gov/media/standard-conditions-care-and-maintenance-captive-sea-turtles

The NMFS OPR Veterinary Medical Officer oversees mortality investigation efforts nationwide. Within the STSSN, the appropriate State Coordinator or State Liaison manages the day-to-day necropsy and sampling of stranded turtles under periods of regular stranding activity (i.e., when the occurrence of sea turtle strandings and related observations are consistent with historical patterns and trends). The Veterinary Medical Officer may assume the primary coordination (in consultation with a State Coordinator or State Liaison) under the following circumstances: unusual or mass events; strandings suspected to be or attributed to commercial fisheries; strandings involving state or federal law enforcement; and any instance where coordination is requested by a STSSN coordinator, state, or federal agency.

Related to Emergency Response, the STSSN Operating Procedures Handbook details the major emergency response needs for the STSSN, cold stunning response and oil spill response. For each of the event-types NMFS OPR can play a central role in the management of the event, or they may defer to other partners, such as the appropriate State Coordinator in the case of a cold stunning event. During these emergency events, NOAA, USFWS, state agencies, STSSN State Coordinators and partners, and the public work together to rescue and recover stranded sea turtles, with the goal of maximizing the survival rate of live stranded sea turtles while ensuring human safety and animal welfare.

CHAPTER 3 AFFECTED ENVIRONMENT

This section presents baseline information necessary for consideration of the alternatives, and describes the resources that would be affected by the alternatives, as well as environmental components that would affect the alternatives if they were to be implemented. The effects of the alternatives on the environment are discussed in chapter 4.

3.1 Physical Environment

The affected environment is associated with the underlying activity, the operation of the STSSN along the Atlantic Coast, Gulf of America, and U.S. Caribbean territories. All activities associated with the STSSN will occur in coastal and marine areas in the territorial and economic exclusive zone waters of the U.S. and its territories.

3.2 Biological Environment

3.2.1 Status of Affected Species

Endangered
Kemp's ridley sea turtle *(Lepidochelys kempii*)
Hawksbill sea turtle (*Eretmochelys imbricata*)
Leatherback sea turtle (*Dermochelys coriacea*)

Threatened
Green sea turtle (*Chelonia mydas*)

- North Atlantic DPS
- South Atlantic DPS

Loggerhead sea turtle (*Caretta caretta*)

- Northwest Atlantic Ocean DPS

The following subsections are synopses of the best available information on the status of the species that are likely to be affected by one or more components of the action. The biology and ecology of these species as well as their status and trends inform the impacts analysis for this document.

3.2.2 Sea turtles

All sea turtle species occurring in the Atlantic Ocean are listed as either endangered or threatened under the ESA. The alternatives discussed in this EA may affect five sea turtle species: leatherback, hawksbill, and Kemp's ridley sea turtles, which are listed as endangered, and the North and South Atlantic DPSs of green sea turtles and Northwest Atlantic Ocean DPS of loggerhead sea turtles, which are listed as threatened. The species summaries in this section will focus primarily on the Atlantic Ocean populations of these species, as these are the populations that may be affected by the proposed action. The following subsections are synopses of the best available information on the life history, distribution, population trends, current status, and threats of the five species of sea turtles that are likely to be affected by one or more components of the action. Thorough descriptions and assessments of the status of the species and DPSs of sea turtles found in U.S. Atlantic waters can be found in the most recent sea turtle Recovery Plans (NMFS and USFWS 1991, 1992, 1993, 1998a, 1998b, 2008; NMFS et al. 2011), 5-year reviews (NMFS and USFWS 2007a, 2007b, 2013a, 2013b, 2015b, 2023), and the loggerhead (Conant et al. 2009), green (Seminoff et al. 2015), and leatherback (NMFS and

USFWS 2020) status reviews, which are incorporated herein by reference. A brief summary of the status of the species within U.S. Atlantic waters and in the action area is given below.

3.2.2.1 General threats to sea turtles

Sea turtles face numerous natural and man-made threats that shape their status and affect their ability to recover. Many of the threats are either the same or similar in nature for all listed sea turtle species including interactions with fisheries, construction and maintenance of navigation channels (dredging), coastal development, environmental contamination, climate change, and variety of other national and anthropogenic threats including predation, diseases, toxic blooms from algae and other microorganisms, and cold stunning. Additional detail about these threats is described in **Section 4.4 Cumulative Impacts** and information specific to a particular species or DPS is discussed in the corresponding status sections where appropriate.

3.2.2.2 Green sea turtle (North Atlantic and South Atlantic DPSs)

The green sea turtle was listed as threatened under the ESA on July 28, 1978, except for the Florida and Pacific coast of Mexico breeding populations, which were listed as endangered (43 FR 32800). On September 2, 1998, critical habitat for green sea turtles was designated in coastal waters surrounding Culebra Island, Puerto Rico (63 FR 46693). On April 6, 2016, NMFS and USFWS issued a final rule to list 11 DPSs of the green sea turtle. Three DPSs were listed as endangered and eight DPSs were listed as threatened (81 FR 20057). That rule superseded the 1978 final listing rule for green sea turtles and applied the existing protective regulations to the DPSs. For the purposes of this analysis, only the North Atlantic DPS (NA DPS) and South Atlantic DPS (SA DPS) will be considered, as they are the only two DPSs with individuals occurring in the mid-Atlantic waters of the U.S. (Figure 1).

Detailed information on the status of green sea turtles, including information on population structure, taxonomy and life history, distribution and abundance, and threats throughout their range, can be found in the Status Review (Seminoff et al. 2015) and the final rule listing DPSs (81 FR 20057).

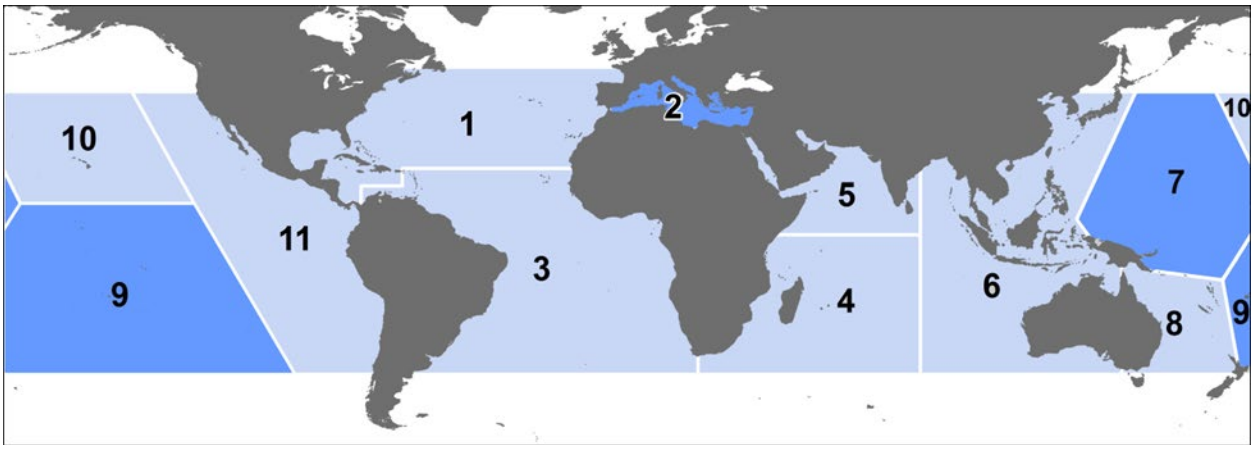


Figure 1. Threatened (light) and endangered (dark) green turtle DPSs: 1. North Atlantic, 2. Mediterranean, 3. South Atlantic, 4. Southwest Indian, 5. North Indian, 6. East Indian-West Pacific, 7. Central West Pacific, 8. Southwest Pacific, 9. Central South Pacific, 10. Central North Pacific, and 11. East Pacific.

Species Description and Distribution

The green sea turtle is the largest of the hardshell marine turtles growing up to 1m in shell length. They have dark brown, gray, or olive colored shells (carapace) and a much lighter, yellow-to-white underside (plastron). The green sea turtle has a circumglobal distribution, occurring throughout nearshore tropical, subtropical and, to a lesser extent, temperate waters. Adult turtles exhibit site fidelity and migrate hundreds to thousands of kilometers from nesting beaches to foraging areas. With the exception of post-hatchlings, green turtles live in coastal foraging grounds including open coastline and protected bays and lagoons. Oceanic habitats are used by oceanic-stage juveniles (post-hatchlings), migrating adults, and in some cases foraging juveniles and adults. Post-hatchlings feed close to the surface on a variety of marine algae and other life associated with drift lines and debris. Juvenile and adult green turtles feed primarily on seagrasses and algae, although they also consume jellyfish, sponges, and other invertebrate prey. Green sea turtles nest on sandy beaches of mainland shores, barrier islands, coral islands, and volcanic islands in more than 80 countries worldwide (Hirth 1997).

- North Atlantic DPS Distribution: Green sea turtles from the NA DPS range from the boundary of South and Central America (7.5° N, 77° W) in the south, throughout the Caribbean, the Gulf of America, and the U.S. Atlantic coast to New Brunswick, Canada (48° N, 77° W) in the north. The range of the DPS then extends due east along latitudes 48° N and 19° N to the western coasts of Europe and Africa (Figure 1). In U.S. Atlantic

and Gulf of America waters, green sea turtles are distributed in inshore and nearshore waters from Texas to Massachusetts.

- South Atlantic DPS Distribution: The range of the green sea turtle SA DPS begins at the border of Panama and Colombia at 7.5° N, 77° W, heads due north to 14° N, 77° W, then east to 14° N, 65.1° W, then north to 19° N, 65.1° W, and along 19° N latitude to Mauritania in Africa. The range extends along the coast of Africa to South Africa, with the southern border being 40° S latitude (Figure 1). The in-water range of the SA DPS is widespread and extends from the south Atlantic to north Atlantic Ocean.

Genetic Diversity

- North Atlantic DPS: The NA DPS has a globally unique haplotype[5], which was a factor in defining the discreteness of the population for the DPS. Evidence from mitochondrial DNA studies indicates that there are at least four independent nesting subpopulations in Florida, Cuba, Mexico, and Costa Rica (Seminoff et al. 2015). More recent genetic analysis indicates that designating a new western Gulf of America management unit might be appropriate (Shamblin et al. 2015).
- South Atlantic DPS: Individuals from nesting sites in Brazil, Ascension Island, and western Africa have a shared haplotype found in high frequencies. Green turtles from rookeries in the eastern Caribbean however, are dominated by a different haplotype.

Within U.S. waters, individuals from both the NA and SA DPSs can be found on foraging grounds. Genetic analyses of juvenile green sea turtles captured in inshore pound nets in NC indicated that they are primarily from rookeries in the United States, Mexico, and Costa Rica, with 7 percent of individuals from rookeries in the southern Atlantic Ocean (SA DPS) (Bass et al. 2006). These models suggest that 93 percent of juveniles in NC inshore waters are from the NA DPS and 7 percent are from the SA DPS (Bass et al. 2006).

Life History Information

Estimates of age at first reproduction for female green sea turtles range widely depending on population from 15-50 years (Avens and Snover 2013, Seminoff et al. 2015). Females lay an average of three nests per season with an average of 100 eggs per nest and have a remigration interval of 2 to 5 years (Hirth 1997). Nesting occurs primarily on beaches with intact dune structure, native vegetation and appropriate incubation temperatures during summer months. After emerging from the nest, post-hatchlings begin an oceanic juvenile phase. Oceanic-stage juvenile green turtles originating from nesting beaches in the Northwest Atlantic appear to use

[5] A set of closely linked genetic markers or DNA variations on a chromosome that tend to be inherited together.

oceanic developmental habitats and move with the predominant ocean gyres for several years before returning to their neritic foraging and nesting habitats (Musick and Limpus 1997, Bolten 2003). Most green turtles exhibit particularly slow growth rates, which has been described as a consequence of their largely herbivorous (*i.e.*, low net energy) diet (Bjorndal 1982). Growth rates of juveniles vary substantially among populations, ranging from less than 1 cm/year (Green 1993) to >5 cm/year (Eguchi et al. 2012).

Status and Population Dynamics

- North Atlantic DPS: Compared to other DPSs, the NA DPS exhibits the highest nester abundance, with approximately 167,424 females at 73 nesting sites, and available data indicate an increasing trend in nesting (NMFS 2022, Seminoff et al. 2015). The largest nesting site in the NA DPS is in Tortuguero, Costa Rica, which hosts 79 percent of nesting females for the DPS (Seminoff et al. 2015). There are no reliable estimates of population growth rate for the DPS as a whole, but estimates have been developed at a localized level. In the continental US, green sea turtle nesting occurs along the Atlantic coast, primarily along the central and southeast coast of Florida. Modeling by Chaloupka et al. (2008) using data sets of 25 years or more show the Florida nesting stock at the Archie Carr National Wildlife Refuge growing at an annual rate of 13.9 percent, and the Tortuguero, Costa Rica, population growing at 4.9 percent. According to data collected from Florida's index nesting beach survey from 1989-2021, green sea turtle nest counts across Florida have increased dramatically, from a low of 267 in the early 1990s to a high of 40,911 in 2019. Green sea turtle nesting is also documented annually on beaches of North Carolina, South Carolina, and Georgia, though nesting is found in low quantities (up to tens of nests) (nesting databases maintained on www.seaturtle.org).
- South Atlantic DPS: The South Atlantic DPS has 51 nesting sites, with an estimated nester abundance of 63,332. More than half of the 51 identified nesting sites (37) did not have sufficient data to estimate the number of nesters or trends (Seminoff et al. 2015). The largest nesting site is at Poilão, Guinea-Bissau, which hosts 46 percent of nesting females for the DPS (Seminoff et al. 2015). Of the nesting sites where data are available, such as Ascension Island, Suriname, Brazil, Venezuela, Equatorial Guinea, and Guinea-Bissau, there is some evidence that population abundance is stable or increasing. NMFS reported the population trend for the NA DPS to be mixed in the most recent report to Congress (NMFS 2022).

Status within the Action Area

The action area consists of coastal and marine areas of the U.S. Atlantic Ocean, Gulf of America, and U.S. Caribbean territorial sea, which encompasses much of the range of the North and South Atlantic DPSs, and therefore the status within the Action Area is the same as described above.

Threats

The principal cause of past declines and extirpations of green sea turtles has been the overexploitation of the species for food and other products. Although intentional take of green sea turtles and their eggs is not extensive within the southeastern U.S., green sea turtles that nest and forage in the region may spend large portions of their life cycle outside the region and outside U.S. jurisdiction, where exploitation is still a threat in some areas. In addition to general threats to all sea turtles, green sea turtles are particularly susceptible to mortality from Fibropapillomatosis (FP) disease. FP results in the growth of tumors on soft external tissues (flippers, neck, tail, etc.), the carapace, the eyes, the mouth, and internal organs (gastrointestinal tract, heart, lungs, etc.) of turtles (Jacobson et al. 1989, Herbst 1994, Aguirre et al. 2002). Presently, FP is cosmopolitan, but has been found to affect large numbers of animals in specific areas, including Florida. Green sea turtles are also susceptible to cold stunning. As temperatures fall below 8-10° C, turtles may lose their ability to swim and dive, often floating to the surface. The rate of cooling that precipitates cold stunning appears to be the primary threat, rather than the water temperature itself (Milton and Lutz 2003). Sea turtles that overwinter in inshore waters, or are unable to leave these waters prior to temperature decreases, are most susceptible to cold stunning because temperature changes are most rapid in shallow water (Witherington and Ehrhart 1989).

Critical Habitat

Critical habitat has not been designated for the North or South Atlantic DPSs, however in the interim, the existing critical habitat designation (*i.e.*, waters surrounding Culebra Island, Puerto Rico) remains in effect for the North Atlantic DPS. Additionally, NMFS has proposed critical habitat for six DPSs segments of green sea turtles (88 FR 46527; July 19, 2023). The proposed marine critical habitat includes nearshore waters (from the mean high water line to 20 m depth) off the coasts of Florida, North Carolina, Texas, Puerto Rico, U.S. Virgin Islands, California (which also includes nearshore areas from the mean high water line to 10 km offshore), Hawai‘i, American Samoa, Guam, and the Commonwealth of Northern Mariana Islands. Proposed marine critical habitat also includes *Sargassum* habitat (from 10 m depth to the outer boundary of the U.S. Exclusive Economic Zone) in the Gulf of America and Atlantic Ocean.

3.2.2.3 Kemp's ridley sea turtle

The Kemp's ridley sea turtle was listed as endangered on December 2, 1970 (35 FR 18319), under the Endangered Species Conservation Act of 1969, a precursor to the ESA. When the ESA was signed into law in 1973, the Kemp's ridley remained listed as endangered. Additional detailed information on the status of Kemp's ridley turtles, including information on population structuring, taxonomy and life history, distribution and abundance, and threats throughout their range, can be found in the Kemp's ridley 5-year review (NMFS and USFWS 2015b) and the Bi-National Recovery Plan for the Kemp's Ridley Sea Turtle (NMFS et al. 2011).

Species Description and Distribution

The Kemp's ridley sea turtle is the smallest of all sea turtles with adults generally weighing <45 kilogram (kg). Kemp's ridleys have a nearly circular, grey-olive colored carapace and a pale yellowish plastron. Kemp's ridleys range from the Gulf of America to the northwest Atlantic Ocean, as far north as the Grand Banks (Márquez 2001, Watson et al. 2004) and Nova Scotia (Bleakney 1955). Kemp's ridley habitat includes sandy and muddy areas in shallow, nearshore waters, although they can also be found in deeper offshore waters during early life stages and migration. These areas support their primary prey species, which consist of swimming crabs, but may also include fish, jellyfish, and an array of mollusks. Pelagic stage turtles rely on the array of prey items associated with floating *Sargassum* habitat. Kemp's ridleys use relatively shallow corridors to migrate between these foraging areas to nesting beaches. Most nesting occurs in Tamaulipas, Mexico, however in the United States, small numbers of Kemp's ridleys are known to nest from Texas to NC.

Life History

Estimates of age to sexual maturity for Kemp's ridley sea turtles ranges greatly from 5-18 years. NMFS et al. (2011) determined the best available point estimate of age to maturity for Kemp's ridley sea turtles was 12 years. While some sea turtles nest annually, the weighted mean remigration rate for Kemp's ridley sea turtles is approximately 2 years. Nesting generally occurs from April to July. Females lay approximately 2.5 nests per season with each nest containing 95-112 eggs. After hatching, pelagic post-hatchling and juveniles spend approximately two years in the ocean prior to recruiting to nearshore waters.

Status and Population Dynamics

Of all the sea turtle species in the world, the Kemp's ridley has declined to the lowest population level. When nesting aggregations at Rancho Nuevo were discovered in 1947, adult female populations were estimated to be in excess of 40,000 individuals (Hildebrand 1963). By the mid-

1980s, however, nesting numbers from Rancho Nuevo and adjacent Mexican beaches were below 1,000, with a low of 702 nests in 1985. Nesting steadily increased through the 1990s, and then accelerated during the first decade of the twenty-first century. Following a significant, unexplained 1-year decline in 2010, Kemp's ridley nests in Mexico reached 21,797 in 2012 (Gladys Porter Zoo 2013). From 2013 through 2014, there was a second significant decline in Mexico. More recent data in Mexico indicate similar fluctuations in the number of nests with periods of low and high nesting. Nesting in Texas has paralleled the trends observed in Mexico, however over the long term, nesting has increased in Texas from one reported nest in 1991 to over 300 in 2024. At this time, it is unclear whether the increases and decreases in nesting seen over the past decade represents a population oscillating around an equilibrium point or if nesting will increase or decrease in the future. Given these uncertainties, NMFS reported the population trend for Kemp's ridley sea turtle as unknown in the most recent report to Congress (NMFS 2022).

Status within the Action Area

The action area consists of coastal and marine areas of the U.S. Atlantic Ocean, Gulf of America, and U.S. Caribbean territorial sea, which encompasses much of the species range, and therefore the status within the Action Area is the same as described above.

Threats

The Kemp's ridley sea turtle was listed as endangered in response to a severe population decline, including bycatch and egg collection. Because the Kemp's ridley has one primary nesting beach, this species is particularly susceptible to habitat destruction by natural (e.g., hurricanes) and human caused events (NMFS and USFWS 2015). Human caused threats include the potential for oil spills, especially in the Gulf of America since it is an area of high-density offshore oil exploration and extraction. Kemp's ridley populations were impacted by the Deepwater Horizon oil spill in which pelagic/oceanic juvenile Kemp's ridleys were the most common species encountered (Witherington et al. 2012). Bycatch of Kemp's ridleys in fisheries is a major threat to Kemp's ridleys. Kemp's ridleys are incidentally captured in fisheries using trawls, gill nets, and hook and line occur throughout the northwest Atlantic Ocean and Gulf of America and were reported to have the highest interaction with fisheries operating in these fisheries of any species (Finkbeiner et al. 2011, Wallace et al. 2013).

Critical Habitat

No critical habitat has been designated for Kemp's ridley sea turtles.

3.2.2.4 Hawksbill sea turtle

The hawksbill sea turtle was listed as endangered throughout its entire range on June 2, 1970 (35 FR 8491) under the Endangered Species Conservation Act of 1969, a precursor to the ESA. When the ESA was signed into law in 1973, the hawksbill remained listed as endangered.

Additional detailed information on the status of hawksbill sea turtles, including information on population structuring, taxonomy and life history, distribution and abundance, and threats throughout their range, can be found in the hawksbill 5-year review (NMFS and USFWS 2013a) and the Hawksbill Recovery Plan (NMFS and USFWS 1998b).

Species Description and Distribution

Hawksbill sea turtles have a serrated carapace with a "tortoise-shell" coloring, ranging from dark to golden brown, with streaks of orange, red, and/or black. Their head is elongated and tapers to a point, with a beak-like mouth that gives the species its name. The shape of the mouth allows the hawksbill turtle to reach into holes and crevices of coral reefs to find sponges, their primary adult food source, and other invertebrates. They weigh on average 45-68 kg (Pritchard et al. 1983). Hawksbills have a circumglobal distribution throughout tropical and, to a lesser extent, subtropical waters of the Atlantic, Indian, and Pacific Oceans. In their oceanic phase, juvenile hawksbills can be found in *Sargassum* mats; post-oceanic hawksbills may occupy a range of habitats that include coral reefs or other hard bottom habitats, sea grass, algal beds, mangrove bays and creeks (Musick and Limpus 1997, Bjorndal and Bolten 2010). They are highly migratory and use a wide range of habitats during their lifetimes (Musick and Limpus 1997, Plotkin 2003). Hawksbills nest on sandy beaches throughout the tropics and subtropics and are capable of migrating long distances between nesting beaches and foraging areas (NMFS and USFWS 2013b). Satellite tagged turtles have shown significant variation in movement and migration patterns. Distance traveled between nesting and foraging locations range from a few hundred to a few thousand kilometers (Miller et al. 1998, Horrocks et al. 2001).

Life History Information

Age to maturity for the species is also long, taking between 20 and 40 years, depending on the region (Chaloupka and Musick 1997, Limpus and Miller 2000). On average, female hawksbills return to the beaches where they were born (natal beaches) every 2-5 years (NMFS and USFWS 2013a), lay 3-5 nests per season (Mortimer and Bresson 1999, Richardson et al. 1999), and 130 eggs per nest (Witzell 1983). Hatchlings migrate to and remain in pelagic habitats until they reach approximately 22-25 cm in SCL and return to coastal foraging areas as juveniles.

Status and Population Dynamics

Very little long-term trend data exists for abundance of hawksbills at foraging sites, primarily because these data are logistically difficult and relatively expensive to obtain. Therefore, the primary information source for evaluating trends in global hawksbill populations is nesting beach data. Surveys at 88 nesting assemblages among ten ocean regions worldwide indicate that 22,004-29,035 females nest annually (NMFS and USFWS 2013a). Among the 63 sites for which historic trends could be assessed, all 63 (100 percent) showed a decline during the long-term period of greater than 20 to 100 years. Among the 41 sites for which recent trend data are available 10 (24 percent) are increasing, 3 (7 percent) are stable, and 28 (68 percent) are decreasing (NMFS and USFWS 2013a). Although greatly depleted from historic levels, nesting populations in the Atlantic Ocean in general are doing better than in the Indo-Pacific, where despite greater overall abundance, a greater proportion of the nesting sites are declining.

Status within the Action Area

Along the east coast of the U.S., hawksbills are rarely observed north of Florida, however they have been found stranded as far north as Massachusetts. Nesting sites in the Atlantic Ocean basin occur in Florida, the insular Caribbean, Western Caribbean mainland, Southwestern Atlantic (Brazil), and Eastern Atlantic (NMFS and USFWS 2013a). Surveys at 33 nesting assemblages in the Atlantic Ocean indicate that 3,626-6,108 females nest annually (NMFS and USFWS 2013a). Of these sites, recent (less than 20 years) abundance data indicate 10 have increasing trends, 10 sites showing decreasing trends, and 13 sites lack enough information to assess trends.

Threats

The greatest threats to hawksbill sea turtles are overharvesting of turtles and eggs, degradation of nesting habitat, and fisheries interactions. Adult hawksbills are harvested for their meat and carapace, which is sold as tortoiseshell. Eggs are taken at high levels, especially in southeast Asia where collection approaches 100 percent in some areas. In addition, lights on or adjacent to nesting beaches are often fatal to emerging hatchlings and alters the behavior of nesting adults. Due to their preference to feed on sponges associated with coral reefs, hawksbills are particularly sensitive to losses of coral reef habitat. Coral reefs are vulnerable to destruction and degradation caused by human activities (*e.g.*, nutrient pollution, sedimentation, contaminant spills, vessel groundings and anchoring, recreational uses) and are also highly sensitive to the effects of climate change (*e.g.*, higher incidences of disease and coral bleaching) (Wilkinson 2004, Crabbe 2008). Because continued loss of coral reef communities (especially in the greater Caribbean

region) is expected to impact hawksbill foraging, it represents a major threat to the recovery of the species.

Critical Habitat

On June 24, 1982, USFWS designated critical habitat for hawksbill sea turtles in the terrestrial environment and nearshore waters of Isla Mona, Culebra Island, Cayo Norte, and Island Culebrita, Puerto Rico (47 FR 27295). On September 2, 1998, NMFS designated critical habitat for hawksbill sea turtles in the coastal waters of Mona and Monito Islands, Puerto Rico (63 FR 46693).

3.2.2.5 Leatherback sea turtle

The leatherback sea turtle was listed as endangered throughout its entire range on June 2, 1970 (35 FR 8491) under the Endangered Species Conservation Act of 1969. When the ESA was signed into law in 1973, the leatherback remained listed as endangered. In 2020 NMFS and USFWS published a status review and identified seven discrete populations (separated from each other as a result of physical and behavioral factors). NMFS concluded that the 7 populations would meet the criteria for recognition as DPSs, however did not list them separately as DPSs as all would meet the definition of endangered (85 FR 48332). For the purposes of this analysis, this document will primarily focus on the Northwest Atlantic Ocean population as only individuals from this population occur in the mid-Atlantic waters of the U.S.

Additional detailed information on the status of leatherback sea turtles, including information on population structuring, taxonomy and life history, distribution and abundance, and threats throughout their range, can be found in the status review (NMFS and USFWS 2020), 5-year review (NMFS and USFWS 2013b), and Recovery Plan (NMFS and USFWS 1998a).

Species Description and Distribution

The leatherback sea turtle is unique due to its large size and wide distribution (due to thermoregulatory adaptations and behavior), and lack of a hard, bony carapace. Leatherbacks are the largest living turtle, reaching lengths of six feet long (~1.83 m), and weighing up to one ton (0.91 metric tons). They have a black carapace with prominent dorsal ridges, long clawless flippers, and a pink spot on the top of their heads. Leatherbacks have pointed tooth-like cusps and sharp-edged jaws that are adapted for a diet of gelatinous prey such as jellyfish, tunicates, and ctenophores. Leatherback turtles spend the majority of their lives at sea, where they develop, forage, migrate, and mate. The leatherback turtle has the widest distribution of any reptile, with a global range extending from 71° N to 47° S and migrate between highly productive temperate foraging areas and tropical and subtropical sandy nesting beaches. The northwest Atlantic

population includes leatherbacks originating from the northwest Atlantic Ocean, south of 71° N, east of the Americas, and west of Europe and northern Africa (the southern boundary is a diagonal line between 5.377° S, 35.321° W and 16.063° N, 16.51° W) (NMFS and USFWS 2020).

Life History Information

Based on mean estimates, leatherback turtles mature at approximately 20 years of age and approximately 130 cm CCL in size (Spotila et al. 1996, Avens et al. 2009, NMFS and USFWS 2020). Females lay an average of five to seven clutches per season, with an inter-nesting interval of 7 to 15 days (Eckert et al. 2012, Eckert et al. 2015). Females lay 20 to 100 eggs per nest (Eckert et al. 2012) and nesting occurs on average every 2 to 4 years (remigration interval, Eckert et al. 2015). The number of leatherback turtle hatchlings that make it out of the nest on to the beach (*i.e.*, emergent success) is approximately 50 percent worldwide (Eckert et al. 2012) and approximately 30 percent of the eggs may be infertile. Nesting females exhibit low site-fidelity to their natal beaches, returning to the same region, but not necessarily the same beach, to nest (Dutton et al. 1999, Dutton et al. 2007). This natal homing results in reproductive isolation between distant nesting beaches, which are separated by physical features, such as land masses, oceanographic features, and currents. This separation is supported by data showing significant genetic discontinuity among the seven populations: northwest Atlantic, southwest Atlantic, southeast Atlantic, southwest Indian, northeast Indian, west Pacific, east Pacific (as summarized in NMFS and USFWS 2020).

Status and Population Dynamics

The northwest Atlantic population nesting female abundance at 55 sites is estimated to be 20,659, with the largest nesting site, Grand Riviere in Trinidad accounting for 29 percent of this abundance. NMFS and USFWS (2020) estimated the index of nesting female abundance for 24 nesting sites in 10 nations within the northwest Atlantic population. Nesting in the northwest Atlantic population is characterized by many small nesting beaches. Large nesting aggregations are rare; only about 10 leatherback nesting beaches in the wider Caribbean region (about two percent of the population's total nesting sites) host more than 1,000 crawls annually (Piniak and Eckert 2011). At beaches with the greatest known nesting female abundance, the northwest Atlantic population is exhibiting a decreasing trend in nesting activity (NMFS and USFWS 2020). The Northwest Atlantic Leatherback Working Group completed a region-wide trend analysis that also showed an overall decline in the population, reporting a 9.32 percent decline in nesting annually from 2008-2017 (Northwest Atlantic Leatherback Working Group 2018). In-water abundance studies of leatherbacks are rare. However, the relative abundance of turtles at a

foraging area off Nova Scotia, Canada, from 2002 to 2015 was recently assessed (Archibald and James 2016). This study evaluated opportunistic sightings per unit effort and found a mean density of 9.8 turtles per 100 km^2, representing the highest in-water density of leatherback turtles reported to date. Archibald and James (2016) concluded that the relative abundance of foraging leatherback turtles off Canada exhibited high inter-annual variability, but overall showed a stable trend from 2002 to 2015.

Status within the Action Area

The action area consists of coastal and marine areas of the U.S. Atlantic Ocean, Gulf of America, and U.S. Caribbean territorial sea, which encompasses much of the range of the northwest Atlantic population,and therefore the status within the Action Area is the same as described above.

Threats

The primary threats to leatherback sea turtles include fisheries interactions (bycatch), harvest of nesting females, and egg harvesting. Because of these threats, once large rookeries are now functionally extinct, and there have been range-wide reductions in population abundance. Leatherbacks are also more susceptible to marine debris ingestion than other sea turtle species due to their predominantly pelagic existence and the tendency of floating debris to concentrate in convergence zones that adults and juveniles use for feeding and migratory purposes (Shoop and Kenney 1992, Lutcavage et al. 1997). Ingestion of marine debris (plastic) is common in leatherback turtles and can block gastrointestinal tracts leading to death.

Critical Habitat

On March 23, 1979, NMFS designated critical habitat for leatherback sea turtles in the waters adjacent to Sandy Point, St. Croix, U.S.V.I. from the 183 m isobath to mean high tide level between 17° 42’12” N and 65° 50’00” W (44 FR 17710). On January 26, 2012, NMFS revised the critical habitat designation for leatherback sea turtles to include coastal and open water areas along the U.S. west coast (77 FR 4170).

3.2.2.6 Loggerhead sea turtle (Northwest Atlantic Ocean DPS)

The loggerhead sea turtle was listed as a threatened species throughout its global range on July 28, 1978 (43 FR 32800). NMFS and USFWS published a Final Rule designating nine DPSs for loggerhead sea turtles (76 FR 58868, September 22, 2011; effective October 24, 2011): (1) Northwest Atlantic Ocean (NWA) (threatened), (2) Northeast Atlantic Ocean (endangered), (3)

South Atlantic Ocean (threatened), (4) Mediterranean Sea (endangered), (5) North Pacific Ocean (endangered), (6) South Pacific Ocean (endangered), (7) North Indian Ocean (endangered), (8) Southeast Indo-Pacific Ocean (endangered), and (9) Southwest Indian Ocean (threatened). The NWA DPS is the only DPS that occurs within the action area and, therefore, it is the only one considered in this document.

Additional detailed information on the status of loggerhead sea turtles, including information on population structuring, taxonomy and life history, distribution and abundance, and threats throughout their range, can be found in the 5-year review (NMFS and USFWS 2023) and Recovery Plan (NMFS and USFWS 2008).

Species Description and Distribution

Loggerhead sea turtles are large and adults in the southeast U.S. average 92 cm in carapace length and weigh approximately 116 kg (Ehrhart and Yoder 1978). Adult and subadult loggerhead sea turtles typically have a light yellow plastron and a reddish brown carapace and have large, strong jaws. Loggerhead turtles are circumglobal, and are found in continental shelf and estuarine environments throughout the temperate and tropical regions of the Atlantic, Indian, and Pacific Oceans. NWA DPS of loggerheads are found along eastern North America, Central America, and northern South America (Dodd Jr. 1988). Habitat use within these areas vary by life stage. Juveniles are omnivorous and forage on crabs, mollusks, jellyfish, and vegetation at or near the surface (Dodd Jr. 1988). Subadult and adult loggerheads are primarily found in coastal waters and eat benthic invertebrates such as mollusks and decapod crustaceans in hard bottom habitats. Nesting occurs on beaches within the southeast U.S. and the wider Caribbean region.

Within the NWA DPS, most loggerheads nest from NC to Florida and along the Gulf coast of Florida. The Recovery Plan identified five recovery units. The Northern Recovery Unit (NRU) includes nesting areas from the Florida/Georgia border north through southern Virginia. The Recovery Plan concluded that all recovery units are essential to the recovery of the species.

Life History Information

Estimates of mean age of sexual maturity for female loggerheads sea turtles is 36 to 38 years (mean age predictions for minimum age are 22.5 to 25 years; Avens et al. 2015) with a 95 percent predictive interval of 29 to 49 years (Chasco et al. 2020). Mean age at sexual maturity for males is 37 to 42 years (mean age predictions for minimum age are 26 to 28 years; Avens et al. 2015). Females nest one to seven times in a season, and clutch sizes range from 95 to 130 eggs. Females nest every 1 to 7 years and exhibit relatively strong nest-site fidelity (Shamblin et al. 2017), with a mean remigration interval of 2.7 years (Shamblin et al. 2021). Young juvenile

loggerheads inhabit oceanic waters spanning the width of the North Atlantic Ocean and Mediterranean Sea after which juveniles typically return to the neritic waters of the Northwest Atlantic Ocean. Older juveniles undergo an ontogenetic, oceanic-to-neritic habitat shift, however, this transition is not obligate, permanent (*i.e.*, some return to oceanic habitats; Mansfield and Putman 2013), nor fixed to a certain body size or age class (Winton et al. 2018).

Status and Population Dynamics

An overall estimate of nesting females for the NWA DPS is not available because of reproductive parameter uncertainty: remigration intervals and clutch frequencies vary spatially and temporally, and data are insufficient for some recovery units. Adequate data are available from the NRU (Florida/Georgia border north through southern Virginia), and the state of Florida, which represents 89 percent of nesting within the DPS (Ceriani and Meylan 2017). Ceriani et al. (2019) evaluated all known Florida nesting data from 1989 to 2018. Using the average annual number of loggerhead nests between 2014 and 2018, Ceriani et al. (2019) estimated the total number of adult females nesting in Florida to be 51,319 (95 percent confidence interval of 16,639-99,739 individuals). To avoid pitfalls of estimating nesting females based on estimates of emigration interval and clutch frequency, Shamblin et al. (2021) used genetic analyses to estimate female abundance for the NRU, estimating 8,074 total nesting females from 2010 to 2015 (Shamblin et al. 2021). The overall nesting trend of NWA DPS appears to be stable, neither increasing nor decreasing, for over two decades (NMFS and USFWS 2023). The NRU has demonstrated a positive, statistically significant growth rate (1.3 percent; $p = 0.04$) over the previous 37 years (NMFS and USFWS 2023).

In-water estimates of abundance include juvenile and adult life stages of both sexes but are difficult to perform on a wide scale. In the summer of 2010, NMFS' Northeast and Southeast Fisheries Science Centers estimated the abundance of juvenile and adult loggerhead sea turtles along the continental shelf between Cape Canaveral, Florida and the mouth of the Gulf of St. Lawrence, Canada. They provided a preliminary regional abundance estimate of 588,000 individuals (approximate inter-quartile range of 382,000-817,000) based on positively identified loggerhead sightings (NMFS 2011). A separate, smaller aerial survey, conducted in the southern portion of the Mid-Atlantic Bight and Chesapeake Bay in 2011 and 2012, demonstrated uncorrected loggerhead sea turtle abundance ranging from a spring high of 27,508 to a fall low of 3,005 loggerheads (Barco et al. 2018).

Status within the Action Area

The action area consists of coastal and marine areas of the U.S. Atlantic Ocean, Gulf of America, and U.S. Caribbean territorial sea, which encompasses much of the NWA DPS range, and therefore the status within the Action Area is the same as described above.

Threats

Destruction and modification of terrestrial and marine habitats threaten the NWA DPS of loggerhead turtles. On beaches, threats that interfere with successful nesting, egg incubation, hatchling emergence, and transit to the sea include erosion, erosion control, coastal development, artificial lighting, beach use, and beach debris (NMFS and USFWS 2023). In the marine environment, threats that interfere with foraging and movement include marine debris, oil spills and other pollutants, harmful algal blooms, and noise pollution (NMFS and USFWS 2023). Domestic and international fisheries bycatch impacts juvenile and adult loggerheads in pelagic and coastal waters throughout the range of the DPS (Bolten et al. 2011, Finkbeiner et al. 2011). Harmful algal blooms (HABs), also called "red tides," are a significant, nearly-annual threat to the DPS, especially to turtles inhabiting the waters off southwest Florida (Hart et al. 2018).

Critical Habitat

In 2014, NMFS and the USFWS designated critical habitat for the NWA DPS of loggerhead sea turtles along the U.S. Atlantic and Gulf of America coasts, from NC to Mississippi (79 FR 39856). The final rule designated five different units of critical habitat, each supporting an essential biological function of loggerhead turtles. These units include nearshore reproductive habitat, winter area, *Sargassum*, breeding areas, and migratory corridors.

CHAPTER 4 ENVIRONMENTAL CONSEQUENCES

This section presents the scientific and analytic basis for comparison of the direct, indirect, and cumulative effects of the alternatives. For the purpose of this analysis, NMFS considered the type of impact (direct, indirect, or cumulative), intensity (e.g., severity or magnitude) of the impact, and duration of the impact of the proposed action, as well as the context (significance of the action is analyzed in several contexts, e.g., the affected interests and the affected region). The magnitude or intensity of a known or potential impact is defined on a spectrum ranging from no impacts to major impacts. The potential impacts could be either beneficial or adverse. We will use the terms minor, moderate, and major and these are defined below. The duration of the potential impact takes into account the permanence of an impact; either short or long term impacts, which are also defined below.

Type of impact:

- **Direct Impact:** A known or potential impact caused by the proposed action or project that occurs at the time and place of the action.
- **Indirect Impact:** A known or potential impact caused or induced by the proposed action or project that occurs later than the action or is removed in distance from it, but is still reasonably expected to occur.
- **Cumulative Impact:** A known or potential impact resulting from the incremental effect of the proposed action added to other past, present, or reasonably foreseeable future actions.

Magnitude/Intensity:

- **Minor:** The action would have only a small impact on protected species. That impact, when adverse, may disturb a few individuals and alter their behavior temporarily, however it is not likely to "adversely affect" those individuals (per ESA definition). Population-level impacts (for example to migration, feeding and reproductive behavior) would not occur at a meaningful level. Changes to protected species' habitats (critical habitat) are minimal and do not appreciably differ from previous or natural conditions. Changes to habitat function are small and inconsequential.
- **Moderate:** The action has a more noticeable impact on protected species. That impact, when adverse, may widely and frequently disturb individuals, and the action may have the potential to "adversely affect" those individuals (per ESA definition). Population level impacts (for example to migration, feeding, and reproductive behavior) may occur. Changes to protected species' habitats (critical habitat) would be apparent when compared to previous or natural conditions. Changes to habitat function are measurable.
- **Major:** The action has an obvious impact on protected species. That impact, when adverse, may result in harassment of individuals at sub-lethal or lethal levels, and the action may have the potential to "jeopardize" those populations and "adversely modify" critical habitat (per ESA definitions). Population level impacts (for example to migration, feeding and reproductive behavior) are likely to occur. Changes to protected species' habitats (critical habitat) would be obvious when compared to previous or natural conditions. Changes to habitat function are obvious.

Duration of Potential Impacts:

- **Short-Term Impact:** A known or potential impact of limited duration, relative to the proposed activity and the environmental resource. For the purposes of this analysis, these impacts may be instantaneous or may last minutes, hours, days, or years.

- **Long-Term Impact:** A known or potential impact of extended duration, relative to the proposed activity and the environmental resource. For the purposes of this analysis, these improvements or disruptions to a given resource would last longer than 5 years.

4.1 Environmental Effects Common to All Alternatives

No alternative analyzed in this EA would result in the termination of the STSSN. Take coverage and authorizations under the ESA have already been issued by NMFS for the activities of the STSSN. All alternatives involve the continuation of the stranding network activities with the exception of the NOAA/NMFS coordination and management. As such the consequences in this section are expected to occur under each alternative.

4.1.1 Directed Take of Sea Turtles

The STSSN responds directly to sick, injured, and entangled sea turtles in the marine environment. The types of events that render turtles in need of aid in the marine environment are varied and include cold stunning; disease and health related issues; entanglement in and impingement on active or abandoned commercial and recreational fishing gear; ingestion of pollutants or marine debris; and vessel strikes and other traumatic injuries, including shark attacks. Typically, these events are reported through a NMFS-dedicated phone line or through the state's STSSN phone line for reporting sick, injured, entangled or stranded wildlife. Alternately, STSSN responders may encounter turtles in the water when acting in the course of their official duties. Occasionally, a member of the public reports a sick, injured or entangled sea turtle in the marine environment, and an immediate response is necessary to prevent further injury or death to the turtle. In these events, NMFS and authorized STSSN personnel may grant authority and give specific instructions to the person at the scene to safely and properly aid the sea turtle.

When a turtle is encountered in the water, the STSSN responder determines if the turtle is alive or dead. The response protocol is based upon this first determination. Activities on live animals will be short in duration (maximum ten minutes) and have minor and short-term impacts. Animals will be lifted into the boat manually or with small dip-nets. No large nets or gear (e.g., trawling gear) would be used. For live turtles, the treatment is based upon the circumstances surrounding the event. For example, when sea temperatures drop below a certain level, sea turtles become lethargic or comatose, a condition known as cold stunning. For these cold stunning cases, the most immediate response is to remove the turtle from the water, provide a cover for the animal, and transport it to a rehabilitation facility for veterinary care. For entanglement events, removal from the water is not always the best response and can be

dangerous for responders and/or result in further injury to the turtle. The STSSN responder assesses the amount and type of gear that is involved and examines where and how the turtle is entangled in the gear. Depending on this assessment, additional assistance may be required. The turtle may be disentangled and released on site, recovered for transport and treatment, or the carcass salvaged.

The STSSN responder looks for injuries associated with the entanglement and observes the turtle's behavior (e.g., lethargic, energetic). Based on the examination and assessment, the STSSN responder attempts to remove any gear that can be removed without further injury to the turtle. If the animal can be brought on board a vessel without further injury, the STSSN responder attempts to remove all external gear and treat the turtle for any associated injuries. If injuries are severe, and it is logistically possible (due to their size and weight, leatherbacks present unique challenges), the turtle is transported to shore for transfer to a rehabilitation facility for veterinary care.

Although not a required element of the proposed action, for dead specimens found in the marine environment, STSSN responders may either document and mark the carcass and leave it where found or salvage the specimen for further examination or for scientific or educational purposes.[6]

Individual response actions consist of direct, minor and short-term impacts to the individual sea turtle. Overall the action will have moderate and long-term beneficial impacts to both the individual and the species. Additionally, neither alternative is expected to impact any designated Critical Habitat for any sea turtle species.

4.1.2 Transporting

Sea turtles transported to a facility and held (e.g., for rehabilitation) must be maintained and cared for as outlined in the USFWS Standard Conditions for Care and Maintenance of Captive Sea Turtles (USFWS 2019). During transport, sea turtles must be transported in a climate-controlled environment, protected from extremes of heat and cold, and within the temperature ranges. For live turtles that are not injured but need resuscitation, procedures specified in 50 CFR 223.206(d)(1) are followed. Transport is expected to have short-term, minor impacts.

[6] NMFS has determined that salvage activities for examination or for educational purposes will, at worst, have no effect on populations or species or, at best, will result in a benefit by increasing knowledge and public education about sea turtle biology. Salvage will also have no effect on the individual dead turtle. Thus, salvage activities are not analyzed in the Effects section of this Environmental Assessment.

4.1.3 Photographing, Measuring, Weighing, and Tagging

Rescued animals are lifted into the boat manually or with small dip-nets. No large nets or gear (e.g. trawling gear) would be used. Depending on availability of equipment, some proportion of the animals will be measured, flipper and Passive Integrated Transponder (PIT) tagged, weighed, and photographed. Morphometric data will be collected using forestry calipers and a flexible tape. Measurements will include straight standard carapace length, straight minimum carapace length, straight maximum carapace width, straight midline plastron length, curved standard carapace length, and curved maximum carapace width and head width. Inconel tags will be applied to the trailing edge of each front flipper and a PIT tag will be subcutaneously applied to the right front flipper. Before insertion of any tags, all flippers will be scanned for the presence of any pre-existing PIT tags. Turtles may also be weighed and photographed. These activities are expected to have short-term, minor impacts.

4.1.4 Public Health and Safety

The proposed action and the No Action Alternative are not expected to have substantial adverse impacts on public health or safety because the action, continued operation of the National STSSN under OPR and through use of the STSSN Operating Procedures Handbook, would not change the current practices of STSSN responders. There is minimal potential for exposure to disease for human responders, if basic stranding protocols are followed. Responders will be trained accordingly in safety and proper response techniques to reduce safety concerns as much as possible when responding to sea turtles.

4.2 Effects of Alternative 1 - No Action Alternative

Under the No Action Alternative, NOAA/NMFS would absolve its role coordinating and participating in the STSSN. The STSSN would continue to operate, and stranding response would be maintained through the existing structure and under the direction of state agencies and the USFWS. Under this alternative, OPR would discontinue its role with mortality investigation and as the State Coordinator for the STSSN in LA, MS, and AL.

Changes to the NOAA/NMFS role in the STSSN, and discontinuation of the coordination and mortality investigation roles would have impacts on the STSSN. This action would result in a less-coordinated STSSN that would potentially operate with different protocols and expectations in each state. This alternative would also result in a significant gap in the Northern Gulf of America states, until replacement coordinating entities could be found, and would limit the mortality investigation work conducted and data management.

The effects of the No Action Alternative would be a less-coordinated, state-managed STSSN, with individual data management systems. This would limit the benefits of the STSSN. In most places, stranding response would continue. Therefore, short-term benefits would be achieved to individual animals from response, rehabilitation, and release, but the benefits would be lower than those produced through Alternative 2.

4.3 Effects of Alternative 2 - Preferred Alternative

Continued Operation of the STSSN Under NMFS Coordination, Guided by the 2024 STSSN Operating Procedures Handbook

Under Alternative 2, NOAA/NMFS would continue to coordinate the STSSN and would finalize the STSSN Operating Procedures Handbook as a guide for the continued operation of the STSSN. The STSSN has been in operation for decades, and the STSSN Operating Procedures seeks to consolidate various guidance documents and clearly outline the roles and responsibilities of STSSN participants. Under this alternative, NOAA/NMFS would maintain its role with the STSSN, providing expertise and guidance to responders throughout the STSSN. NOAA/NMFS would continue to coordinate program-wide morality investigation to better understand in-water threats and causes of stranding. NOAA/NMFS would continue to maintain and expand the STSSN National Database and provide data management assistance. This will allow for the development of consolidated data summaries that can be used to analyze in-water threats and trends.

Alternative 2 would provide short-term benefits to individual turtles through response, rehabilitation, and release, as well as moderate and long-term benefits to populations and species through analysis of in-water threats and maintenance of the long-term data set to better inform future management actions.

4.4 Cumulative Impacts

A cumulative impact is the impact on the environment resulting from the incremental impact of the action, when added to other past, present, and reasonably foreseeable future actions, regardless of the agency (federal or non-federal) or person undertaking such other actions. Significance from the proposed action cannot be avoided if it is reasonable to anticipate a significant cumulative impact on the environment. Cumulative impacts can result from individually minor, but collectively significant, actions taking place over time. Sea turtles face

numerous natural and anthropogenic direct and indirect threats that shape their status and affect their ability to recover.

The purpose of the STSSN is to provide aid to sick, injured, and entangled sea turtles in the Atlantic and Gulf of America coastal environments, and this action is inherently positive and beneficial to sea turtles. The proposed action, STSSN coordination by NMFS OPR, will respond to incidents that have occurred because of human activity or due to natural causes of illness, injury or mortality through rescue, rehabilitation and stranding response. These actions are wholly beneficial in nature and in turn would reduce impacts to sea turtles from past, present, and reasonably foreseeable future actions as described below. Thus, the impact on the environment resulting from the proposed action would be inherently positive and beneficial.

As discussed below, NMFS believes that the proposed action would not have a significant cumulative effect on either the physical or biological environments when combined with other past, present, and reasonably foreseeable future actions. The proposed action is directed at sea turtle recovery and would not have a significant cumulative effect on non-target species or the physical environment in the proposed study area when combined with other past, present, and reasonably foreseeable future actions.

4.4.1 Fisheries

Incidental bycatch in commercial fisheries is identified as a major contributor to past declines, and a threat to future recovery, for all sea turtle species (Lewison et al. 2013, NMFS and USFWS 2013a, 2013b, 2015b, 2020, 2023). Alteration of prey abundance and alteration of bottom habitats from bottom tending fishing gear (e.g., bottom trawlers) have also been identified as a threat to sea turtles.

Domestic fisheries often capture, injure, and kill sea turtles at various life stages. Sea turtles in the pelagic environment are exposed to U.S. Atlantic pelagic longline fisheries and similar fisheries in international waters and foreign nation waters. Sea turtles in the benthic environment in waters off the coastal United States are exposed to a suite of other fisheries in federal and state waters and similarly across their range in the waters of other countries. These fishing methods include trawls, gill nets, purse seines, hook-and-line gear (including bottom longlines and vertical lines (e.g., bandit gear, handlines, and rod-reel)), pound nets, and trap fisheries.

In addition to domestic fisheries, sea turtles are subject to direct as well as incidental capture in numerous foreign fisheries, further impeding the ability of sea turtles to survive and recover on a

global scale. For example, pelagic stage sea turtles, especially loggerheads and leatherbacks, circumnavigating the Atlantic are susceptible to international longline fisheries (Lewison et al. 2013). Bottom longlines and gill net fishing is known to occur in many foreign waters, including (but not limited to) the northwest Atlantic, western Mediterranean, South America, west Africa, central America, and the Caribbean. Shrimp trawl fisheries are also occurring off the shores of numerous foreign countries and pose a significant threat to sea turtles similar to the impacts seen in U.S. waters. Many unreported takes or incomplete records by foreign fleets make it difficult to characterize the total impact that international fishing pressure is having on listed sea turtles. Nevertheless, international fisheries represent a continuing threat to sea turtle survival and recovery throughout their respective ranges.

4.4.2 Non-Fishery In-Water Activities

4.4.2.1 Dredging and disposal

The construction and maintenance of federal navigation channels have caused sea turtle mortalities. Hopper dredges can entrain and kill sea turtles. Dredging may also alter foraging habitat and relocation trawling associated with the project may injure or kill sea turtles and displace the turtles out of their preferred habitat. Whole sea turtles and sea turtle parts have been taken in hopper dredging operations from New York through Texas. Between 1980 and 2006, the last time a comprehensive report was prepared by the U.S. Army Corps of Engineers, 609 sea turtles were incidentally taken during dredging activities at 77 locations along the East Coast and Gulf of America (Dickerson et al. 2007). Most sea turtle encounters with hopper dredges result in serious injuries or mortalities.

Due to beach erosion, dredged materials are commonly borrowed from offshore shoals to deposit onto beaches, generally for recreational purposes and to protect property. Harbor and channel dredging can indirectly affect sea turtles by degrading habitat, such as altering benthic foraging areas, decreasing the number and abundance of prey species, and reducing water quality by increasing turbidity and releasing potential contaminants into the water column (Ramirez et al. 2017). Trailing suction hopper dredges and other support vessels may strike slow-moving sea turtles or entrain sea turtles in the draghead, as it moves across the seabed. Such direct impacts often result in severe injury and/or mortality. Nesting success can be reduced by inappropriate quality sand deposited onto nesting beaches, or nests can be directly injured by sand deposited over nests. Dredging and beach nourishment impacts to sea turtles are likely to continue into the foreseeable future.

4.4.2.2 Water cooling systems

Sea turtles entering coastal or inshore areas have also been affected by entrainment and/or impingement in the cooling-water intake systems (CWIS) of electrical generating plants. Impingement means physical contact with the intake screens during withdrawal of cooling water by sea turtles large enough to be retained by traveling screens. To keep condensers from clogging with solid materials and biota, many power plant CWIS use a combination of large-and finer-mesh screens. Typically, the large-mesh screens or bar racks are fixed in place while the finer-mesh screens can move to facilitate cleaning. These movable screens are called traveling screens. As the water passes through these screens, organisms larger than the mesh openings can be impinged against the screens. Sea turtles with an underlying condition may have limited swimming abilities, leaving them susceptible to impingement. The survival rate for impinged species is species specific and varies with size, season, and depends on several other power plant-related factors, such as intake velocity, plant design, and operating conditions. There are several Power Generating Stations in the STSSN operating area that are known to affect sea turtles.

4.4.2.3 Vessel interactions

Vessel strikes represent a recognized threat to air breathing marine species, including sea turtles and these injuries are commonly observed in stranded animals. Vessel strikes can lead to the injury, debilitation, and/or mortality of sea turtles (Dwyer et al. 2003). The Sea Turtle Stranding and Salvage Network's reports include evidence of vessel interactions (*e.g.*, carapace damage from propeller and skeg impact injuries) with sea turtles. It is not known how many of these injuries occur pre- or post-mortem. It is likely that the interactions with commercial and recreational vessels result in a higher level of sea turtle mortality than what is documented, since some carcasses would not reach the beach. Minor vessel collisions may cause injuries that weaken or otherwise affect sea turtles that can then become vulnerable to predation, disease, and other natural or anthropogenic hazards.

Vessels in the action area include federal, private, and commercial vessels. Federal vessels include those maintained by the U.S. Navy, U.S. Coast Guard, NOAA, and U.S. Army Corps of Engineers. Private and commercial vessels also have the potential to interact with sea turtles. Vessel activities may result in the lethal (*e.g.*, boat strike) and non-lethal (*e.g.*, harassment) impacts to ESA-listed species that could prevent or slow a species' recovery. However, fishing vessels represent only a portion of marine vessel activity. Due to reduction in vessel speed during fishing operations, collisions are more likely when vessels are in transit. As fishing vessels are

smaller than large commercial tankers and container ships, and slower and less agile than recreational speed boats, collisions are less likely to result in mortality. Commercial fishing vessel activity is not likely to increase in the foreseeable future along the Atlantic coast. While allowable catch levels may increase as fish stocks are rebuilt, associated increases in catch rates may preclude the need to increase effort to obtain allowable catch. Conversely, recreational vessel activity may increase as human populations on the coast continue to grow and access to the ocean increases. Vessels (federal and private, commercial and recreational) will continue to operate in the area for the foreseeable future, and the impacts described above will likely persist.

4.4.3 Coastal Development and Erosion Control

Coastal development can result in the loss or degradation of sea turtle feeding habitat and deter or interfere with sea turtle nesting, affect nesting success, and degrade nesting habitats for sea turtles. Structural impacts to sea turtle nesting habitat include the construction of buildings and pilings, beach armoring and renourishment, and sand extraction (Lutcavage et al. 1997, Bouchard et al. 1998). These factors may decrease the amount of nesting area available to females and change the natural behaviors of both adults and hatchlings, directly or indirectly, through loss of beach habitat or changing thermal profiles and increasing erosion, respectively (Ackerman 1997, Witherington et al. 2003, Witherington et al. 2007). In-water erosion control structures such as breakwaters, groins, and jetties can impact nesting females and hatchlings as they approach and leave the surf zone or head out to sea by creating physical blockage, concentrating predators, creating longshore currents, and disrupting wave patterns. Nocturnal human activities along nesting beaches may also discourage sea turtles from nesting sites. In addition, coastal development is usually accompanied by artificial lighting which can alter the behavior of nesting adults (Witherington 1992) and is often fatal to emerging hatchlings that are drawn away from the water (Witherington and Bjorndal 1991). Coastal counties are presently adopting stringent protective measures to protect hatchling sea turtles from the disorienting effects of beach lighting. The negative effects of coastal development and erosion control activities to listed species are not expected to dissipate in the future.

4.4.4 Environmental Contamination

Environmental contaminants include atmospheric loading of pollutants, storm water runoff from coastal development, groundwater discharges, and industrial development. Non-point sources from terrestrial activities have caused reductions in water quality leading to degradation of habitat for sea turtles. Chemical contamination may have effects on listed species' reproduction and survival. Multiple municipal, industrial, and household sources, as well as atmospheric transport, introduce various pollutants such as pesticides, hydrocarbons, organochlorides (*e.g.*,

DDT, PCBs, and PFCs), and others that may cause adverse health effects to sea turtles (Iwata et al. 1993, Grant and Ross 2002, Garrett 2004, Hartwell 2004). Acute exposure to hydrocarbons from petroleum products released into the environment via oil spills and other discharges may directly injure individuals through skin contact with oils (Geraci 1990), inhalation at the water's surface and ingesting compounds while feeding (Matkin and Saulitis 1997). Hydrocarbons also have the potential to impact prey populations, and therefore may affect listed species indirectly by reducing food availability in the action area. Excessive turbidity due to coastal development and/or construction sites may also influence sea turtle foraging ability.

Sea turtles may also be affected directly or indirectly by fuel oil spills. Fuel spills involving fishing vessels are common events. However, these spills are typically small amounts that are unlikely to affect listed species unless they occur adjacent to nesting beaches or in foraging habitats. Larger spills may result from accidents, although these events are rare and generally involve small areas. Fuel spills may impact nesting beaches, bottom habitat, and benthic resources, but it is unknown to what extent oil releases from recreational and commercial vessels or shoreline activities such as fueling facilities may affect sea turtles in migratory or foraging areas. Immediately after an oil release, direct contact with petroleum compounds or dispersants used to respond to spills may cause skin irritation, chemical burns, and infections (Lutcavage et al. 1995). Inhalation of volatile petroleum vapors can irritate lungs and dispersants have a surfactant effect that may further irritate or injure the respiratory tract, which may lead to inflammation or pneumonia (Shigenaka et al. 2010). Ingestion of petroleum compounds may remain in the turtle's digestive system for days (Van Vleet and Pauly 1987), which may affect the animals' ability to absorb or digest foods. Absorption of petroleum compounds or dispersants may damage liver, kidney, and brain function as well as causing anemia and immune suppression as seen in seabirds that have ingested and absorbed petroleum compounds (Shigenaka et al. 2010). Exposure to an oil release can cause long-term chronic effects such as decreased survival and lowered reproductive success may occur.

Persistent petrochemical products in the marine environment are frequently encountered by sea turtles. Tar balls are frequently observed sealing the mouths and nostrils of small sea turtles. Witherington (1994) found evidence of tar in the gastro-intestinal tracts of over one-third of the post-hatchling sea turtles examined offshore of Florida in 1993 and evidence of tar ingestion was documented in 20 percent of neonate loggerhead sea turtles examined along the Gulf Stream (Witherington 2002). Van Vleet and Pauly (1987) concluded that the source of tar observed on stranded sea turtles in the Gulf of America originated from crude oil tanker discharges and that crude oil/tar significantly impacts marine turtles in the eastern Gulf of America.

Threats of oil releases and discharges from vessels are greatest in port areas, shipping lanes, and areas of heavy recreational vessel use. Oil releases caused by oil and gas development and transportation activities, as well as oil releases from vessels or shoreline activities such as fueling facilities adjacent to nesting beaches, may directly affect sea turtles and nesting beaches. During the decade between 1992 and 2001, sea turtles were identified as resources at risk in 73 oil releases. Nine of these releases occurred along Florida's Atlantic coast (Milton et al. 2003). The continued exposure of sea turtles and other living marine resources due to vessel and land based oil releases is likely to continue into the future. There is no basis to conclude that the level of interaction represented by the various vessel activities that would occur under the preferred alternative would be detrimental to the existence of biological resources considered with the action.

The April 20, 2010 explosion of the Deepwater Horizon (DWH) oil rig affected sea turtles in the Gulf of America. An assessment was completed on the injury to Gulf of America marine life, including sea turtles, resulting from the spill (DWH Trustees 2015). Following the spill, juvenile Kemp's ridley, green, and loggerhead sea turtles were found in *Sargassum* algae mats in the convergence zones, where currents meet and oil accumulates. Sea turtles found in these areas were often coated in oil and/or had ingested oil. The spill resulted in the direct mortality of sea turtles and may have had sub-lethal effects or caused environmental damage that will affect other sea turtles into the future.

4.4.4.1 Marine debris

Marine debris is a continuing problem for sea turtles. Sea turtles living in the pelagic environment commonly eat or become entangled in marine debris (e.g., tar balls, plastic bags/pellets, balloons, and ghost fishing gear) as they feed along oceanographic fronts where debris and their natural food items converge. This is especially problematic for sea turtles that spend all or significant portions of their life cycle in the pelagic environment (i.e., leatherbacks and oceanic stage juveniles of all species). Ingested debris can block the digestive tract, causing death or serious injury (Lutcavage et al. 1997, Laist et al. 1999). Plastic may be ingested out of curiosity or due to confusion with prey items. Marine debris consumption has been shown to depress growth rates in post-hatchling loggerhead sea turtles, increasing the time required to reach sexual maturity and increasing predation risk (McCauley and Bjorndal 1999). Sea turtles can also become entangled and die in marine debris, such as discarded nets and monofilament line (NRC 1990, Lutcavage et al. 1997, Laist et al. 1999). The effects of environmental contamination to listed species is not expected to change in the future.

4.4.5 Climate

There is a large and growing body of literature on past, present, and future impacts of globally changing climates, exacerbated and accelerated by human activities. Some of the likely effects commonly mentioned are sea level rise, increased frequency of severe weather events, and change in air and water temperatures. NOAA's climate information portal provides basic background information on these and other measured or anticipated effects (see http://www.climate.gov).

4.4.5.1 Climate change impacts

The Intergovernmental Panel on Climate Change (IPCC 2019) reported the following consequences of climate change on sea turtles with high confidence, which is an evaluation of the underlying evidence and agreement in the conclusion. Loss of sandy beaches, due to sea level rise and storm events, reduces available nesting habitat (Fish et al. 2005, Fuentes et al. 2010, Reece et al. 2013, Katselidis et al. 2014, Patino-Martinez et al. 2014, Pike et al. 2015, Marshall et al. 2017). Storms, waves, and sea level rise are likely to increase erosion and sediment loss. Changes in beach morphology, dune scarping, vegetation loss, and reduction in beach area are likely to reduce availability of sea turtle nesting sites, and potential for landward migration of the beach profile is limited due to human development. Temperature directly affects important sea turtle life history traits, including: hatchling size, sex, viability, and performance (Hays et al. 2003, Pike 2014, Dudley et al. 2016, Santos et al. 2017). One of the greatest concerns is the effect of temperature on hatchling emergence rates and sex ratios (Santidrián Tomillo et al. 2014, Patrício et al. 2017). Changes in ocean temperature indirectly impacts sea turtles by altering the abundance and distribution of their prey (Polovina 2005, Doney et al. 2012, Sydeman et al. 2015, Briscoe et al. 2017). Additionally, sea turtles require habitat associated with bathymetric and mesoscale features that aggregate their prey, and the persistence and location of these features are linked to variations in climate (Baez et al. 2013, Bjorndal et al. 2017, Santora et al. 2017). The IPCC (2019) stated with high confidence that climate change is likely to alter foraging success, juvenile recruitment, breeding phenology, growth rates, and population stability.

Climate change is expected to continue and may impact ESA-listed species and their habitat in the action area. The likely rate of change associated with climate impacts is on a century scale, which makes the ability to discern changes in the abundance, distribution, or behavior of listed species as a result of climate change impacts challenging in the short term.

4.4.6 Other Threats

4.4.6.1 Diseases

The most common disease among sea turtles is FP, a tumor-causing disease that occurs globally and relative to this EA, in Florida, Texas, and Puerto Rico. FP has been documented in all seven species of sea turtles, however it is most prevalent in green turtles. The disease presents itself as cauliflower-like tumors on the exterior and interior of the body and is closely associated with infection by a herpesvirus called Chelonid Herpesvirus 5. Development of the tumors is likely caused by a myriad of factors, not fully understood by researchers and veterinarians, however studies have suggested that there are links between FP and human effects on the environment, including various forms of pollution (Herbst 1994). Stranded turtles found with FP are treated at permitted rehabilitation facilities, where typically tumors are surgically removed and other treatments are provided. However, those treated in human care for the disease represent a small proportion of wild sea turtles who are infected with FP. The rate at which FP and other diseases are present in sea turtles, especially green sea turtles, is not expected to change especially as environmental conditions continue to evolve. At this time, there are still many unknowns about FP and there is no strategy to reduce or eliminate FP from sea turtle populations other than individual treatment options.

4.4.6.2 Red Tide

Harmful algae blooms (HAB) of *Karenia brevis,* commonly referred to as "red tide", are a result of an increase of toxin-producing microorganisms (algae) in the marine environment. They are known to harm or kill many marine animals, including sea turtles, and mainly occur in the Gulf of America and southeastern U.S. along the Atlantic coast. Brevetoxins, the toxin produced by red tides, primarily affect the nervous system of animals, which causes sea turtles specifically to become very weak, lethargic, unresponsible, or may exhibit other signs of abnormal neurological function. Sea turtles are exposed to these toxins through their diets as toxin levels are found to be high in marine invertebrates and seagrasses, which are significant portions of sea turtle diets. Sea turtles that are affected by red tides and are found alive may be treated by permitted sea turtle rehabilitation facilities and administered medications to help clear toxins from their bodies. Sea turtle deaths associated with red tide have been documented throughout the waters of Florida and Texas.

Human activity does not directly cause red tides, but it may prolong or intensify them due to nutrient runoff in coastal areas as the tide moves closer to shore. Satellite and water sampling information may be used to identify and track the movement of recent red tide events, however

historic patterns and severity are not well known despite extensive historical records (Blake et al., 2022). Red tides eventually become less potent and eventually disappear but there is nothing humans can do to hasten this process. As sea surface temperatures continue to rise and human populations and urban development continue to increase in coastal areas, which in return increases stormwater, wastewater, and agricultural runoff to inland and coastal aquatic systems, the presence and severity of red tide along the east coast and Gulf of America is expected to increase as well.

4.4.6.3 Cold Stunning

Sea turtles may become hypothermic (cold-stunned) as a result of prolonged exposure to cold water temperatures (below 50°F) causing debilitating lethargy that often leads to death (Griffin et al. 2019). As cold-stunned turtles become lethargic, they eventually are unable to swim causing them to float at the surface making them susceptible to winds and/or tides that may wash them ashore. Sea turtles can recover quickly from brief exposure to colder water temperatures, which is often the case in cold-stunning events in the southeastern U.S., however, as cold-stunned turtles become lethargic and float at the surface their exposure to cold air temperatures increases which may worsen their condition causing them to drown or make them more susceptible to predators and scavengers. These colder and more prolonged conditions are more often encountered in the northeastern U.S. This high level of cold exposure affects circulation, organ function, and the immune system, which can directly damage the skin, shell, and eyes and cause the individual to become more susceptible to bacterial and fungal infections.

Cold stunning events have repeatedly occurred in various places along the east coast and Gulf of America and often require intervention from humans to help individuals recover. This may include a short stay in a permitted rehabilitation facility until waters warm or transport to a warmer location is available. Cold stunning events have been well documented since the late 1800s, with a noticeable increase in stranding numbers over the past two decades due to warming waters in the north influencing turtles to move northward and delaying their southern migration, and as a result of increased beach monitoring (Montello et al. 2022). Cold stunning events cannot be prevented and are expected to continue into the future.

4.4.6.4 Predation

Predation by various land predators is a threat to developing nests and emerging hatchlings, and marine predators are a threat to sea turtles, especially in earlier life stages, once in the water. The primary natural predators of sea turtle nests are mammals, including raccoons, coyotes, wild pigs, skunks, and badgers. Emergent hatchlings are preyed upon by these mammals as well as

ghost crabs, laughing gulls, and the exotic South American fire ant (*Solenopsis invicta*). Once hatchlings reach the water, they are preyed upon by fish, such as jacks, dolphin fish, and sharks. In addition to natural predation, direct harvest of eggs and adults from beaches in foreign countries continues to be a problem for various sea turtle species in certain parts of their range (NMFS and USFWS 2008). Marine predators are also a threat to sea turtles, particularly for hatchlings and smaller life stages. Marine predators include sharks, dolphin fish or mahi mahi, jacks.

4.4.6.5 Offshore wind development

In recent years, plans for offshore wind energy within the ranges of sea turtles have emerged. Approximately 30 offshore wind energy projects have been proposed from Maine to North Carolina, and projects have already broken ground in several lease areas. In the Mid-Atlantic region, an offshore wind pilot project off of Virginia installed two turbines in 2020. Multiple call and lease areas throughout the rest of the Mid-Atlantic region are at various stages in the regulatory process. Four wind energy areas have been identified within the Gulf of America, three of which are located off the coast of Texas and the last off the coast of Louisiana. Lease sales for these areas occurred in late 2023, however the regulatory process for permitting offshore wind farms in the Gulf of America has not yet begun.

Currently, the impact of offshore wind energy on sea turtles is unknown, but likely to range from no impact to moderately adverse, depending on the number and locations of projects that occur, as well as the effects of mitigation efforts. Potential impacts may result from underwater noise, habitat alteration, and vessel traffic. Construction of offshore wind farms may continue along the east coast of the U.S. and operation of these wind farms will continue indefinitely.

4.4.7 Actions Taken to Reduce Threats

Actions have been taken to reduce human-caused impacts to sea turtles from various sources, particularly since the early 1990s. Some actions have resulted in significant steps towards reducing the recurring sources of mortality of sea turtles and improving the status of all sea turtle populations in the Atlantic and Gulf of America. For example, the TED regulations such as those published on February 21, 2003 (68 FR 8456) and September 20, 2020 (85 FR 59198), and pelagic longline regulations implementing the use of specific hook and bait types significantly reduces the impacts of trawl and longline fisheries on sea turtles (NMFS SEFSC 2009). Other actions include lighting ordinances, in situ nest protection and predation control to help increase hatchling survival, as well as measures to reduce the mortality of pelagic immature, benthic

immature, and mature age classes from various fisheries and other marine activities. The STSSN responds to sick and injured turtles as a result of disease and in-water threats to understand and minimize effects. Summaries of these actions to reduce threats to sea turtles can be found in 5-year reviews and status reviews (NMFS and USFWS 2007a, 2013a, 2013b, 2015b, 2020, 2023, Conant et al. 2009).

4.5 Conclusion and Summary of Cumulative Impacts

Cumulative effects include the effects of future state, tribal, local, or private actions that are reasonably expected to occur in the action area. Sea turtles in the action area die of various natural causes, including cold stunning, as well as human activities, such as incidental capture in state fisheries, ingestion of and/or entanglement in debris, ship strikes, and degradation of nesting habitat. Due to several factors, including decomposition, the cause of death for most sea turtles recovered by the STSSN is unknown.

The activities conducted by the STSSN provide a positive benefit to individual sea turtles by providing aid to injured, entangled, or sick turtles so that they may be released back into the environment. Mortality and serious injury are not anticipated due to the actions of the STSSN or the overarching coordination by NOAA/NMFS. Response to live stranded sea turtles has the potential to elicit short-term stresses on the individual turtle that are not likely to result in long-term effects on these individuals, populations or species. Therefore, NMFS does not expect the STSSN activities to result in more than short-term effects on individual animals. In addition, NMFS does not expect any delayed mortality of turtles following their release as a direct result of the proposed activities.

Additionally, the continued implementation of a coordinated STSSN has long-term beneficial effects for sea turtles that are rescued and rehabilitated, and returned to the environment, where they are able to reproduce. The actions are therefore not likely to appreciably reduce the numbers, distribution, or reproduction of green, hawksbill, Kemp's ridley, leatherback, loggerhead, or olive ridley sea turtles in the wild that would appreciably reduce the likelihood of survival and recovery of these species. Based on the analysis herein, impacts within the action area as a result of the proposed action are not expected to be significant. NMFS believes that the proposed action would not have a significant cumulative effect on either the physical or biological environments when combined with other past, present, and reasonably foreseeable future actions. The proposed action is directed at sea turtle recovery and would not have a

significant cumulative effect on non-target species or the physical environment in the proposed study area when combined with other past, present, and reasonably foreseeable future actions.

CHAPTER 5 LIST OF PREPARERS AND AGENCIES CONSULTED

This document was prepared by the Marine Mammal and Sea Turtle Conservation Division (F/PR2) of NMFS' Office of Protected Resources.

CHAPTER 6 REFERENCES

Ackerman, R.A. 1997. The nest environment and the embryonic development of sea turtle. The Biology of Sea Turtles, Volume I. CRC Press pp. 83-106.

Aguirre, A., G. Balazs, T. Spraker, S. K. K. Murakawa, and B. Zimmerman. 2002. Pathology of oropharyngeal fibropapillomatosis in green turtles *(Chelonia mydas)*. Journal of Aquatic Animal Health 14:298-304.

Archibald, D. W. and M. C. James. 2016. Evaluating inter-annual relative abundance of leatherback sea turtles in Atlantic Canada. Marine Ecology Progress Series 547:233-246.

Avens L., J. C. Taylor, L. R. Goshe, T. T. Jones, and M. Hastings. 2009. Use of skeletochronological analysis to estimate the age of leatherback sea turtles (*Dermochelys coriacea*) in the western North Atlantic. Endangered Species Research 8:165-177.

Avens, L., and M. L. Snover. 2013. Age and age estimation in sea turtles. In: Wyneken, J., K. J. Lohmann, and J. A. Musick (Eds.), The Biology of Sea Turtles Volume III. CRC Press Boca Raton, FL, pp. 97–133.

Avens, L., L. R. Goshe, L. Coggins, M. L. Snover, M. Pajuelo, K. A. Bjorndal, and A. B. Bolten. 2015. Age and size at maturation- and adult-stage duration for loggerhead sea turtles in the western North Atlantic. Marine Biology 162:1749-1767.

Baez J. C., D. Macias, J. A. Caminas, J. M. O. de Urbina, S. Garcia-Barcelona, J. J. Bellido, and R. Real. 2013. By-catch frequency and size differentiation in loggerhead turtles as a function of surface longline gear type in the western Mediterranean Sea. Journal of the Marine Biological Association of the United Kingdom 93:1423-1427.

Barco, S. G., M. L. Burt, R. A. DiGiovanni, Jr., W. M. Swingle, and A. S. Williard. 2018. Loggerhead turtle (*Caretta caretta*) density and abundance in Chesapeake Bay and the temperate ocean waters of the southern portion of the MidAtlantic Bight. Endangered Species Research 37:269-287.

Bass, A. L., S. P. Epperly, and J. Braun-McNeill. 2006. Green turtle (*Chelonia mydas)* foraging and nesting aggregations in the Caribbean and Atlantic: impact of currents and behavior on dispersal. Journal of Heredity 97(4):346-354.

Bjorndal, K. A. 1982. The consequences of Herbivory for the Life History Pattern of the Caribbean Green Turtle (*Chelonia mydas)*. In: Bjorndal, K.A. (Ed.), Biology and Conservation of Sea Turtles. Smithsonian Institution Press pp. 111–116.

Bjorndal, K. A. and A. B. Bolten. 2010. Hawksbill sea turtles in seagrass pastures: success in a peripheral habitat. Marine Biology 157:135-145.

Bjorndal K. A., A. B. Bolten, M. Chaloupka, V. S. Saba, C. Bellini, M. A. Marcovaldi, A. J. Santos, L. F. W. Bortolon, A. B. Meylan, and P. A. Meylan. 2017. Ecological regime shift drives declining growth rates of sea turtles throughout the West Atlantic. Global Change Biology 23:4556-4568.

Blake, S. D., M. McPherson, M. Karnauskas, S. R. Sagarese, A. Rios, A. D. Stoltz, A. Mastitski, and M. Jepson. 2022. Use of fishermen's local ecological knowledge to understand historic red tide severity patterns. Marine Policy 145, p.105253.

Bleakney, J. S. 1955. Four records of the Atlantic ridley turtle (*Lepidochelys kempii*) from NovaScotia. Copeia 2:137.

Bolten, A. B. 2003. Variation in sea turtle life history patterns: Neritic vs. oceanic developmental stages. In: Lutz, P.L. J. A. Musick, and J. Wyneken. (Eds.), The Biology of Sea Turtles, Volume II. CRC Press Boca Raton, Florida p. 455.

Bolten, A. B., L. B. Crowder, M. G. Dodd, S. L. MacPherson, J. A. Musick, B. A. Schroeder, B. E. Witherington, K. J. Long, and M. L. Snover. 2011. Quantifying multiple threats to endangered species: an example from loggerhead sea turtles. Frontiers in Ecology and the Environment 9:295-301.

Bouchard, S., K. Moran, M. Tiwari, D. Wood, A. Bolten, P. Eliazar, and K. Bjorndal. 1998. Effects of exposed pilings on sea turtle nesting activity at Melbourne Beach, Florida. Journal of Coastal Research 1343-1347.

Briscoe D. K., A. J. Hobday, A. Carlisle, K. Scales, J. P. Eveson, H. Arrizabalaga, J. N. Druon, and J. M. Fromentin. 2017. Ecological bridges and barriers in pelagic ecosystems. Deep Sea Research Part II: Topical Studies in Oceanography 140:182-192.

Ceriani, S. A., and A. B. Meylan. 2017. *Caretta caretta* (North West Atlantic subpopulation) (amended version of 2015 assessment). The IUCN Red List of Threatened Species 2017:e.T84131194A119339029.

Ceriani, S. A., P. Casale, M. Brost, E. H. Leone, and B. E. Witherington. 2019. Conservation implications of sea turtle nesting trends: elusive recovery of a globally important loggerhead population. Ecosphere 10:1-19.

Chaloupka, M. Y. and J. A. Musick. 1997. Age, growth, and population dynamics. In: Lutz, P. L and J. A. Musick (Eds). The Biology of Sea Turtles. CRC Press, Boca Raton, Florida. pp. 233--276.

Chaloupka, M.Y., K. A. Bjorndal, G. H. Balazs, A. B. Bolten, L. M. Ehrhart, C. J. Limpus, H. Suganuma, S. Troëng, and M. Yamaguchi. 2008. Encouraging outlook for recovery of a once severely exploited marine megaherbivore. Global Ecology and Biogeography 17:297–304.

Chasco, B. E., J. T. Thorson, S. S. Heppell, L. Avens, J. Braun-McNeill, A. B. Bolten, K. A. Bjorndal, and E. J. Ward. 2020. Integrated mixed-effect growth models for species with incomplete aging histories: a case study for the loggerhead sea turtle (*Caretta caretta*). Marine Ecology Progress Series 636:221-234.

Conant, T. A., P. H. Dutton, T. Eguchi, S. P. Epperly, C. C. Fahy, M. H. Godfrey, S. L. MacPherson, E. E. Possardt, B. A. Schroeder, J. A. Seminoff, M. L. Snover, C. M. Upite, and B. E. Witherington. 2009. Loggerhead sea turtle (*Caretta caretta*) 2009 status review under the U.S. Endangered Species Act. National Oceanic and Atmospheric Administration, National Marine Fisheries Service.

Crabbe, M. J. 2008. Climate change, global warming and coral reefs: modeling the effects of temperature. Computational Biology and Chemistry 32(5):311-4.

DWH Trustees (Deepwater Horizon Natural Resource Damage Assessment Trustees). 2015. Deepwater Horizon Oil Spill: Draft Programmatic Damage Assessment and Restoration Plan and Draft Programmatic Environmental Impact Statement. Retrieved from http://www.gulfspillrestoration.noaa.gov/restoration-planning/gulf-plan/.

Dickerson, D., Theriot, C., Wolters, M., Slay, C., Bargo, T. and Parks, W. 2007. Effectiveness of relocation trawling during hopper dredging for reducing incidental take of sea turtles. 2007 World Dredging Conference. Retrieved from: https://www. westerndredging. org/phocadownload/ConferencePresentations/2007_WODA_Florida/Session3C-USACE-ERDCResearchInitiatives/2-Dickerson, et al-Relocation Trawling During Hopper Dredging and Sea Turtles.pdf.

Dodd, C. K., Jr. 1988. Synopsis of the biological data on the loggerhead sea turtle (*Caretta caretta*) (Linnaeus 1758). U.S. Fish and Wildlife Service Biological Report 88(14). p. 110.

Doney S., and A. Rosenberg (Eds). AGU Fall Meeting Abstracts. 2012.

Dudley P. N., E. Bonazza, and W. P. Porter. 2016. Climate change impacts on nesting and internesting leatherback sea turtles using 3D animated computational fluid dynamics and finite volume heat transfer. Ecological Modelling 320:231-240.

Dutton, P. H., B. W. Bowen, D. W. Owens, A. Barragan, and S. K. Davis. 1999. Global phylogeography of the leatherback turtle (*Dermochelys coriacea*). Journal of Zoology 248:397-409.

Dutton, P. H., C. Hitipeuw, M. Zein, S. R. Benson, G. Petro, J. Pita, V. Rei, L. Ambio, and J. Bakarbessy. 2007. Status and genetic structure of nesting populations of leatherback turtles (*Dermochelys coriacea*) in the western Pacific. Chelonian Conservation and Biology 6:47-53.

Dwyer, K. L., C. E. Ryder, and R. Prescott. 2003. Anthropogenic mortality of leatherback turtles in Massachusetts waters. U.S. Department of Commerce, National Oceanic and Atmospheric Administration, National Marine Fisheries Service, Southeast Fisheries Science Center, NOAA Technical Memorandum NMFS-SEFSC-503, Miami, FL.

Eckert, K. L., B. P. Wallace, J. G. Frazier, S. A. Eckert, and P. C. H. Pritchard. 2012. Synopsis of the biological data on the leatherback sea turtle (*Dermochelys coriacea*). U.S. Fish and Wildlife Service, editor. Washington, D.C.: Biological Technical Publication.

Eckert, K. L., B. P. Wallace, J. R. Spotila, and B. A. Bell. 2015. Nesting, ecology, and reproduction. Spotila J. R., and P. Santidrián Tomillo (Eds). The leatherback turtle: biology and conservation. Baltimore, Maryland: Johns Hopkins University Press. p. 63.

Eguchi, T., J. A. Seminoff, R. A. LeRoux, D. Prosperi, D. L. Dutton, and P. H. Dutton. 2012. Morphology and Growth Rates of the Green Sea Turtle (*Chelonia mydas*) in a Northernmost Temperate Foraging Ground. Herpetologica 68:76–87.

Ehrhart, L. M., and R. G. Yoder. 1978. Marine turtles of Merritt Island National Wildlife Refuge, Kennedy Space Centre, Florida. Florida Marine Research Publications 33:25-30.

Finkbeiner, E. M., B. P. Wallace, J. E. Moore, R. L. Lewison, L. B. Crowder, and A. J. Read. 2011. Cumulative estimates of sea turtle bycatch and mortality in USA fisheries between 1990 and 2007. Biological Conservation 144(11):2719-2727.

Fish, M. R., I. M. Côté, J. A. Gill, A. P. Jones, S. Renshoff, and A. R. Watkinson. 2005. Predicting the impact of sea-level rise on Caribbean sea turtle nesting habitat. Conservation Biology 19(2):482-491.

Fuentes, M. M. P. B., C. J. Limpus, M. Hamann, and J. Dawson. 2010. Potential impacts of projected sea-level rise on sea turtle rookeries. Aquatic conservation: marine and freshwater ecosystems 20(2), 132-139.

Garrett, C. L. 2004. Priority substances of interest in the Georgia Basin - Profiles and background information on current toxics issues. Canadian Toxics Work Group Puget Sound, Georgia Basin International Task Force, GBAP Publication No. EC/GB/04/79.

Geraci, J. R. 1990. Physiologic and toxic effects on cetaceans. Pages 167-197 in J. R. Geraci, and D. J. St. Aubin, editors. Sea Mammals and Oil: Confronting the Risks. Academic Press, San Diego, California.

Gladys Porter Zoo. 2013. Gladys Porter Zoo's Preliminary Annual Report on the Mexico/United States of America Population Restoration Project for the Kemp's Ridley Sea Turtle (*Lepidochelys kempii)* on the Coasts of Tamaulipas, Mexico 2013.

Grant, S. C. H., and P. S. Ross. 2002. Southern resident killer whales at risk: Toxic chemicals in the British Columbia and Washington environment. Fisheries and Oceans Canada, Institute of Ocean Sciences, Canadian Technical Report of Fisheries and Aquatic Sciences 2412, Sidney, British Columbia, Canada.

Griffin, L. P., C. R. Griffin, J. T. Finn, R. L. Prescott, M. Faherty, B. M. Still, and A. J. Danylchuk. 2019. Warming seas increase cold-stunning events for Kemp's ridley sea turtles in the northwest Atlantic. PLoS One 14(1), p.e0211503.

Hart, K. M., A. R. Iverson, I. Fujisaki, M. M. Lamont, D. Bucklin, and D. J. Shaver. 2018. Marine threats overlap key foraging habitat for two imperiled sea turtle species in the Gulf of Mexico. Frontiers in Marine Science 5.

Hartwell, S. I. 2004. Distribution of DDT in sediments off the central California coast. Marine Pollution Bulletin 49(4):299-305.

Hays G. C., A. C. Broderick, F. Glen, and B. J. Godley. 2003. Climate change and sea turtles: a 150-year reconstruction of incubation temperatures at a major marine turtle rookery. Global Change Biology 9:642-646.

Herbst, L. H. 1994. Fibropapillomatosis of marine turtles. Annual Review of Fish Diseases 4:389-425.

Hildebrand, H. H. 1963. Hallazgo del area de anidacion de la tortuga marina "lora", *Lepidochelys kempii* (Garman), en la costa occidental del Golfo de Mexico (Rept., Chel.). Ciencia, Mexico 22:105-112.

Hirth, H. F. 1997. Synopsis of the biological data on the green turtle (*Chelonia mydas*) (Linnaeus 1758). Fish and Wildlife Service, Washington, D.C, Biological Report 97(1) 120 pp.

Horrocks, J. A., L. A. Vermeer, B. Krueger, M. Coyne, B. A. Schroeder, and G. H. Balazs. 2001. Migration routes and destination characteristics of post-nesting hawksbill turtles satellite-tracked from Barbados, West Indies. Chelonian Conservation and Biology 4(1):107-114.

IPCC. 2019. Summary for Policymakers. In: IPCC Special Report on the Ocean and Cryosphere in a Changing Climate. Portner HO, Roberts DC, Masson-Delmotte V, Zhai P, Tignor M, Poloczanska E, Mintenbeck K, Nicolai M, Okem A, Petzold J, et al., editors.

Iwata, H., S. Tanabe, N. Sakai, and R. Tatsukawa. 1993. Distribution of persistent organochlorines in the oceanic air and surface seawater and the role of ocean on their global transport and fate. Environmental Science & Technology 27(6):1080-1098.

Jacobson, E. R., J. L. Mansell, J. P. Sundberg, L. Hajjar, M. E. Reichmann, L. M. Ehrhart, M. Walsh, and F. Murru. 1989. Cutaneous fibropapillomas of green turtles (*Chelonia mydas*). Journal Comparative Pathology 101:39-52.

Katselidis, K. A., G. Schofield, G. Stamou, P. Dimopoulos, and J. D. Pantis. 2014. Employing sea-level rise scenarios to strategically select sea turtle nesting habitat important for long-term management at a temperate breeding area. Journal of Experimental Marine Biology and Ecology 450:47-54.

Laist, D. W., J. M. Coe, and K. J. O'Hara. 1999. Marine debris pollution. Pages 342-366 in J. R. R. R. R. Twiss Jr., editor. Conservation and Management of Marine Mammals. Smithsonian Institution Press, Washington, D.C.

Lewison, R., B. Wallace, J. Alfaro-Shigueto, J. C. Mangel, S. M. Maxwell, and E. L. Hazen. 2013. Fisheries bycatch of marine turtles: lessons learned from decades of research and conservation. The Biology of Sea Turtles, Volume III. CRC Press, Boca Raton, FL. pp. 329-351.

Limpus, C. J., and J. D. Miller. 2000. Final report for Australian hawksbill turtle population dynamics project. Queensland Parks and Wildlife Service.

Lutcavage, M. E., P. L. Lutz, G. D. Bossart, and D. M. Hudson. 1995. Physiologic and clinicopathologic effects of crude oil on loggerhead sea turtles. Archives of Environmental Contamination and Toxicology 28:417-422.

Lutcavage, M. E., P. Plotkin, B. Witherington, and P. L. Lutz. 1997. Human impacts of sea turtle survival. In P. L. Lutz, and J. A. Musick (Eds). The Biology of Sea Turtles. CRC Press, Boca Raton, Florida. pp. 387-404.

Mansfield, K., and N. F. Putman. 2013. Oceanic habits and habitats (*Caretta caretta*). Wyneken J., K. J. Lohmann, and J. A. Musick (Eds). The Biology of Sea Turtles. CRC Press, Boca Raton, Florida.

Márquez, M. R. 2001. Status and distribution of the Kemp's ridley turtle (*Lepidochelys kempii*) in the Wider Caribbean Region. Pages 46-51 in Eckert, K. L. and F. A. Abreu Grobois (editors). Proceedings of the Marine Turtle Conservation in the Wider Caribbean Region: A Dialogue.

Marshall K. N., I. C. Kaplan, E. E. Hodgson, A. Hermann, D. S. Busch, P. McElhany, T. E. Essington, C. J. Harvey, and E. A. Fulton. 2017. Risks of ocean acidification in the California Current food web and fisheries: ecosystem model projections. Global Change Biology 23:1525-1539.

Matkin, C., and E. Saulitis. 1997. Killer whale Orcinus orca. Restoration Notebook, Exxon Valdez Oil Spill Trustee Council.

McCauley, S., and K. Bjorndal. 1999. Conservation implications of dietary dilution from debris ingestion: Sublethal effects in post-hatchling loggerhead sea turtles. Conservation Biology 13(4):925-929.

Miller, J. D., K. A. Dobbs, C. J. Limpus, N. Mattocks, and A. M. Landry, Jr. 1998. Long-distance migrations by the hawksbill turtle (*Eretmochelys imbricata*) from north-eastern Australia. Wildlife Research 25(1):89-95.

Milton, S. L., and P. L. Lutz. 2003. Physiological and genetic responses to environmental stress. In: P. L. Lutz, J. A. Musick, and J. Wyneken (Eds), The Biology of Sea Turtles, Volume II. CRC Press, Boca Raton, Florida. pp. 163-197.

Milton, S., P. Lutz, G. Shigenaka, R.Z. Hoff, R.A. Yender, and A.J. Mearns. 2003. Oil and sea turtles: biology, planning and response. National Oceanic and Atmospheric Administration National Ocean Service, Office of Response and Restoration, Hazardous Materials Response Division, August 2003.

Montello, M. A., K. D. Goulder, R. P. Pisciotta, and W. J. McFarlane. 2022. Historical Trends in New York State Cold-Stunned Sea Turtle Stranding-to-Release: 1998–2019. Chelonian Conservation and Biology: Celebrating 25 Years as the World's Turtle and Tortoise Journal 21(1), pp.74-87.

Mortimer, J. A. and R. Bresson. 1999. Temporal distribution and periodicity in hawksbill turtles (*Eretmochelys imbricata*) nesting at Cousin Island, Republic of Seychelles, 1971-1997. Chelonian Conservation and Biology 3(2):318-325.

Musick, J. A., and C. J. Limpus. 1997. Habitat utilization and migration in juvenile sea turtles. In: Lutz, P. L., and J. A. Musick (Eds.), The Biology of Sea Turtles. CRC Press, Boca Raton, Florida pp. 137–163.

National Research Council. 1990. Decline of the sea turtles, Washington, D.C.: National Academy Press.

NMFS. 2011. Preliminary summer 2010 regional abundance estimate of loggerhead turtles (*Caretta caretta*) in northwestern Atlantic Ocean continental shelf waters. Northeast Fisheries Science Center, Southeast Fisheries Science Center (Eds). Center Reference Document 11-03. Woods Hole, MA: National Marine Fisheries Service, Northeast Fisheries Science Centers.

NMFS. 2022. Recovering Threatened and Endangered Species, FY 2019–2020 Report to Congress. National Marine Fisheries Service. Silver Spring, MD.

NMFS SEFSC. 2009. An assessment of loggerhead sea turtles to estimate impacts of mortality reductions on population dynamics. NMFS Southeast Fisheries Science Center.

NMFS and USFWS. 1991. Recovery Plan for U.S. Population of Atlantic Green Turtle (*Chelonia mydas*). National Marine Fisheries Service, Washington, DC.

NMFS and USFWS. 1992. Recovery Plan for the leatherback turtles *(Dermochelys coriacea*) in the U.S. Caribbean, Atlantic, and Gulf of Mexico. U.S. Department of Commerce, National Oceanic and Atmospheric Administration, National Marine Fisheries Service, Washington, D.C.

NMFS and USFWS. 1993. Recovery Plan for Hawksbill Turtles in the U.S. Caribbean Sea, Atlantic Ocean, and Gulf of Mexico. National Marine Fisheries Service, St. Petersburg, Florida.

NMFS and USFWS. 1998a. Recovery plan for U.S. Pacific populations of the leatherback turtle (*Dermochelys coriacea*). National Oceanic and Atmospheric Administration, National Marine Fisheries Service, Office of Protected Resources, Silver Spring, Maryland.

NMFS and USFWS. 1998b. Recovery plan for U. S. Pacific populations of the hawksbill turtle (*Eretmochelys imbricata*). National Marine Fisheries Service and U.S. Fish and Wildlife Service, Silver Spring, Maryland.

NMFS and USFWS. 2007a. Green Sea Turtle (*Chelonia mydas*) 5-year review: Summary and Evaluation. National Marine Fisheries Service and U.S. Fish and Wildlife Service, Silver Spring, Maryland.

NMFS and USFWS. 2007b. Loggerhead Sea Turtle (*Caretta caretta*) 5-Year Review: Summary and Evaluation. National Marine Fisheries Service and U.S. Fish and Wildlife Service, Silver Spring, Maryland.

NMFS and USFWS. 2008. Recovery Plan for the Northwest Atlantic Population of the Loggerhead Sea Turtle (*Caretta caretta*), Second Revision. National Marine Fisheries Service, Silver Spring, Maryland.

NMFS and USFWS. 2013a. Hawksbill sea turtle *(Eretmochelys imbricata*) 5-year review: Summary and evaluation. National Marine Fisheries Service and U.S. Fish and Wildlife Service, Silver Spring, Maryland.

NMFS and USFWS. 2013b. Leatherback sea turtle (*Dermochelys coriacea*) 5-year review: Summary and evaluation. National Marine Fisheries Service and U.S. Fish and Wildlife Service, Silver Spring, Maryland.

NMFS and USFWS. 2015a. Memorandum of Understanding defining the roles of the U.S. Fish and Wildlife Service and the National Marine Fisheries Service in Joint Administration of

The Endangered Species Act of 1973 as to Sea Turtles. National Marine Fisheries Service and U.S. Department of Interior, Fish and Wildlife Service, Silver Spring, MD.

NMFS and USFWS. 2015b. Kemp's ridley sea turtle (*Lepidochelys kempii*) 5-year review: Summary and evaluation. National Marine Fisheries Service and U.S. Department of the Interior, Fish and Wildlife Service, Silver Spring, MD.

NMFS and USFWS. 2020. Endangered Species Act status review of the leatherback turtle (*Dermochelys coriacea*). Report to the National Marine Fisheries Service Office of Protected Resources and U.S. Fish and Wildlife Service.

NMFS and USFWS. 2023. Loggerhead Sea Turtle (*Caretta caretta*) Northwest Atlantic Ocean DPS 5-Year Review: Summary and Evaluation. National Marine Fisheries Service and U.S. Department of the Interior, Fish and Wildlife Service, Silver Spring, MD.

NMFS, USFWS, and SEMARNAT. 2011. Bi-national Recovery Plan for the Kemp's ridley sea turtle (*Lepidochelys kempii*), second revision. National Marine Fisheries Service, Silver Spring, Maryland.

Northwest Atlantic Leatherback Working Group. 2018. Northwest Atlantic Leatherback Turtle Status Assessment. WIDECAST Technical Report No. 16.

Patrício A.R., A. Marques, C. Barbosa, A. C. Broderick, B. J. Godley, L. A. Hawkes, R. Rebelo, A. Regalla, and P. Catry. 2017. Balanced primary sex ratios and resilience to climate change in a major sea turtle population. Marine Ecology Progress Series 577:189-203.

Patino-Martinez, J., A. Marco, L. Quinones, and L. A. Hawkes. 2014. The potential future influence of sea level rise on leatherback turtle nests. Journal of Experimental Marine Biology and Ecology 461:116-123.

Pike, D. A. 2014. Forecasting the viability of sea turtle eggs in a warming world. Global Change Biology 20:7-15.

Pike, D. A., E. A. Roznik, and I. Bell. 2015. Nest inundation from sea-level rise threatens sea turtle population viability. Royal Society Open Science 2(7):150127.

Piniak, W. E. D., and K. L. Eckert. 2011. Sea turtle nesting habitat in the Wider Caribbean Region. Endangered Species Research 15(2):129-141.

Plotkin, P. 2003. Adult migrations and habitat use. In: Lutz, P. L., J. A. Musick, and J. Wyneken (Eds), Biology of Sea Turtles, Volume II. CRC Press, Boca Raton, Florida. pp 225-241.

Polovina J. J. 2005. Climate variation, regime shifts, and implications for sustainable fisheries. Bulletin of Marine Science 76:233-244.

Pritchard, P. C. H., P. Bacon, F. H. Berry, A. Carr, J. Feltemyer, R. M. Gallagher, S. Hopkins, R. Lankford, M. R. Marquez, L. H. Ogren, W. Pringle Jr., H. Reichart, and R. Witham. 1983. Manual of sea turtle research and conservation techniques, Second ed. Center for Environmental Education, Washington, D. C.

Ramirez, A., C. Kot, and D. Piatkowski. 2017. Review of sea turtle entrainment risk by trailing suction hopper dredges in the US Atlantic and Gulf of Mexico and the development of the ASTER decision support tool. US Department of the Interior, Bureau of Ocean . E., Tsaros, P., Zbinden, J. A., & Godley, B. J. 2013. Ecology of loggerhead marine turtles (*Caretta caretta)* in a neritic foraging habitat: moveEnergy Management. OCS Study BOEM 84:275.

Reece J. S., D. Passeri, L. Ehrhart, S. C. Hagen, A. Hays, C. Long, R. F. Noss, M. Bilskie, C. Sanchez, and M. V. Schwoerer. 2013. Sea level rise, land use, and climate change influence the distribution of loggerhead turtle nests at the largest USA rookery (Melbourne Beach, Florida). Marine Ecology Progress Series 493:259-274.

Richardson, J. I., R. Bell, and T. H. Richardson. 1999. Population ecology and demographic implications drawn from an 11-year study of nesting hawksbill turtles (*Eretmochelys imbricata*) at Jumby Bay, Long Island, Antigua, West Indies. Chelonian Conservation and Biology 3(2):244-250.

Santidrián Tomillo P., D. Oro, F. V. Paladino, R. Piedra, A. E. Sieg, and J. R. Spotila. 2014. High beach temperatures increased female-biased primary sex ratios but reduced output of female hatchlings in the leatherback turtle. Biological Conservation 176:71-79.

Santora J. A., E. L. Hazen, I. D. Schroeder, S. J. Bograd, K. M. Sakuma, and J C. Field. 2017. Impacts of ocean climate variability on biodiversity of pelagic forage species in an upwelling ecosystem. Marine Ecology Progress Series 580:205-220.

Santos K. C., M. Livesey, M. Fish, and A. C. Lorences. 2017. Climate change implications for the nest site selection process and subsequent hatching success of a green turtle population. Mitigation and adaptation strategies for global change 22:121-135.

Seminoff, J. A., C. D. Allen, G. H. Balazs, P. H. Dutton, T. Eguchi, H. L. Haas, S. A. Hargrove, M. P. Jensen, D. L. Klemm, A. M. Lauritsen, S. L. MacPherson, P. Opay, E. E. Possardt, S. L. Pultz, E. E. Seney, K. S. Van Houtan, and R. S. Waples. 2015. Status Review of the Green Turtle (*Chelonia mydas*) Under the U.S. Endangered Species Act. NOAA Technical Memorandum, NOAA NMFS-SWFSC-539. 571 p.

Shamblin, B. M., P. H. Dutton, K. A. Bjorndal, A. B. Bolten, E. Naro-Maciel, A. J. B. Santos, C. Bellini, C. Baptistotte, M. Â. Marcovaldi, and C. J. Nairn. 2015. Deeper mitochondrial sequencing reveals cryptic diversity and structure in Brazilian green turtle rookeries. Chelonian Conservation and Biology 14(2):167-172.

Shamblin, B. M., M. G. Dodd, D. B. Griffin, S. M. Pate, M. H. Godfrey, M. S. Coyne, K. L. Williams, J. B. Pfaller, B. L. Ondich, K. M. Andrews, et al. 2017. Improved female abundance and reproductive parameter estimates through subpopulation-scale genetic capture-recapture of loggerhead turtles. Marine Biology 164.

Shamblin, B. M., M. G. Dodd, S. M. Pate, M. H. Godfrey, J. B. Pfaller, K. L. Williams, B. L. Ondich, D. A. Steen, E. S. Darrow, and P. Hillbrand. 2021. In search of the "missing majority" of nesting loggerhead turtles: improved inter-seasonal recapture rates through subpopulation-scale genetic tagging. Marine Biology 168:1-14.

Shigenaka G., R. Z. Hoff, R. A. Yender, and A. J. Mearns. 2010. Oil and sea turtles: biology, planning and response. National Oceanic and Atmospheric Administration National Ocean Service, Office of Response and Restoration.

Shoop, C. R., and R. D. Kenney. 1992. Seasonal distributions and abundances of loggerhead and leatherback sea turtles in waters of the northeastern United States. Herpetological Monographs 6:43–67.

Spotila, J. R., A. E. Dunham, A. J. Leslie, A. C. Steyermark, P. T. Plotkin, and F. V. Paladino. 1996. Worldwide population decline of *Dermochelys coriacea*: are leatherback turtles going extinct? Chelonian Conservation and Biology 2: 209-222.

Sydeman W. J., E. Poloczanska, T. E. Reed, and S. A. Thompson. 2015. Climate change and marine vertebrates. Science 350:772-777.

USFWS. 2019. U.S. Fish and Wildlife Service's Standard Conditions for Care and Maintenance of Captive Sea Turtles. https://www.fws.gov/sites/default/files/documents/seaturtle-standardconditions-for-care-2019.pdf

Van Vleet, E. S., and G. G. Pauly. 1987. Characterization of oil residues scraped from stranded sea turtles from the Gulf of Mexico. Caribbean Journal of Science 23:73-83.

Wallace, B. P., C. Y. Kot, A. D. DiMatteo, T. Lee, L. B. Crowder, and R. L. Lewison. 2013. Impacts of fisheries bycatch on marine turtle populations worldwide: toward conservation and research priorities. Eosphere 4(30):40.

Watson, J. W., D. G. Foster, S. Epperly, and A. Shah. 2004. Experiments in the western Atlantic Northeast Distant Waters to evaluate sea turtle mitigation measures in the pelagic longline fishery. Report on experiments conducted in 2001-2003. February 4, 2004.

Wilkinson, C. 2004. Status of Coral Reefs of the World: 2004. Australian Institute of Marine Science, ISSN 1447-6185.

Winton, M. V., G. Fay, H. L. Haas, M. Arendt, S. Barco, M. C. James, C. Sasso, and R. Smolowitz. 2018. Estimating the distribution and relative density of satellite-tagged loggerhead sea turtles using geostatistical mixed effects models. Marine Ecology Progress Series 586:217-232.

Witherington, B. E., and L. M. Ehrhart. 1989. Hypothermic stunning and mortality of marine turtles in the Indian River Lagoon System, Florida. Copeia 1989(3):696-703.

Witherington, B. E., and K. A. Bjorndal. 1991. Influences of artificial lighting on the seaward orientation of hatchling loggerhead turtles (*Caretta caretta)*. Biological Conservation 55(2):139-149.

Witherington, B. E. 1992. Behavioral responses of nesting sea turtles to artificial lighting. Herpetologica 48(1):31-39.

Witherington, B. E. 1994. Flotasm, jetsam, post-hatchling loggerheads, and the advecting surface smorgasbord. In: Proceedings of the 14th Annual Symposium of Sea Turtle Biology and Conservation, pp. 166-168, K.A. Bjorndal, A.B. Bolten, D.A. Johnson, and P.J. Eliazar (Eds). NOAA Technical Memorandum NMFS-SEFSC-351.

Witherington, B. E. 2002. Ecology of neonate loggerhead turtles inhabiting lines of downwelling near a Gulf Stream front. Marine Biology 140(4):843-853.

Witherington, B. E., S. Hirama, and A. Moiser. 2003. Effects of beach armoring structures on marine turtle nesting: Final project report. Florida Fish and Wildlife Conservation Commission.

Witherington, B. E., S. Hirama, and A. Moiser. 2007. Changes to armoring and other barriers to sea turtle nesting following severe hurricanes striking Florida beaches: Final project report. Florida Fish and Wildlife Conservation Commission, Melbourne Beach, FL.

Witherington, B., B. Schroeder, S. Hirama, B. Stacy, M. Bresette, J. Gorham, and R. DiGiovanni. 2012. Efforts to rescue oiled turtles at sea during the BP Deepwater Horizon blowout event, April-September 2010. Pages 21-22 in Jones, T.T. and B.P. Wallace (compilers) Proceedings of the Thirty-First Annual Symposium on Sea Turtle Biology and Conservation. NOAA Technical Memorandum NMFS-SEFSC-631.

Witzell, W. N. 1983. Synopsis of biological data on the hawksbill turtle (*Eretmochelys imbricata*) (Linnaeus, 1766). FAO Fisheries Synopsis No. 137. 78 pp.

APPENDIX A. HANDBOOK: Sea Turtle Stranding and Salvage Network Operating Procedures Handbook (April 2025)

Sea Turtle Stranding and Salvage Network Operating Procedures Handbook

Marine Mammal and Sea Turtle Conservation Division
Office of Protected Resources
National Marine Fisheries Service
National Oceanic and Atmospheric Administration

Final; April 28, 2025

Commonly Used Acronyms

DWH	Deepwater Horizon (oil spill)
EPA	Environmental Protection Agency
ESA	Endangered Species Act
FOIA	Freedom of Information Act
FOSC	Federal On-Scene Coordinator
GAR	Greater Atlantic Region
GARFO	Greater Atlantic Regional Fisheries Office
GOA	Gulf of America
MOU	Memorandum of Understanding
NEFSC	Northeast Fisheries Science Center
NEPA	National Environmental Policy Act
NGO	Non-Governmental Organization
NGOA	Northern Gulf of America
NMFS	National Marine Fisheries Service
NOAA	National Oceanic and Atmospheric Administration
NRDA	Natural Resource Damage Assessment
OPR	Office of Protected Resources
PRA	Paperwork Reduction Act
SEFSC	Southeast Fisheries Science Center
SERO	Southeast Regional Office
STSSN	Sea Turtle Stranding and Salvage Network
USFWS	U.S. Fish and Wildlife Service

Key Terms and Definitions

Cold stunning: Phenomenon caused by cold weather events that cause water temperatures to fall near or below 50 °F/ 10 °C, resulting in hypothermia and potentially death of sea turtles within the affected area. Most commonly applied to mass stranding events involving tens to thousands of sea turtles in specific water bodies with historically documented occurrences.

Host Agency: A state or federal natural resource agency with an established sea turtle conservation program, that employs the State STSSN Coordinator for a given state.

Incidental capture: Unintentional capture or killing of a sea turtle during the course of an otherwise lawful activity, such as fishing (commercial and recreational), dredging, and operation of power plants. Incidental capture in commercial and recreational fisheries is referred to as bycatch.

Necropsy: Postmortem examination of an animal for the purposes of determining the cause of death or morbidity, making observations related to health or life history, and collection of data or biological samples.

OPR STSSN Coordination Team: A team of OPR staff who jointly coordinate the STSSN. The team is composed of the NMFS Sea Turtle Coordinator, Veterinary Medical Officer, and STSSN Database Coordinator.

Regional Coordinator: A NOAA employee who provides oversight over the STSSN in a particular region, when the regional network structure consists of State Liaisons instead of State Coordinators. The Greater Atlantic Region has a Regional Coordinator.

State Coordinator: A state or federal natural resource agency employee who has accepted the responsibility of coordinating the STSSN in a given state, per Section 3 of this document.

State Liaison: An employee of a state or private STSSN organization who serves as the coordinator of their organization's stranding program and has been selected by the Regional Coordinator to serve as a point of contact for stranding response in their state.

Stranding: A sea turtle that is found on shore or floating that is either dead or is alive but ill, injured, entangled/entrapped or otherwise impaired in a manner that limits or prevents normal behavior and movement.

STSSN Partners: Any agency, organization or individual who is permitted and participates in the STSSN.

Unusual Stranding/Mortality Events: Multiple sea turtle strandings within a defined area and time that exhibit any of the following characteristics: marked increase in the magnitude or a marked change in the nature of morbidity or mortality (including species, life stage, and sex); a marked change in temporal or spatial distribution; strandings exhibiting similar or unusual pathologic findings, behavior patterns, clinical signs, or general physical condition. Events that primarily include live sea turtles may be considered unusual stranding events whereas those represented by mostly deceased animals are referred to as mortality events.

Table of Contents

1. Introduction and Background

1.1 Document Purpose

The National Oceanic and Atmospheric Administration (NOAA) National Marine Fisheries Service (NMFS) Office of Protected Resources (OPR) leads the administration and coordination of the Sea Turtle Stranding and Salvage Network (STSSN). The STSSN currently responds to and documents stranded[1] sea turtles in coastal areas under U.S. jurisdiction along the Atlantic Ocean, Gulf of America (GOA, formerly Gulf of Mexico), and the U.S. Caribbean territorial sea.

The purpose of this document is to:

1) Provide the background and history of the STSSN,

2) Outline the roles and responsibilities of NMFS, USFWS, STSSN coordinators, liaisons, and participants, and

3) Consolidate current STSSN operating procedures into one reference document to ensure program-wide consistency.

Although the STSSN has been in operation for several decades, the Coordination role formally shifted to OPR in January 2022. This transition prompted an evaluation of STSSN operations, development of this Operating Procedures Handbook, review of the program under the National Environmental Policy Act (NEPA), and completion of Paperwork Reduction Act (PRA) requirements for all STSSN-related forms.

1.2 Federal Jurisdiction Regarding the STSSN

All species of sea turtles found in U.S. waters are listed as endangered or threatened under the Endangered Species Act (ESA). NMFS and the U.S. Fish and Wildlife Service (USFWS) share federal jurisdiction for the conservation and recovery of sea turtles. Section 4(f) of the ESA (16 U.S.C. 1533(f)) provides for the creation of Recovery Plans for endangered and threatened species and provides NMFS and USFWS with authority "to procure the services of appropriate public and private agencies and institutions and other qualified persons" in order to implement those plans. To advance the conservation and recovery of listed sea turtles, each sea turtle Recovery Plan[2] developed jointly by NMFS and USFWS identifies and highlights the need to

[1] **Stranded Definition:** A sea turtle, in the marine environment, that is alive but sick, injured, or entangled. 50 CFR 222.310(a). For the purposes of this document, we consider a turtle stranded when found dead or alive but sick, injured, or entangled. In many places in this document we simply use the term stranded with the intention of capturing both dead and live stranded turtles.

[2] Sea Turtle Recovery Plans are available through the following link. At this link, click on "Read our Recovery Plans": https://www.fisheries.noaa.gov/national/endangered-species-conservation/recovery-species-under-endangered-species-act

maintain an active stranding network. The STSSN is a cooperative effort of federal, state, and permitted private partners working to inform causes of morbidity and mortality in sea turtles by responding to and documenting stranded sea turtles in a manner sufficient to inform conservation management and recovery.

In accordance with the 2015 Memorandum of Understanding (MOU) between NMFS and USFWS (Appendix A), NMFS has lead responsibility for sea turtles when in the marine environment and USFWS has lead responsibility when in the terrestrial environment (NMFS and USFWS 2015b[3]). Sea turtle stranding response and rehabilitation have traditionally operated with a shared jurisdictional responsibility between the two agencies. The MOU establishes NMFS as the lead for, and coordinator of, the STSSN to attend to stranded turtles in the marine environment or when washed ashore from the marine environment. Coordination by NMFS of the STSSN may include coordinating the placement of stranded turtles at approved rehabilitation facilities. USFWS authorizes stranding response and rehabilitation, and within its capacity, USFWS shall assist the STSSN, including within the National Wildlife Refuge system. NMFS shall share STSSN information with USFWS to promote the recovery and conservation of sea turtles. USFWS shall serve as the lead for and coordinator of authorized facilities holding sea turtles for rehabilitation or captive display. USFWS shall share information with NMFS on captive sea turtles and coordinate with NMFS on guidelines and standards for such facilities.

1.3 STSSN Authorities

1.3.1 Statutory and Regulatory Authority

As mentioned above, all sea turtle species found in U.S. waters are listed as endangered or threatened under the ESA (16 U.S.C. 1533(f)), and Federal jurisdiction is shared between NMFS and USFWS. Both NMFS and USFWS have promulgated regulations that provide an exception to the prohibitions on sea turtle take and allow for response to stranded sea turtles in water and on land, based on their specific jurisdictional responsibility.

In 2005, NMFS published a final rule under 50 CFR Part 222.310: "Sea Turtle Conservation; Exceptions to Taking Prohibitions for Endangered Sea Turtles." This rule is a programmatic permit by regulation pursuant to ESA section 10(a)(1)(A) to authorize any agent or employee of NMFS, USFWS, the United States Coast Guard (USCG), or any other federal land or water management agency, or any agent or employee of a state agency responsible for fish and wildlife who is designated by his or her agency for such purposes, when acting in the course of his or her official duties, to take *endangered* sea turtles if such taking is necessary to aid a sick, injured,

[3] 2015 Memorandum of Understanding between NMFS and USFWS can be downloaded at: https://www.fisheries.noaa.gov/resource/document/noaa-fisheries-and-us-fws-memorandum-understanding-sea-turtles

entangled or stranded endangered sea turtle or dispose of such specimen or salvage such specimen which may be useful for scientific and educational purposes.

Additionally, 50 CFR Part 223.206(b) provides an exception to the prohibitions on take of threatened sea turtles. The regulation states that: "If any member of any *threatened* species of sea turtle is found injured, dead, or stranded, any agent or employee of the NMFS, USFWS, the USCG, or any other federal land or water management agency, or any agent or employee of a state agency responsible for fish and wildlife who is designated by his or her agency for such purposes, may, when acting in the course of his or her official duties, take such specimens without a permit if such taking is necessary to aid a sick, injured, or stranded specimen or dispose of a dead specimen or salvage a dead specimen which may be useful for scientific study." The USFWS has codified regulations similar to NMFS. Specifically, sections 17.21(c)(3) and 17.31(b) provide exceptions to the prohibition on take of endangered and threatened species, including sea turtles identified in 17.42(b)). The USFWS regulations allow USFWS and NMFS personnel to respond to strandings on land, including aiding incidentally caught sea turtles at piers.

On July 27, 2016, NMFS OPR's Endangered Species Act Interagency Cooperation Division issued a biological opinion under the authority of section 7(a)(2) of the ESA regarding the effects of NMFS Permit by Regulation, 50 CFR Part 222.310: "Sea Turtle Conservation; Exceptions to Taking Prohibitions for Endangered Sea Turtles," which authorizes response to stranded *endangered* sea turtles in the marine environment. In this opinion, NMFS concludes that the operation of the STSSN, including actions to aid stranded turtles, and salvage and dispose of dead carcasses, is not likely to jeopardize the continued existence or recovery of green, hawksbill, Kemp's ridley, leatherback, loggerhead, or olive ridley sea turtles and is not likely to destroy or adversely modify designated critical habitat.

1.3.2 Permitting for Stranding Response and Rehabilitation

Every organization that conducts response and/or rehabilitation activities as part of the STSSN must be authorized under the ESA. USFWS is responsible for permitting rehabilitation and captive holding facilities, and issues authorizations for response organizations. Additionally, in some cases, USFWS delegates their permitting authority to the states, through ESA Section 6 delegations of authority.

History of the STSSN

The multi-state STSSN, operating in the Gulf of America and along the U.S. Atlantic coast (and later U.S. Caribbean Territories), was established in the early 1980s, with the coordinating role assumed by NMFS Southeast Fisheries Science Center (SEFSC), Miami Laboratory. Prior to NMFS SEFSC taking on the coordination role, some southeastern states collected and maintained sea turtle stranding data for their state and the University of Miami Rosenstiel School

of Marine and Atmospheric Science served as an early central repository for some of those data until NMFS SEFSC took on that role. Today, the states along the Atlantic and Gulf coasts, Puerto Rico, and the U.S. Virgin Islands comprise the STSSN.

NMFS SEFSC played an important role in formalizing the multi-state STSSN, maintaining a sea turtle stranding database, and providing STSSN summary data when requested. In the early 2000s, OPR began providing overarching support to the STSSN, then in 2012 established a Veterinary Medical Officer position within its National Sea Turtle Program. After the Deepwater Horizon (DWH) oil spill in 2010, which caused catastrophic impacts to sea turtles in the Gulf of America, OPR staff designed and are currently implementing the Deepwater Horizon Sea Turtle Early Restoration Project, which includes enhancements to the STSSN across the Gulf of America. On January 1, 2022, the responsibility for administering and coordinating the STSSN was transferred to OPR from SEFSC as the program aligns with OPR's national coordination role for protected resources at NMFS. OPR's longer-range goals for the STSSN include integrating the existing west coast and Hawaii sea turtle stranding networks into the STSSN.

1.4 STSSN Purpose and Mission Statement

The STSSN is a cooperative effort to monitor and inform causes of morbidity and mortality in sea turtles by responding to and documenting stranded sea turtles in a manner sufficient to inform conservation management and recovery. The STSSN accomplishes this through:

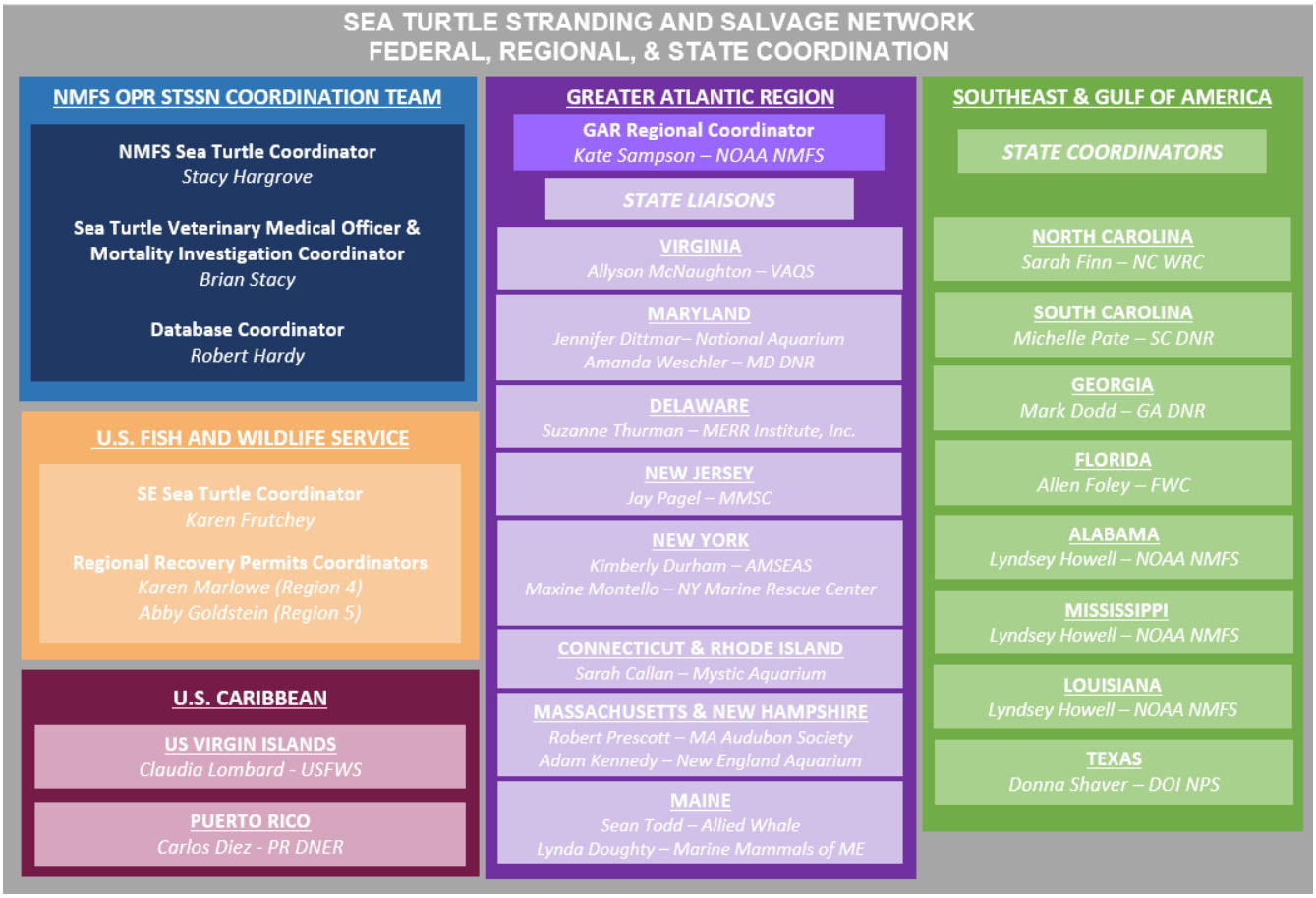
(1) Collection of data in accordance with STSSN protocols;
(2) Monitoring of stranding trends;
(3) Provision of initial aid to live stranded sea turtles;
(4) Provision of sea turtle samples/parts for conservation-relevant research; and
(5) Availability of timely data for conservation management purposes.

1.5 STSSN Operations and Coordination

NMFS OPR established the STSSN Coordination Team in 2022, to implement the STSSN program. The STSSN Coordination Team oversees STSSN efforts throughout the STSSN operating area, defined as the coastal areas throughout the Gulf of America, U.S. Atlantic coast, and U.S. Caribbean waters, and maintains and manages the STSSN database. Leadership of the regional and state networks varies by region, and is described in more detail below. Figure 1 shows the full scope of STSSN partners, including Federal, regional, and state or territory roles, and the individuals holding each role as of publication of this document. Data queries and additional stranding-related information are available at the Sea Turtle Stranding and Salvage

Network Data Summary and Visualization Application[4], which currently (as of the publication of this document) allows access to at least 10-years of data maintained in the STSSN database.

Figure 1: STSSN Federal, Regional, and State Coordination[5]



1.5.1 Southeast Region (Texas through North Carolina)

Each of the southeastern states have STSSN Coordinators who manage the day-to-day operations of the STSSN in their respective states. The current State Coordinator affiliations are either state

[4] The Sea Turtle Stranding and Salvage Network Data Summary and Visualization Application is available for public data queries here: https://connect.fisheries.noaa.gov/stssnDataSummary/

[5] Organization acronyms found in Figure 1**:** Atlantic Marine Conservation Society (AMSEAS), Florida Fish and Wildlife Conservation Commission (FWC), Georgia Department of Natural Resources (GA DNR), Maryland Department of Natural Resources (MD DNR), Marine Mammal Stranding Center (MMSC), National Marine Fisheries Service (NMFS), National Oceanic and Atmospheric Administration (NOAA), National Park Service (NPS), North Carolina Wildlife Resources Commission (NC WRC), Office of Protected Resources (OPR), Puerto Rico Department of Natural and Environmental Resources (PR DNER), United States Fish and Wildlife Service (USFWS), Virginia Aquarium & Marine Science Center (VAQS)

wildlife agency staff or federal agency staff (National Park Service or NMFS). Duties and responsibilities of State Coordinators are detailed in Section 1.9.2 of this document.

In the Southeast Region (SER), the STSSN is often divided into two sub-regions, the Gulf of America (GOA), including Texas through the Florida west coast, and the Southeast Atlantic (SE), including the Florida east coast through North Carolina. The GOA and SE STSSN both document high numbers of strandings each year, and routinely respond to strandings, incidental captures, and cold stuns, or aperiodic mass strandings caused by cold weather events. The incidental capture data within the STSSN database are primarily turtles captured by hook and line at recreational fishing piers and do not include many other incidental captures, such as those recorded by commercial fisheries observer programs.

1.5.2 Greater Atlantic Region (Maine through Virginia)

The Greater Atlantic Region (GAR) STSSN is led by the GAR Regional Stranding Coordinator, who also serves as the lead for the Sea Turtle Disentanglement Network. The Sea Turtle Disentanglement Network operates in the GAR states and focuses mainly on response to sea turtles that are entangled by line associated with commercial pot/trap gear and gillnets.

STSSN State Liaisons are established in each of the northeastern states, working under the direction of the GAR Stranding Coordinator. Each state has one or more State Liaisons who manage the day-to-day operations of the STSSN program for their organization, within their specific response area. The current State Liaisons are primarily affiliated with non-governmental organizations and facilities, but one liaison is a state wildlife agency representative. Duties and responsibilities of State Liaisons are detailed in Section 1.9.2 of this document.

The GAR STSSN routinely responds to and documents strandings, incidental captures, and cold stun events. The incidental capture data within the STSSN database for GAR are primarily leatherback turtles captured by vertical lines in pot/trap gear or by hook and line of recreational fisheries. Cold-stunning events in the GAR result in hundreds to more than a thousand turtles stranding in Massachusetts, New York, and other GAR states annually.

1.6.3 U.S. Caribbean (U.S. Virgin Islands and Puerto Rico)

In the U.S. Caribbean, the STSSN is led by the USFWS in the U.S. Virgin Islands, and in Puerto Rico by the Department of Natural and Environmental Resources. The U.S. Caribbean STSSN involves a network of volunteers and organizations. Stranding data have historically been maintained locally in USVI and Puerto Rico, however, Caribbean State Coordinators and partners are beginning to enter data into the STSSN Database.

Duties and responsibilities of State Coordinators are detailed in Section 1.9.2 of this document.

1.6 Requirements and Process to Join the Sea Turtle Stranding and Salvage Network

The STSSN is a network of federal and state agencies, non-governmental entities, and individual volunteers authorized to respond to and document sea turtles found dead, debilitated, or otherwise in need of assistance in coastal areas under U.S. jurisdiction along the Atlantic Ocean, Gulf of America, and the U.S. Caribbean territorial sea. NMFS coordinates the Network. The stranding networks in Maine through Virginia are managed by a NMFS Regional Coordinator, who is located in the NMFS Greater Atlantic Regional Fisheries Office (GARFO). Federal, state, or territory marine resource agency staff serve as State Coordinators in North Carolina through Texas, and in the U.S. Caribbean. Entities seeking to participate in sea turtle stranding response and/or rehabilitation should contact the appropriate regional or state coordinator to discuss their interest in participating in the STSSN.

The NMFS Regional Coordinator and/or the relevant State Coordinators work with USFWS to determine if there is a geographic, temporal, or capacity need for stranding response or rehabilitation in a specified area. When a need is identified and the interested entity meets state and/or federal requirements to conduct stranding response and/or rehabilitation activities, USFWS and/or the state natural resource agency will provide the necessary authorizations/permits. Authorized stranding responders and rehabilitation facilities must comply with all requirements specified in their federal and/or state authorizations. Additionally, sea turtle rehabilitation facilities must comply with the USFWS Standard Conditions for Care and Maintenance of Captive Sea Turtles.

1.7 STSSN Support

The cost of stranding response operations and rehabilitation is the responsibility of the participating institutions using their own operating budgets, which may include funds received from Federal or non-federal grants, donations, etc. Some states have been awarded competitive NMFS ESA Section 6 Species Recovery Grants[6] to support their STSSN programs in the past. Pending availability of funds, NMFS sea turtle programs may provide some financial support for STSSN operations, specific stranding events (e.g., cold-stun events), or other STSSN priorities.

OPR and GARFO currently fund positions that support the STSSN. GARFO has one full time employee who serves as the GAR Regional Coordinator for the STSSN and the Sea Turtle Disentanglement Network. OPR funds (either through appropriated funding or other sources, such as Deepwater Horizon Oil Spill Sea Turtle Restoration Funds) the STSSN Coordination Team, composed of the National Sea Turtle Coordinator, National Veterinary Medical Officer,

[6] More information on Section 6 Species Recovery Grants can be found on the NMFS website, at: https://www.fisheries.noaa.gov/grant/species-recovery-grants-states

and STSSN Database Coordinator, as well as the State Coordinator role for Louisiana, Mississippi, and Alabama. Two OPR positions are funded through the Deepwater Horizon Natural Resource Damage Assessment (DWH NRDA) Restoration Program, as OPR is currently implementing a large-scale project that supports Gulf of America-wide coordination of the STSSN and database development for at least 10-years (2017-2026).

SEFSC supported several STSSN positions through 2021. Currently, staff at some SEFSC labs and Northeast Fisheries Science Center (NEFSC) labs respond to strandings opportunistically in their local area, as part of the STSSN in their state. The NMFS Southeast Regional Office (SERO) does not regularly participate in the STSSN, but they do provide funding support to the Southeast state coordinating agencies, as funds are available.

In Federal Fiscal Years 2023 and 2024, approximately $500,000 of funding was appropriated to NOAA each year to support organizations involved in stranding response and rehabilitation. The funds were distributed as competitive grants issued by the National Fish and Wildlife Foundation's Sea Turtle Program. Grants supported organizations nation-wide to increase capacity for response and rehabilitation of sea turtles. Future funding for this purpose is uncertain.

1.9 STSSN Roles and Responsibilities

The STSSN is a cooperative network of Federal, State, and local partners. The following sections define the explicit roles that together comprise the coordination of the STSSN.

1.9.1 National Coordination

1) NMFS Sea Turtle Coordinator

NMFS Sea Turtle Coordinator responsibilities:

- Coordinate with USFWS on issues of joint jurisdiction, interagency coordination, and permits.
- Facilitate national-level discussions within NMFS and with partners on issues related to the STSSN.
- Guide STSSN enhancements and program direction to ensure data collection efforts (and data collected) are meeting conservation and recovery needs.
- Identify/seek/provide funding for priority STSSN activities.
- Communicate regularly with State Coordinators and partners to ensure effective STSSN implementation.

2) OPR STSSN Coordination Team

NMFS OPR STSSN Coordination Team responsibilities:

- Provide protocols, including data collection methods, to ensure consistent data collection and reporting efforts throughout the STSSN.
- Regularly evaluate STSSN data access and summary needs for conservation management activities.
- Facilitate/coordinate response to mass/unusual stranding events.
- Assist the State Coordinators, Regional Coordinator, State Liaisons, and STSSN members, as needed.
- Communicate regularly with State Coordinators and partners to ensure effective STSSN implementation.
- Provide training resources.
- Monitor strandings for unusual events/occurrences and alert/coordinate with relevant entities.

3) *NMFS STSSN Database Coordinator*

NMFS STSSN Database Coordinator responsibilities:

- Manage the NMFS STSSN Database and maintain user accounts for state data entry.
- Provide technical support to STSSN partners related to STSSN data management.
- Maintain technical documentation, instructional guidance, and training materials related to STSSN data management to ensure consistency in stranding documentation practices.
- Enter additional stranding data, not entered by states, into the STSSN Database.
- Respond to internal and external data requests in a timely manner and refer requests to the states as appropriate.
- Provide real-time updates and summaries across the STSSN.
- Develop and maintain stranding data access and summary tools that are useful for conservation management needs and for the public.
- Monitor strandings for unusual events/occurrences and alert/coordinate with relevant entities.
- Monitor data validation process and ensure historic data are compatible with the new system.

4) NMFS Sea Turtle Veterinary Medical Officer and Mortality Investigation Coordinator

NMFS Veterinary Medical Officer responsibilities:

- Facilitate/coordinate collection of clinical and necropsy data/samples necessary to identify causes of strandings.

- Provide stranding response and necropsy instruction and training to STSSN members, as needed.
- Provide veterinary assistance to USFWS and other agencies/partners for any needs related to live stranded sea turtles, including animal welfare concerns and compliance with permit conditions to ensure effective investigation of any unusual or mass stranding/mortality events through direct involvement, coordination of participating individuals/groups, and/or documentation/reporting of findings.
- Ensure data collection efforts are appropriate to inform mortality and morbidity investigations.
- Provide overarching STSSN guidance on how to investigate mortality events.
- Communicate regularly with State Coordinators and partners to ensure effective STSSN implementation.
- Ensure all relevant new information is incorporated into STSSN mortality investigations.
- Monitor for unusual events in real time and conduct outreach as near real time as possible to ensure data are not lost and ensure monitoring is increased if necessary.

5) NMFS Greater Atlantic Region Stranding Coordinator

NMFS GAR Stranding Coordinator responsibilities:

- Facilitate communication within GAR STSSN, and between response and rehabilitation organizations, USFWS, and NMFS, including organizing regular GAR STSSN meetings.
- Provide protocols and training (as needed) for stranding response and disentanglement.
- Assist with logistics during stranding events as needed, including organizing transports, working with municipal, state, and government partners, and responding to media.
- Identify/seek/provide funding to support the GAR STSSN.
- Complete data entry and data validation.
- Assist with analyses/interpretation of data and provide expertise to ensure proper data context.
- Respond to data requests for the GAR.
- Investigate unusual stranding trends, including engaging the NMFS Veterinary Medical Officer and investigating human activities in the area.
- Provide the OPR STSSN Coordination Team with timely notification of unusual or mass-stranding events.
- Coordinate rehabilitation activities, including inspecting new facilities, receiving euthanasia notifications, working with facilities to find appropriate release locations, and finding placement for turtles.
- Work with USFWS regarding permitting for telemetry, rehabilitation, and other topics.

6) U.S. Fish and Wildlife Service

USFWS serves as the Federal authorizing agency for STSSN response and is the lead agency for sea turtle rehabilitation. USFWS coordinates closely with STSSN Regional and State Coordinators for transport and release of live stranded sea turtles. USFWS responsibilities:

- Coordinate with NMFS on issues of joint jurisdiction and interagency coordination.
- Provide and ensure compliance with Standard Conditions (including transport, rehabilitation, and release conditions) for the Care and Maintenance of Captive Sea Turtles for permitted rehabilitation facilities.
- Assist in response to mass/unusual stranding events, as needed.
- Engage in regular communication with STSSN State Coordinators, State Liaisons and OPR STSSN Coordination Team on permitting and rehabilitation topics.
- Coordinate with the OPR STSSN Coordination Team, GARFO Regional Coordinator, STSSN State Coordinators, and State Liaisons on the location and timing of turtle release, as needed.
- Coordinate and ensure compliance related to the possession, handling, and disposition of sea turtle samples transferred for research, education, or tribal purposes.
- Permit the import and repatriation of some sea turtles that strand outside of the U.S. and coordinate with the OPR STSSN Coordination Team, GARFO Regional Coordinator,and State Coordinators as appropriate, on release locations.

1.9.2 State STSSN Coordination

1) State Coordinator (SER and U.S. Caribbean Territories)

In the SER states (North Carolina through Texas) and in the U.S. Caribbean Territories, the STSSN is coordinated by a state or federal natural resource agency employee within an established state or federal sea turtle conservation program. The role of STSSN State Coordinator includes the following responsibilities:

- Oversee and actively coordinate a state network of permitted individuals and organizations that participate as members of the STSSN.
- Facilitate a response to all reports of stranded sea turtles in their state unless logistically unfeasible or prohibited by weather or other safety and cultural considerations.
- Organize/provide training to STSSN responders to ensure adherence to STSSN protocols.
- Establish and maintain a reporting protocol, including the preferred methods of contact for their state responders.
- Ensure stranding data (electronic submission of the STSSN form), and photos are entered/uploaded into the NOAA STSSN Database weekly (i.e., within 7 days of the stranding event).

- Ensure stranding records are verified in the NOAA STSSN database in a timely manner and minimally, on a monthly basis.
- Immediately notify the OPR STSSN Coordination Team regarding unusual or mass-stranding events.
- Participate in scheduled conference calls, meetings, and/or training events and engage in regular communication with the OPR STSSN Coordination Team to ensure effective STSSN implementation.
- Assist with analyses/interpretation of data and provide expertise to ensure proper data context.
- Provide STSSN data in response to data requests in a timely manner.
- Coordinate with the USFWS on rehabilitation and release.

2) State Liaisons (GAR states)

In the GAR states (Maine through Virginia), stranding response is coordinated by the NMFS GAR Regional Stranding Coordinator and conducted by organizations and facilities that specialize in the care of sick or injured wildlife (e.g., aquariums, state resource agencies, wildlife organizations). Some states may have multiple Liaisons. The State Liaison's role includes the following responsibilities:

- Facilitate a response to reports of stranded sea turtles in their state unless logistically unfeasible or prohibited by weather or other safety or cultural considerations.
- Organize/provide training to STSSN responders under their organization's authority to ensure adherence to STSSN protocols.
- Establish and maintain a reporting protocol, including the preferred methods of contact for their state responders.
- Enter all basic stranding data and upload photos into the NOAA STSSN Database weekly (i.e., within 7 days of the stranding event).
- Provide real-time notification/alert to GAR Stranding Coordinator regarding unusual or mass stranding events.
- Participate in scheduled conference calls, meetings, and/or training events and engage in regular communication with OPR STSSN Coordination Team to ensure effective STSSN implementation.
- Assist with analyses/interpretation of data and provide expertise to ensure proper data context.

Stranding Responders

Stranding responders include federal and state resource agency staff, those affiliated with non-governmental organizations and private entities, and members of the public that have fulfilled and maintain STSSN training requirements and are authorized to conduct stranding response

activities by the relevant permit authority for their state. The Stranding Responder's role includes the following responsibilities:

- Document all strandings in accordance with standard STSSN procedures, including the STSSN reporting form and digital photographs.
- Report all basic stranding information (date, species, lat/long, condition, injuries) to the State Coordinator, or directly into the database, within 48 hours of the stranding event, as feasible.
- Provide real-time notification/alert to State Coordinator regarding unusual or mass stranding events.
- Regularly communicate with State Coordinator and participate in scheduled training events and/or call or meetings to ensure effective STSSN implementation.
- Maintain STSSN training requirements, as required by the State Coordinator
- Collect samples and salvage carcasses if requested and permitted.
- Assist with transport of live and dead animals, if requested and feasible.

2. STSSN Contact Information

2.1 NOAA STSSN Staff

Name	Role	Contact Information	Topic Area Expertise
STSSN Coordination Team	STSSN Coordination Team	nmfs.opr.stssn@noaa.gov	Preferred email address for any general STSSN inquiries or needs. Emails are currently forwarded to Stacy Hargrove, Brian Stacy, and Robert Hardy.
Stacy Hargrove	NMFS Sea Turtle Coordinator; OPR STSSN Coordination Team	(305) 814-8871	NMFS Sea Turtle Coordinator; General STSSN Coordination, Operational Issues, Emergency Response, General Sea Turtle Topics
Dr. Brian Stacy	Veterinary Medical Officer; OPR STSSN	(352) 294-4098	Mortality Investigation, Unusual Strandings, Enforcement Issues,

	Coordination Team		Necropsies, Emergency Response
Robert Hardy	STSSN Database Coordinator; OPR STSSN Coordination Team	(727) 490-9384	Database Needs, Training, Questions
Kate Sampson	GARFO STSSN Regional Coordinator	(978) 282-8470	GARFO STSSN coordination
Lyndsey Howell	Sea Turtle Mortality Investigation Biologist; Alabama, Mississippi, & Louisiana STSSN State Coordinator	(601) 568-2406	Mortality Investigation; Strandings in LA, MS, and AL

2.2 Stranding Hotline Numbers, STSSN State Coordinators, and STSSN State Liaisons

Each state and territory along the Gulf of America, Atlantic coast, and U.S. Caribbean has a stranding hotline to report dead, sick, or injured sea turtles. All hotline numbers and contact information for the State Coordinators and State Liaisons are listed on the NOAA website[7].

3. Process for Establishing a State Coordinator

Through its role coordinating the STSSN, NMFS OPR has developed the following procedures related to the selection and replacement of State Coordinators who serve with the approval of their host agency.

[7] Stranding Hotline Numbers, State Coordinators, and State Liaisons are available here: https://www.fisheries.noaa.gov/marine-life-distress/state-coordinators-and-state-liaisons-sea-turtle-stranding-and-salvage-network

3.1 STSSN State Coordinator Selection Criteria

Each STSSN State Coordinator serves in the role voluntarily. The State Coordinator host agency must be a federal natural resource agency or a state natural resource agency with an ESA Section 6 agreement and the designated State Coordinator must meet the following criteria:

1. A state or federal natural resource agency employee within an established state or federal sea turtle conservation program,
2. Understanding and willingness to follow all STSSN protocols and procedures,
3. Sea turtle stranding expertise, and
4. Experience with coordinating individuals and groups.

3.2 Replacement of a STSSN State Coordinator

If a current STSSN State Coordinator is no longer able or willing to fulfill the State Coordinator role for any reason (e.g., retirement, leaving their agency, workload concerns, etc.), NMFS OPR, as the STSSN Coordination entity, will work with the host agency to follow the procedure below to appoint a new State Coordinator.

If the host agency wishes to continue hosting the State Coordinator role, NOAA/OPR will consult with the host agency when transitioning to a new staff member. If the host agency does not wish to continue hosting the State Coordinator role, OPR will assume the role of interim State Coordinator, to the extent funding is available, until a permanent qualified replacement is identified.

3.3 Corrective Action

If a current STSSN State Coordinator is not sufficiently meeting the responsibilities outlined in this document, NMFS OPR, as the STSSN Coordination entity, will follow the procedure below to notify the host agency of OPR's concerns and seek corrective actions.

1. OPR will notify the host agency in writing that the responsibilities of the role are not being adequately fulfilled.
2. OPR will work with the host agency to determine necessary steps for the existing State Coordinator to meet the requirements and/or determine if the State Coordinator responsibilities will transfer to OPR as an interim step.
3. If, after 6 months, the State Coordinator is not able to fulfill their requirements, OPR will notify the host agency that OPR will assume the role of interim State Coordinator until a permanent qualified replacement is identified.

3.4 Formal Agreement

Once this Operating Procedures document is finalized, the NMFS OPR STSSN Coordination Team will issue formal letters to each current State Coordinator and host agency, requesting signature agreement to the responsibilities and requirements outlined in this document.

4. Process for Selecting State Liaisons

Through its role coordinating the STSSN, NMFS OPR has developed the following procedures related to the selection of State Liaisons, who serve with the approval of their host organization. In the GAR, most states do not have a state or federal natural resource agency designated as the State Coordinator; therefore, the GAR STSSN Regional Coordinator may select one or more State Liaisons to assist with the operation of the STSSN in that state. Each STSSN State Liaison serves in the role voluntarily.

4.1 STSSN State Liaison Selection Criteria

State Liaisons must have:

1. Understanding and willingness to follow all STSSN protocols and procedures,
2. Sea turtle stranding expertise, and
3. Experience coordinating individuals and groups.

4.2 Replacement of a STSSN State Liaison

If a current STSSN State Liaison is no longer able or willing to fulfill the role for any reason (e.g., retirement, leaving their agency, workload concerns, etc.), the GAR Regional Coordinator, in consultation with the NMFS OPR STSSN Coordination Team, will work with the host organization to designate a new State Liaison. If the host organization does not wish to continue hosting the State Liaison role, the Regional Coordinator will determine if a replacement host organization is necessary.

4.3 Corrective Action

If a current STSSN State Liaison is not sufficiently meeting the responsibilities outlined in this document, the GAR Regional Coordinator, in consultation with the OPR STSSN Coordination Team, will follow the procedures below.

1. The Regional Coordinator will notify the host agency in writing that the responsibilities of the role are not being fulfilled.

2. The Regional Coordinator will work with the host agency to determine necessary steps for the existing State Liaison to meet the requirements.
3. If, after 6 months, the State Liaison is not able to fulfill their requirements, the Regional Coordinator will consult with the NMFS OPR STSSN Coordination Team and determine if the role will transfer to the Regional Coordinator as an interim step.

4.4 Formal Agreement

Once this Operating Procedures document is finalized, the NMFS OPR STSSN Coordination Team will issue formal letters to each current State Liaison and host agency, requesting signature agreement to the responsibilities and requirements outlined in this document.

5. Stranding Response

NMFS serves as the Federal agency coordinator of the STSSN. This authority comes from Section 4(f) of the ESA (16 U.S.C. 1533(f)), which provides for the creation of Recovery Plans for endangered and threatened species and provides NMFS and USFWS with authority "to procure the services of appropriate public and private agencies and institutions and other qualified persons" in order to implement those plans. Further, the 2015 MOU between NMFS and USFWS states that NMFS shall serve as the lead for and coordinator of the STSSN. Coordination may include coordinating placement of stranded turtles at permitted rehabilitation facilities. The MOU also states that FWS shall provide assistance to the STSSN, including within the National Wildlife Refuge system.

In January 2022, OPR specifically assumed the lead coordination role and formed the STSSN Coordination Team. This section provides protocols, forms, and guidance on the implementation of the STSSN.

5.1 STSSN Training

As part of NMFS OPR's role in coordinating the STSSN, OPR develops and makes training materials available to the STSSN State Coordinators/Liaisons to facilitate standardized data collection across the network. Training materials may be written protocols, videos, or other appropriate formats. NMFS' publicly available training materials can be found on the NMFS STSSN Website[8].

[8] STSSN training materials are available here: https://www.fisheries.noaa.gov/national/marine-life-distress/sea-turtle-stranding-and-salvage-network#information-for-network-members

Each State Coordinator and State Liaison provides training to their volunteers and partner organizations. Training materials may be written protocols, videos, or other appropriate formats. The State Coordinators maintain a list of authorized, trained, and active participants within their state.

5.2 STSSN Forms

The collection of STSSN Forms and Instruction documents described below are available in Appendix D of this document.

STSSN Stranding Report Form (required): This is a standardized form, used by all states to document strandings. The form is tailored for each state with relevant contact information specific to the state. The STSSN Stranding Report was updated in 2020 to enhance the collection and standardization of management-relevant data to the extent practicable. This enhanced data collection and standardization effort focuses on key injuries, anthropogenic interactions, and other anomalies. Detailed instructions for filling out the STSSN Stranding Report are available to responders to ensure strandings are evaluated similarly and data are collected consistently across all responders. Timely submission of this form into the STSSN database is included in the list of responsibilities of responders, State Coordinators, and State Liaisons.

STSSN Stranding Report Form Cold Stun Event Form and Cold Stunning Data Collection Batch Form (recommended): A modified and simplified version of the STSSN Report Form is available for use during large-scale cold stun events when large numbers of animals are triaged in a short period of time. The cold stun form allows for critical information to be collected on individual animals and the batch form allows for groups of turtles to be processed and documented together.

Gear Identification Guide and Form: The STSSN Gear Characterization Guide (recommended and requested) is used to guide the characterization of fishing gear recovered from sea turtles documented by the STSSN and to identify gear that requires subsequent examination by fishery gear experts. The objective is the consistent characterization of fishing materials to inform threat identification and monitoring. The guide includes data collection forms that should be used in coordination with the guide and specific criteria for the collection and referral of gear for expert review. The guide and forms are intended to assist the STSSN in documenting a wide range of gear types, including recreational hook/line, commercial longline, pot/trap, and gillnet.

Sea Turtle Hook and Line Incidental Capture Form (recommended and requested): The sea turtle hook and line incidental capture form is intended to be filled out by an STSSN responder when a sea turtle is hooked by a recreational angler from a shore-based location. The form seeks to collect information on all aspects of the hooking incident, including fishing practices (bait used,

fishing location, time of day, etc.), injuries and impacts to the turtle, as well as the treatment and disposition of the turtle.

Greater Atlantic Region Sea Turtle Entanglement Form (recommended and requested): The sea turtle entanglement form is intended to be filled out by a GAR STSSN or Sea Turtle Disentanglement Network member to document sea turtle entanglements in vertical lines or other gear in-water.

Forms related to necropsy and mortality investigation are described in section 7.3, below.

5.3 Carcass Collection and Biological Sampling Guidance

NMFS OPR staff provide guidance on carcass collection (i.e., salvage) for necropsy in consultation with State and Regional Coordinators based on conservation and management needs, regional and localized characteristics of sea turtle strandings, recognized knowledge gaps, mass or unusual events, postmortem condition, and logistical considerations. In addition, NMFS provides guidance on biological sampling from stranded turtles for the purposes of health and mortality investigation and facilitates other authorized biological sampling (e.g., for research purposes) as needed and to the extent practicable.

5.4 Carcass Disposal

Methods for disposal of sea turtle carcasses include natural decomposition above ground or at sea, burial in landfills or in individual or mass graves, composting, rendering, incineration, and chemical digestion with secondary consideration for toxicity to scavengers from euthanized turtles. Each facility that responds to strandings or takes in rescued sea turtles should have a plan for carcass disposal that is compliant with local, state, and federal laws and best management practices.

There are two states where NMFS OPR staff regularly conduct necropsies and dispose of carcasses; Mississippi and Florida. NMFS OPR staff follow local, state, and federal laws and best practices in each state. The University of Florida, College of Veterinary Medicine uses chemical digestion for carcass disposal, the Mississippi Department of Environmental Quality recommends carcasses be placed in a plastic bag and buried at a licensed landfill.

5.5 USFWS Protocols

USFWS has developed protocols for the stranding activities (i.e. transport, rehabilitation, and release) that fall under its jurisdiction. The USFWS requires the use of the live animal transport protocols for all permitted entities transporting sea turtles. All rehabilitation facilities are required to ensure compliance with the USFWS' Standard Conditions for Care and Maintenance

of Captive Sea Turtles[9]. The release of sea turtles from rehabilitation facilities falls under USFWS jurisdiction. NMFS STSSN staff, STSSN State Coordinators, and USFWS routinely coordinate on release locations.

5.6 Outreach Materials

STSSN partners are not required to seek NMFS approval for their organization's outreach materials. NMFS OPR often develops outreach materials for specific events and purposes that are distributed to the STSSN partners for use. This helps create consistent messaging, particularly for unusual or mass stranding events. NMFS has many helpful materials that may be used by STSSN partners, such as guidelines for boaters and recreational fisherman[10] (e.g. Go Slow, Sea Turtles Below[11]).

6. Data Management

6.1 STSSN Database History

A central repository for sea turtle stranding data was established in the early 1980s by NMFS SEFSC in collaboration with the existing southeast state stranding networks. The SEFSC database initially relied on NMFS staff entering all STSSN data. In later years, the states began entering basic stranding information directly into the SEFSC database with NMFS staff completing the data entry, performing basic QA/QC routines, and either assigning or confirming codes for findings associated with each stranding. However, as stranding numbers increased over time, the burden of data entry and coding relevant findings exceeded available staff time, delaying data validation and resulting in challenges for state partners and other NMFS staff to easily query and access the data. Over the years, multiple databases were developed by STSSN partners, which complicated data standardization, data access, and data quality assurance and control.

As part of the Deepwater Horizon Sea Turtle Early Restoration Project's enhancement of the STSSN in the Gulf of America, OPR developed a new STSSN data application to improve data quality, data entry efficiency, and data access for management purposes. The new data application was implemented in the Gulf of America in 2020, in the northeast states in 2021, and

[9] USFWS. 2019. U.S. Fish and Wildlife Service's Standard Conditions for Care and Maintenance of Captive Sea Turtles are available at: https://www.fws.gov/media/standard-conditions-care-and-maintenance-captive-sea-turtles

[10] Fishing Tips to Protect Sea Turtles and Marine Mammals are available here: https://www.fisheries.noaa.gov/national/resources-fishing/fishing-tips-protect-sea-turtles-and-marine-mammals

[11] Go Slow, Sea Turtles Below videos are available here: https://www.fisheries.noaa.gov/video/go-slow-sea-turtles-below

in the southeast states in 2022. Full transition of all data from the SEFSC database to the new data application was completed in 2023, and the SEFSC database was archived. OPR is responsible for supporting and maintaining the new STSSN data application for STSSN use into the future.

6.2 STSSN Data Access and Data Release Process

This data access and data release process will guide NMFS' use of STSSN data, release of data by NMFS to external individuals or groups, and notification of the appropriate STSSN Regional Coordinator, State Coordinator, and/or State Liaison when STSSN data are requested from NMFS.

6.2.1 NMFS Data Requests and Use for Management Purposes

1) NMFS reserves the right to access the STSSN data for sea turtle management purposes.
2) NMFS will provide the appropriate State Coordinators/Liaison with an opportunity to review draft manuscripts, including NOAA Technical Reports or Technical Memoranda, that use STSSN data.
3) Any publication or use of these data by NMFS will credit the appropriate state STSSN.

6.2.2 Public Data Requests

1) When NMFS receives a request for STSSN data, NMFS will, within one week, notify the relevant State Coordinators/Liaisons that a data request has been received and is being responded to in accordance with this data access and release process and all applicable Freedom of Information Act (FOIA) requirements.
2) NMFS will provide a standard statement whenever data are released to the public in email, web based, or other electronic or written formats, including in response to FOIA requests. State Coordinators/Liaisons are encouraged to use this or similar language when releasing data or fulfilling data requests, taking into account relevant state laws. The statement is as follows:

   "Any publication or use of these data should credit the appropriate state STSSN. Users with the intent to publicly present or publish these data should consult and/or collaborate with contributing STSSN entities and network coordinators to understand data caveats, complexities, and nuances."
3) If data/information being released are considered preliminary, the following statement will be included:

   "Preliminary data are subject to change and are not recommended for use in publications/analyses."
4) The State Coordinator/Liaison may request, from NMFS, a copy of a data request

and/or a copy of the information provided in response to a data request.

5) When NMFS receives a FOIA request for STSSN data, NMFS will, within one week, notify the relevant State Coordinators/Liaisons that a FOIA request has been received and is being responded to in accordance with FOIA requirements and established procedures.
6) The State Coordinator/Liaison may request, from NMFS, a copy of the FOIA request and/or a copy of the information provided in response to the FOIA request.

6.3 Data Entry and Verification

The Data Entry and Verification Guide (see Appendix C) describes the data entry and verification processes used in the STSSN database to ensure consistent data collection. Data collection and verification are a two-step process. A responder documents a stranded sea turtle according to STSSN training and begins the data entry process. This information is subsequently reviewed by a trained, experienced verifier who 1) evaluates the information to ensure accuracy, and 2) applies specific standards and criteria to record additional details that are pertinent to management, such as observations related to life history, human interaction, and health. A key feature of this system is that photographic verification is required to evaluate and verify most cases. In addition, the application includes numerous integrated tools that facilitate data entry and provide quality assurance.

7. Mortality Investigation

7.1 Overarching Purpose and Description of Activity

Mortality investigation encompasses efforts undertaken in association with the STSSN to identify and characterize causes of sea turtle stranding and mortality. These activities include, but are not limited to, postmortem examination (necropsy); collection of anthropogenic, biological, or environmental materials or samples; clinical evaluation of live stranded sea turtles; and any analyses (e.g., diagnostic, forensic, oceanographic, biologic) pertinent to investigative objectives.

7.2 Procedures

The NMFS OPR Veterinary Medical Officer oversees these efforts nationally. Within the STSSN, the appropriate State Coordinator or State Liaison manages the day-to-day necropsy and sampling of stranded turtles under periods of regular stranding activity (i.e., when the occurrence of sea turtle strandings and related observations are consistent with historical patterns and

trends). The Veterinary Medical Officer may assume the primary coordination (in consultation with a State Coordinator or State Liaison) under the following circumstances: unusual or mass events; strandings suspected to be or attributed to commercial fisheries; strandings involving state or federal law enforcement; and any instance where coordination is requested by a STSSN coordinator, state, or federal agency.

Within the GOA, a Sea Turtle Mortality Investigation Biologist assists with the coordination of mortality investigation in AL, MS, and LA, and provides assistance in FL and TX, as needed. The Sea Turtle Mortality Investigation Biologist's main functions include: 1) provide training and guidance regarding salvage of stranded turtles for necropsy; 2) manage freezers where carcasses are stored; 3) coordinate necropsies, including completion of data forms and sampling; 4) manage requests for samples (under valid state and federal permits); and 5) ensure disposal of carcasses in a manner compliant with applicable local and state regulations.

Sea turtle necropsies are conducted by (or under the direct oversight of veterinarians and biologists with demonstrated training and experience with sea turtle anatomy, basic pathology (recognition of common abnormalities), and frequent presentations of anthropogenic interaction(s). Additional specific qualifications, such as a veterinary degree, board certification in veterinary pathology, or resource agency affiliation, may be required by OPRs Veterinary Medical Officer or NOAA Office of Law Enforcement for medico-legal cases or those related to priority management or conservation issues or NRDA.

7.3 Forms

Standardized gross necropsy forms have been developed by the STSSN for necropsy of sea turtles. These forms are formatted and worded such that they are complementary to the STSSN Stranding Report in order to facilitate standardized collection of information necessary to inform sea turtle conservation management. Two versions of the form exist, a 4-page format and an abbreviated 2-page format, and are available in Appendix D. Users may select the form most suitable based on the postmortem condition of the turtle, and the specific needs and circumstances of a given case. The shorter version is used most frequently. Use of these specific forms is not required. Users may also use other necropsy forms, such as those developed by facilities or organizations to which they are affiliated, as long as similar data fields are clearly included.

7.4 Sample Request Process

Requests for samples from sea turtles necropsied by STSSN participants are managed by the State or Regional Coordinator(s) and must be covered by the applicable permitting process (varies by state). Researchers requesting samples must contact the OPR STSSN Coordination Team or the appropriate State or Regional Coordinator(s) for all states or regions of interest. The

State or Regional Coordinator will then advise the preferred means of communicating requests to relevant network participants.

Samples from sea turtles that died or were euthanized during the course of rehabilitation, whole carcasses, and samples requested for educational or tribal purposes are managed by the USFWS.

Samples required for veterinary diagnosis, NMFS-led mortality investigation, NRDA, and from cases of interest to state or federal law enforcement are prioritized over samples requested for research purposes; however, all requests are met whenever feasible.

In the event that concurrent research sampling requests cannot be accommodated, OPRs Veterinary Medical Officer will work with requesting parties to seek a resolution and will ultimately determine the collection and disposition of samples.

7.5 Training Materials/Videos

ORPs Veterinary Medical Officer will provide training in sea turtle necropsy and sampling for the STSSN upon request by State or Regional Coordinators. In addition, a series of instructional videos[12] on methods for sea turtle necropsy are available from the NMFS/OPR.

8. Emergency Events

Most sea turtle strandings involve a single animal, but periodically, large-scale sea turtle stranding events occur and require coordination between federal and state agencies, non-governmental organizations, academic institutions, and the public for a safe and organized response. Emergency events for sea turtles may be caused by anthropogenic factors such as oil spills, chemical spills, and illegal/irresponsible fishing practices, or they may be caused by natural factors such as extreme weather, disease, or harmful algal blooms. During these emergency events, NOAA, USFWS, state agencies, STSSN State Coordinators and partners, and the public work together to rescue and recover stranded sea turtles, with the goal of maximizing the survival rate of live stranded sea turtles while ensuring human safety and animal welfare. The following sections describe some of the most common large-scale sea turtle stranding events.

[12] Necropsy instructional videos are available here: https://www.fisheries.noaa.gov/national/marine-life-distress/online-sea-turtle-necropsy-lecture-series

8.1 Cold Stunning

Cold stunning is a phenomenon that occurs when water temperatures fall below 50F/10C where sea turtles are present. Sea turtles become lethargic due to hypothermia and float at the surface. They may be washed ashore due to winds and tides, and if they are not rescued and temperatures remain low, they may develop secondary health problems, become vulnerable to predators, or die. Thousands of turtles at a time may be affected by cold-stunning events. Cold stunning is most likely to occur in shallow bays and lagoons, which are susceptible to rapid changes in water temperatures and where access to warmer water is limited or obstructed by the surrounding land. Locations of repeated and historical cold stunning events within the U.S. include Long Island Sound (New York), Cape Cod Bay (Massachusetts), Albemarle-Pamlico Estuarine System (North Carolina), Indian River/Banana River/Mosquito Lagoon complex (Florida), St. Joseph Bay (Florida), and multiple bays and lagoons in Texas. Weather forecasts and water temperatures are monitored for conditions that are likely to result in cold stunning. STSSN responders search from land and water to rescue and recover cold-stunned turtles whenever possible. Response to sea turtle cold stunning events is organized by STSSN State Coordinators in the Southeast and the NMFS GAR Stranding Coordinator in the Northeast following protocols and procedures developed for each state. NOAA staff may assist during large events or if requested by state coordinators and undertake any role necessary.

8.2 Oil Spill Response

The USCG or the Environmental Protection Agency serves as the Federal On-Scene Coordinator (FOSC) to oversee response to oil spills in U.S. waters. Oil spill response activities follow the Incident Command System structure specified by the National Incident Management System, modified for oil spill response by the National Response Teams; all response activities are coordinated by the Unified Command. Funding for response activities is provided through a Pollution Removal Funding Authorization from the Oil Spill Liability Trust Fund, which is administered by the USCG's National Pollution Funds Center.

If an oil spill occurs in an area where sea turtles are known to inhabit, the FOSC requests NOAA NMFS OPR (typically through the NOAA Scientific Support Coordinator) and USFWS Ecological Services to participate in wildlife response.

8.2.2 Response Role

Under the Oil Pollution Act (OPA), agencies with jurisdictional authority for natural resources, which include NOAA and agencies under DOI, have three key roles as outlined in the National Oil and Hazardous Substances Pollution Contingency Plan (NCP, 40 CFR § 300.145):

1) Serve as scientific advisors to the FOSC, with duties including oil trajectory predictions, overflight observations of oil on water, identification of high value or sensitive habitats or resources, and shoreline surveys of oil to determine clean-up priorities;
2) Represent the interests of their respective Departments in oil spill response planning and decision-making through National Response Teams and Regional Response Teams. Through this process, resource agencies are involved in the development of oil spill response planning documents, including Area Contingency Plans and Wildlife Response Plans (including sea turtle and marine mammal response considerations), at both regional and area levels; and
3) Serve as natural resource Trustees for impacted resources and, as appropriate, conduct a Natural Resource Damage Assessment (NRDA), jointly with other Trustees (i.e., state resource agencies, tribal nations), with the goal of restoring resources and their services harmed by the spill.

8.2.3 Natural Resource Damage Assessment Role

Under OPA, responsibility for acting on behalf of the public lies with designated federal, state, tribal, and foreign natural resource Trustees. These Trustees are authorized to assess and restore natural resource injuries resulting from a discharge of oil, or the substantial threat of such a discharge (e.g., vessel groundings), and associated response activities. Under the National Contingency Plan, the Department of Commerce and the Department of Interior are designated as Federal Trustees for a wide variety of coastal resources, including fisheries, migratory birds, protected species, and habitats (e.g., wetlands, mangroves, mudflats, beaches, and reefs). Federal and state resource agencies serve as Co-trustees for sea turtles.

Within NOAA, NRDA is conducted by the Damage Assessment, Remediation, and Restoration Program, composed of the Office of Response and Restoration's Assessment and Restoration Division, NMFS Restoration Center, and the Natural Resources Section of the NOAA General Counsel's Office.

NMFS published Guidelines for Oil Spill Response and Natural Resource Damage Assessment: Sea Turtles[13] in 2019, and it provides considerations related to oil spill response activities that may impact sea turtles, including engagement of the STSSN.

[13] *Guidelines for Oil Spill Response and Natural Resource Damage Assessment: Sea Turtles* are available for download here: https://www.fisheries.noaa.gov/resource/document/guidelines-oil-spill-response-and-natural-resource-damage-assessment-sea-turtles

Appendix A: 2015 Memorandum of Understanding (MOU) between NMFS and USFWS

See Appendix A document (6 pages) on the NMFS website, at: https://www.fisheries.noaa.gov/national/marine-life-distress/sea-turtle-stranding-and-salvage-network

Appendix B: USFWS Standard Conditions for Care and Maintenance of Captive Sea Turtles

See separate Appendix B document (22 pages) on the NMFS website, at: https://www.fisheries.noaa.gov/national/marine-life-distress/sea-turtle-stranding-and-salvage-network

Appendix C: STSSN Application Data Entry and Verification Guide

See separate Appendix C document (192 pages) on the NMFS website, at: https://www.fisheries.noaa.gov/national/marine-life-distress/sea-turtle-stranding-and-salvage-network

Appendix D: STSSN Forms and Instructions

See separate Appendix D document (74 pages) on the NMFS website, at: https://www.fisheries.noaa.gov/national/marine-life-distress/sea-turtle-stranding-and-salvage-network

APPENDIX B. Public Comments and Responses

A *Federal Register* notice was published to inform the public of the availability of, and request comments on, the draft Environmental Assessment (EA) on December 30, 2024 (89 FR 106439). The public comment period ended on January 29, 2025, and three comment letters were received from entities providing comments on the draft EA and the Sea Turtle Stranding and Salvage Network Operating Procedures Handbook which was incorporated as an appendix to the draft EA. NMFS thanks all commenters for their comments and input on the draft EA. Individual comments received are detailed below, with their corresponding responses.

Comments on the Draft EA

Comment: The National Aquarium provided support for the action and stated they are appreciative of the efforts of NOAA and OPR. The USFWS noted that they are grateful for the close partnership with NMFS in sea turtle conservation and concurred with the EA's findings that these actions are wholly beneficial and would reduce impacts to sea turtles from past, present, and reasonably foreseeable future actions and that impacts from the proposed actions are not expected to be significant.
Response: NOAA acknowledges these comments and thanks the commenters for their support and partnership.

Comment: The Florida Fish and Wildlife Conservation Commission (FWC) indicated that they have numerous staff supporting the state's STSSN and they issue 200 permits per year. In 2024, staff and permit holders responded to 1968 stranded turtles. They indicated that the proposed action is not expected to impact the continued operation of the state STSSN.
Response: NOAA acknowledges and agrees that the action would not impact the operation of any state STSSN. This action is specifically intended to outline the role of NOAA/NMFS OPR and the coordination of the network from that level, and to provide guidance and protocols to assist state STSSN efforts, many of which are already in place.

Comment: The U.S. Fish and Wildlife Service (USFWS) noted that the USFWS' Standard Conditions for Care and Maintenance of Captive Sea Turtles (USFWS 2019) which was developed in coordination with NMFS and STSSN Coordinators and contains required best management practices for sea turtles held in captivity for rehabilitation or educational display was incorrectly referenced. They requested the document title be corrected and provided a reference for use in the References section or footnote.

Response: NOAA has made the suggested revisions and included the provided reference in the References (Chapter 6).

Comment: USFWS recommended updating the Status and Population Dynamics information for Kemp's ridley sea turtle in Section 3.2.2.3 to include the statement: Nesting in Texas has paralleled the trends observed in Mexico, however over the long term, nesting has increased in Texas from one reported nest in 1991 to over 300 in 2024.
Response: NMFS has made the suggested revisions in Section 3.2.2.3.

Comment: The USFWS provided minor text edits to several sections of this EA to avoid redundancy and increase clarity.
Response: NMFS reviewed and made all suggested revisions. NOAA thanks the commenter for these clarifying edits.

Comments related to the Sea Turtle Stranding and Salvage Network Operating Procedures Handbook (Handbook)

Comment: FWC stated that while the Handbook describes the split in federal jurisdiction between NMFS, with lead authority over sea turtles in the water, and the USFWS, with oversight on the nesting beaches and for turtles in rehabilitation, it should also clarify that USFWS delegates rehabilitation oversight, including oversight of 15 sea turtle rehabilitation facilities in Florida, to FWC under Section 6(c) of the ESA.
Response: NMFS acknowledges this comment and the issue raised. As a result of this comment, we have added clarifying text to Section 1.2 of the Handbook. The Handbook is focused on stranding response roles under the coordination of NMFS, and does not fully discuss rehabilitation or captive holding, as those are authorized through the USFWS. The Handbook does not change the state role, as defined in an established Cooperative Agreement under Section 6(c) of the ESA.

Comment: FWC noted potential conflicting language on Incidental Take during fishing. They referenced Section 1.3.1. of the Handbook, Statutory and Regulatory Authority, which references several federal rules allowing federal and state employees and their agents to take federally listed threatened and endangered sea turtles when rendering aid or responding to stranded animals. The commenter noted that one such exception referencing incidental take during fishing, 50 CFR 223.206(d), *Exception for incidental taking*, appears to allow fisherman to "take" (possess) sea

turtles captured incidentally during fishing activities, and 223.206(d)(1)(i)(A) further specifies that a sea turtle taken incidentally while fishing must be returned to the water if actively moving. The commenter questioned if these regulations also apply to the STSSN, stating that while this requirement is not directly stated in the Handbook, this reference to the statutory language contradicts best practices and standards of care for handling sea turtles incidentally captured during recreational fishing on commercial piers in Florida. In Florida, the best standard of care for these animals is mandatory assessment by an FWC-authorized sea turtle veterinarian whenever practicable. FWC further recommended that the Handbook acknowledge and encourage the best standard of care, which includes veterinary assessment for sea turtles incidentally captured during recreational fishing.

Response: The Florida best practices and standards do not conflict with the regulations described in the Handbook (50 CFR 223.206(b)). These regulations pertain to exceptions for activities with injured, dead, or stranded specimens, and are distinct from the regulations specifically referenced in the comment (50 CFR 223.206(d)) pertaining to incidental take of sea turtles during fishing or scientific research activities on vessels (in-water, not land-based activities). The USFWS has codified regulations at 50 CFR 17.21(c)(3) and 17.31(b), which provide exceptions to the prohibition on take of endangered and threatened species, including sea turtles identified in 17.42(b)). The USFWS regulations allow USFWS and NMFS personnel to respond to strandings on land, including aiding incidentally caught sea turtles at piers. If fishers catch a sea turtle, NMFS recommends fishers follow the *Recommendations to Reduce Injuries if you Hook or Entangle a Sea Turtle* outlined on the NMFS website (https://www.fisheries.noaa.gov/national/resources-fishing/fishing-tips-protect-sea-turtles-and-marine-mammals). We have reviewed and added clarifying language to Section 1.3.1 in the Handbook.

Comment: The FWC requested that the contact information for the FWC Sea Turtle Stranding Coordinator be updated in the Handbook.

Response: NMFS made the appropriate revisions in Section 2.2 of the Handbook.