2025

Virginia Marine Mammal Conservation Plan

Prepared by

Virginia Department of Wildlife Resources

With

Virginia Coastal Zone Management Program

National Oceanic and Atmospheric Administration

Virginia Marine Mammal Conservation Plan

Virginia Department of Wildlife Resources

This document serves as a final report to the Virginia Coastal Zone Management Program of the Department of Environmental Quality in fulfillment of Award Number NA 21NOS4190152 FY21 Task # 92.03 from the National Ocean Service of the National Oceanic and Atmospheric Administration.

Cover image: Bottlenose dolphins in the ocean off Virginia Beach, VA. This species is the most common marine mammal found in Virginia waters. They occur in the ocean, coastal bays, and in the Chesapeake Bay estuary. Bottlenose dolphins calve in late spring and early summer and calves stay with their mothers for several years.

2025
Virginia Marine Mammal
Conservation Plan

Prepared by
Megan Perdue, Protected Marine Species Conservation Assistant
Susan Barco, Protected Marine Species Subject Matter Expert
Ruth Boettcher, Coastal Nongame Wildlife Biologist
Becky Gwynn, Deputy Director

Virginia Department of Wildlife Resources
7870 Villa Park Drive, Suite 400
Henrico, Virginia 23228

Approved: _____

Ryan J. Brown, Executive Director,
Virginia Department of Wildlife Resources

Date: _____

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Disclaimer

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Commerce, National Oceanic and Atmospheric Administration, under the Coastal Zone Management Act of 1972, as amended. This Plan has been approved by the Virginia Department of Wildlife Resources (DWR) but does not necessarily represent official positions, views, or approvals of cooperating agencies and stakeholders who provided input in the plan or the U.S. Department of Commerce, NOAA, or any of its sub-agencies. This Plan is subject to modification as dictated by new findings, changes in species status, and completion of actions prescribed in the Plan. The achievement of goals and strategies outlined in the Plan will depend on funding, work priorities, and other administrative constraints.

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List of Acronyms and Abbreviations

AIS	Automatic Identification System
Bay	Chesapeake Bay
BOEM	Bureau of Ocean Energy Management
CBBT	Chesapeake Bay Bridge Tunnel
CFR	Code of Federal Regulations

CITES	Convention on International Trade in Endangered Species of Wild Flora and Fauna
CVW	Clean Virginia Waterways
CZM	Coastal Zone Management
DDT	dichlorodiphenyltrichloroethane
DEQ	Department of Environmental Quality
DPS	Distinct Population Segment
DWR	Virginia Department of Wildlife Resources
EEZ	United States Economic Exclusive Zone, which goes 200 nautical miles from shore
EPA	Environmental Protection Agency
ESVA	Eastern Shore of Virginia
ESA	Endangered Species Act
FR	Federal Register
HAB	Harmful Algal Bloom
HI	Human Interaction
inshore	waters from the coastal bays landward of the barrier islands to the fall line where the Atlantic coastal plain and the Piedmont Plateau converge
ISEN	Interagency Stranding Event Network
IUCN	International Union for the Conservation of Nature
JEA	Joint Enforcement Agreement
LE	Law Enforcement
MARCO	Mid-Atlantic Ocean Data Portal
Mid-Atlantic Bight	section of the U.S. Atlantic continental shelf that extends from Long Island, New York, to Cape Hatteras, North Carolina, that is often used in fishery management actions
MMAP	Marine Mammal Authorization Program
MMC	Marine Mammal Commission
MMCP	Marine Mammal Conservation Plan
MMPA	Marine Mammal Protection Act
MOU	Memorandum of Understanding
MRC	Virginia Marine Resources Commission
NCMS	Northern Coastal Migratory Stock
nearshore	waters that extend from the Atlantic Ocean shoreline and COLREG demarcation line to three miles offshore
NEFOP	Northeast Fisheries Observer Program
NEPA	National Environmental Policy Act
NNCESS	Northern North Carolina Estuarine System Stock
NMFS	National Marine Fisheries Service, also known as NOAA Fisheries
NOAA	National Oceanic and Atmospheric Association
offshore	federal waters that extend from three miles offshore to the edge of the outer continental shelf
PAM	Passive Acoustic Monitor
PBR	Potential Biological Removal
PCB	Polychlorinated biphenyl

pelagic	federal waters that extend beyond the shelf break
Percentage of HI	Calculation of number of strandings positive for human interaction (HI) divided by the total number of cases positive and negative, excluding the cases where HI was undetermined (HI=CBD) [HI=Yes/(HI=Yes + HI=No)]
PFAs	Per- and polyfluoroalkyl substances
RWSC	Regional Wildlife Science Collaborative
SAG	Surface active group (in reference to North Atlantic right whales)
SAR	Stock Assessment Report
SCMS	Southern Coastal Migratory Stock
SGCN	Species of Great Conservation Need
SMA	Seasonal Management Area
SWG	State Wildlife Grants
TNC	The Nature Conservancy
TRP	Take Reduction Plan
TRT	Take Reduction Team
UME	Unusual Mortality Event
US	United States
USACOE	United States Army Corps of Engineers
USFWS	United States Fish and Wildlife Service
VAMSC	Virginia Aquarium & Marine Science Center
VAQF	Virginia Aquarium & Marine Science Center Foundation
VAQS	Virginia Aquarium Stranding Response Program
VDEQ	Virginia Department of Environmental Quality
VIMS	Virginia Institute of Marine Science
VMMSN	Virginia Marine Mammal Stranding Network
VOP	Virginia Ocean Plan
WAP	Wildlife Action Plan
WEA	Wind Energy Area

Executive Summary

Many species of marine mammals utilize Virginia waters, ranging from the commonly observed bottlenose dolphin to large baleen whales, such as the endangered North Atlantic right whale. While all marine mammal species are protected under the federal Marine Mammal Protection Act, state and federally listed species receive additional protection under the Virginia and United States Endangered Species acts, respectively.

Marine mammals are highly mobile marine mega-vertebrates that do not spend the entirety of their lives in Virginia waters. Some species, such as the harbor seal, only occur in state waters from late fall to early spring while others may quickly pass through during their northern and southern migrations. Although bottlenose dolphins are present year-round, their local distribution and abundance is variable and largely driven by water temperatures and prey availability. Regardless of the season, at least one marine mammal species is present in Virginia waters throughout the annual cycle.

Threats to marine mammals in Virginia waters are consistent with those throughout the mid-Atlantic region. Marine mammal injuries and mortality are primarily attributed to anthropogenic activities, including interactions with commercial and recreational fishing gear and vessel strikes. Non-lethal compounding stressors may also compromise animals, making them more susceptible to disease and parasites. These stressors include low levels of contaminants, poor water quality stemming from various types of pollution, harmful algal blooms, and disruptive human activities such as marine construction, harassment from recreational boaters, and in-water military training exercises.

The high diversity of species in Virginia and elevated conservation status (*i.e.* state and federally threatened or endangered) of some of these species makes the conservation and management of marine mammals and their habitats especially important in the Commonwealth. Because marine mammals occupy wide geographic ranges and exhibit seasonal distribution patterns throughout their ranges, effective conservation cannot be carried out by a single entity and requires coordinated efforts of multiple state, federal, nongovernmental, and international partners. The overarching goal of this Plan is to enhance the survival and conserve the habitats of marine mammals in Virginia in a manner that complements regional and federal management and conservation efforts. The Plan's Conservation Narrative focuses on three goals, under which strategies, actions, Entities and timelines are identified and described, and include:

> Goal 1: Maintain a permanent and effective Marine Mammal Stranding Network in Virginia.
>
> Goal 2: Identify and mitigate risks to marine mammal populations and habitats in Virginia through cost-effective monitoring, research, and best practices.
>
> Goal 3. Promote marine mammal conservation in Virginia through social marketing and information dissemination.

As the agency responsible for conservation and management of protected species, the Virginia Department of Wildlife Resources is responsible for developing state conservation plans. Coordination and communication between the Virginia Department of Wildlife Resources and the Virginia Marine Resources Commission, the two state agencies responsible for managing protected marine species in the Commonwealth, along with the National Oceanic and Atmospheric Administration National Marine Fisheries Service and the United States Fish and Wildlife Service, the two federal agencies which oversee the protection and management of marine mammals at the federal level, is a key aspect of marine mammal conservation in Virginia. The successful implementation of most of the conservation strategies and actions identified in this Plan rely heavily on the cooperation of many other collaborating agencies, organizations, and partners. Since marine mammal conservation fundamentally involves human beings, the most successful conservation actions will be those aligned with the values, wellbeing, and perspectives of people who will be asked to support and/or adopt many of these actions for the benefit of marine mammals.

This Plan was developed in concert with the 2024 Sea Turtle Conservation Plan, and many of its strategies and actions are similar to those identified for marine mammals. The coordination and implementation of related efforts outlined in both plans should be executed in a way that maximizes limited state and federal resources and provides the greatest conservation benefits for both marine taxa. Lastly, the sea turtle and marine mammal conservation plans will serve as appendices to the 2025 Virginia Wildlife Action and the 2025 Virginia Ocean Plan, both of which are currently under development, and will help ensure that sea turtle and marine mammal conservation will be incorporated into the Commonwealth's future wildlife and ocean resources management priorities.

Introduction

Background

Marine mammals are distributed throughout the global marine ecosystem. Like other mammals, they are warm-blooded, breathe air, have hair (some briefly at birth), and nurse their young. There are four groups of marine mammals: cetaceans (whales, dolphins, and porpoises), pinnipeds (seals, sea lions, and walruses), sirenians (manatees and dugongs), and marine fissipeds (polar bears and sea otters). Cetaceans and sirenians spend the entirety of their lives in the water, while pinnipeds and marine fissipeds spend their lives both on land and in the water.

Over 30 species of marine mammals have been documented in Virginia's state and federal waters and differ in form, lifestyle, and habitat requirements. Some species' presence is seasonal, while other species are strictly transitory. Only bottlenose dolphins are present in Virginia year-round. Some species primarily utilize inshore and nearshore waters, while others only occur in deep offshore waters. The bottlenose dolphin (*Tursiops* sp.) is the most commonly observed marine mammal in Virginia waters and typically comprises over half of the state's annual strandings (VAQS *unpublished data*, October 2023). Other frequently observed cetacean species include the harbor porpoise (*Phocena phocoena*), short-beaked common dolphin (*Delphinus delphis*), and baleen whales such as the humpback whale (*Megaptera novaeangliae*) and North Atlantic right whale (*Eubalaena glacialis*). Other non-cetacean species utilize Virginia waters as well, such as harbor seals (*Phoca vitulina*) and Florida manatees (*Trichechus manatus latirostris*).

Several marine mammal species that utilize Virginia waters are listed as endangered or threatened under the Virginia and United States (US) Endangered Species acts. Moreover, waters along the entire US Atlantic coast were identified as a high-risk hotspot for over 20 species of marine mammals because of their exposure to anthropogenic threats (Avila *et al.* 2018). All marine mammals are protected under the federal Marine Mammal Protection Act (MMPA) and Virginia state laws also protect all wildlife, including state and federally listed species. To better conserve and manage all marine mammal species, coordinated state and federal conservation strategies have been suggested by the National Oceanic and Atmospheric Administration's (NOAA) National Marine Fisheries Service (hereafter referred to as NOAA Fisheries) and the US Fish and Wildlife Service (USFWS). The marine mammal conservation plan for Virginia is designed to conserve and manage marine mammals in state and surrounding federal waters. The Virginia Marine Mammal Conservation Plan (Plan) encompasses all of Virginia's inshore waters from the coastal bays landward of the barrier islands to the fall line where the Atlantic coastal plain and the Piedmont Plateau converge (hereafter referred to as inshore waters). The Plan's coverage also includes state waters that extend from the Atlantic Ocean shoreline and COLREG demarcation line to three miles offshore (hereafter referred to as nearshore waters), federal waters that extend from three miles offshore to the edge of the outer continental shelf (hereafter referred to as offshore waters) and federal waters that extend beyond the shelf break (hereafter referred to as pelagic waters). Lastly, this Plan also encompasses terrestrial seal haul-out sites and manatee freshwater habitats.

The Virginia Marine Mammal Conservation Plan will serve as an appendix to the 2025 Virgina Wildlife Action Plan and the Virgina Ocean Plan, both of which are currently in preparation.

Regulations and Management of Marine Mammals in Virginia

Federal Agencies and Regulations

All marine mammals are federally protected under the Marine Mammal Protection Act of 1972, as amended, (MMPA), making it illegal to "take", import or export marine mammals and their parts in the U.S. Two federal entities are responsible for implementing marine mammal protection under the MMPA: National Oceanic and Atmospheric Administration (NOAA) Fisheries which oversees protection of whales, dolphins, porpoises, seals, and sea lions, and the U.S. Fish and Wildlife Service (USFWS) which oversees protection of manatees, polar bears, walruses, and sea otters. Other marine vertebrate species or non-marine aquatic and terrestrial mammals are not covered under the MMPA.

Some marine mammal species receive additional protection under the Endangered Species Act of 1973, as amended, (federal ESA) and the Convention on International Trade in Endangered Species of Wildlife Flora and Fauna (CITES). The ESA is not specific to marine mammals and only provides protections to species deemed threatened or endangered. CITES is an international agreement between governments enacted to ensure international trade of animals and plants is legal, traceable, sustainable, and does not threaten their survival in the wild. CITES is also not specific to marine mammals but provides protection to species deemed threatened or endangered in the U.S. Species may be listed under one of three appendices according to their conservation status, which designates how much, if any, trade is permitted. Those species listed in Appendix I receive the most protection; those listed in Appendix III receive the least protection (CITES 2019). For example, harbor seals are not listed as threatened or endangered under the ESA and are not currently regulated under CITES but are still federally protected under the MMPA. North Atlantic right whales, on the other hand, are endangered under the ESA, a CITES Appendix I species, and federally protected under the MMPA.

Federal Endangered Species Act (ESA)

In 1973, Congress passed the federal ESA (16 U.S.C. 1531 et. seq.), which enhanced federal abilities to protect endangered species and develop measures for their recovery. The federal ESA offers endangered and threatened species comprehensive protection as administered jointly by the USFWS and NOAA Fisheries. The USFWS has authority over terrestrial and freshwater fish, wildlife, plants, and insects, while NOAA Fisheries has authority over marine and anadromous fish and wildlife. Section 4 of the federal ESA provides for the listing and recovery planning process, including the determination of critical habitat and the issuance of regulations deemed necessary and advisable to further the conservation and recovery of listed species. Section 6 allows for the establishment of cooperative agreements with states that give state fish and wildlife agencies shared authority over the recovery and conservation of federally listed species within state boundaries (see below). Federally-permitted, -funded, or -conducted actions known

to impact federally listed marine mammals, such as dredging and in-water military training activities, are addressed under Section 7 through incidental take statements for intergovernmental consultation. Section 10 provides for the development of habitat conservation plans and incidental take permits for non-federal actions that may impact listed species, such as state commercial fishery operations.

During each reauthorization of the federal ESA, amendments have been added which reflect the experience and knowledge gained in administering its provisions. The 1978 amendments required the USFWS and NOAA Fisheries to develop and implement recovery plans for species under their jurisdictions. Between 1991 and 2020, recovery plans were completed for all federally listed northwest Atlantic large whales: the North Atlantic right whale (NOAA Fisheries 1991, 2005), humpback whale (NOAA Fisheries 1991), blue whale (*Baleanoptera musculus*; NOAA Fisheries 1998, 2020), fin whale (*Baleanoptera physalus*) NOAA Fisheries 2010a), sei whale (*Baleanoptera borealis*; NOAA Fisheries 2011), and sperm whale (*Physeter macrocephalus*; NOAA Fisheries 2010b). Re cent five-year status reviews were completed for the sperm whale (2015), fin whale (2019), blue whale (2020), sei whale (2021), and North Atlantic right whale (2022). Following the 2015 five-year humpback whale status review, the Gulf of Maine stock of humpback whales, the primary stock present in Virginia waters (Barco *et al.* 2002), was de-listed in 2016 and no longer receives protection under the ESA. In addition to the above large whales, the West Indian manatee is currently listed as threatened under the ESA following its reclassification from endangered in 2017 (82 FR 16668). A petition to re-classify them as endangered in 2022 was found to be warranted and triggered a status review (88 FR 70634). In January 2025, the review resulted in a proposed rule to separate the Florida manatee subpopulation from the Caribbean subpopulation (Antillean manatee) and to keep threatened status for Florida manatees, which are found in Virginia, and list the Antillean manatee as endangered (90 FR 3131). A final ruling on the proposed rule will likely be available in late 2025 or the first half of 2026.

Federal Marine Mammal Protection Act (MMPA)

The MMPA was enacted on October 21, 1972, and established a national policy to prevent marine mammal species and population stocks from declining beyond the point where they ceased to be significant functioning elements of the ecosystems of which they are a part. The MMPA prohibits the "taking" of marine mammals and enacts a moratorium on the import, export, and sale of any marine mammal, along with any marine mammal part or product, within the U.S. Under the ESA, "take" means "to harass, hunt, capture, or kill, or attempt to harass, hunt, capture, or kill any marine mammal" 16 U.S.C.S. § 1362(13). The ESA goes on to define "harassment" in 16 U.S.C.S. § 1362(18). This definition covers harassment generally in 16 U.S.C.S. §1362(18)(A), and harassment in the context of military readiness activity in 16 U.S.C.S. § 1362(18)(B), with levels of harassment defined in 16 U.S.C.S. § 1362(18)(C) and (D). Harassment generally means "any act of pursuit, torment or annoyance which (i) has the potential to injure a marine mammal in the wild; or (ii) has the potential to disturb a marine mammal or marine mammal stock by causing disruption of behavioral patterns, including, but

not limited to, migration, breathing, nursing, breeding, feeding, or sheltering" 16 U.S.C.S. §1362(18)(A). NOAA Fisheries and the USFWS enforce the provisions of the federal ESA and issue regulations to implement its legislative goals. NOAA Fisheries, USFWS, and the Marine Mammal Commission (MMC) share responsibility for implementing the MMPA. The MMC provides independent, science-based oversight of domestic and international policies and actions of federal agencies addressing human impacts on marine mammals and their ecosystems. To increase the effectiveness of implementing the MMPA, NOAA Fisheries can partner with state law enforcement (LE) agencies through Joint Enforcement Agreements (JEA) to perform LE services that support federal regulations (NOAA Fisheries 2024).

The MMPA mandates marine mammal management and conservation by providing stock assessment reports (SARs) on marine mammals that reside in U.S. waters (16 U.S.C.S. § 1386). Each species is divided into one or many stocks, which is defined under the MMPA as "a group of individuals of the same species or smaller taxa in a common spatial arrangement that interbreed when mature." SARs include information on population trends, minimum population estimates, geographic ranges, status of the stock, Potential Biological Removal (PBR), anthropogenic mortalities, and other sources of mortality. PBR represents an estimate of the maximum number of animals, not including natural mortalities, that may be removed from a marine mammal stock while allowing that stock to reach or maintain its optimum sustainable population (OSP). PBR is defined as "the maximum number of animals, not including natural mortalities, that may be removed from a marine mammal stock while allowing that stock to reach or maintain its optimum sustainable population." 50 C.F.R. § 229.2 (2024). PBR is calculated as a product of the estimated minimum population size, half of the maximum theoretical or estimated productivity rate, and a recovery factor (MMPA 1972; Wade and Angliss 1997). The default maximum productivity rate used for cetaceans is 0.04. The recovery factor ranges between 0.1 and 1.0 depending on the species' status. In assessing each stock's status in the SAR, stocks are designated as Strategic Stocks (SS) if one of the following criteria is met: 1) listed as endangered or threatened under the ESA, 2) declining and likely to be listed under the ESA, 3) considered depleted under the MMPA (below OSP), or 4) exposed to direct anthropogenic mortality exceeding calculated PBR. SARs are reviewed annually for strategic stocks and every three years (or as significant new information is obtained) for non-strategic stocks.

The MMPA allows for exemptions of "take" by commercial fishing operations through NOAA Fisheries' Marine Mammal Authorization Program (MMAP). The MMAP categorizes fisheries into one of three categories. For all Category 1 and 2 fisheries, fishers must obtain a marine mammal authorization certificate each year from NOAA Fisheries or its designated agent, which legally authorizes fishers to incidentally take a marine mammal. Takes are tracked through the Fisheries Observer Program. In addition, all fishers, irrespective of the category of their fishery, are required to report every incidental death or injury that results from commercial fishing operations within 48 hours of the event. When fishery-related mortality of a species or stock exceeds PBR, a Take Reduction Team (TRT) is established to create a Take Reduction Plan to reduce incidental mortality or serious injury from commercial fishing. A species or stock does not have to be listed under the ESA to warrant the formation of a TRT. When a TRT is formed,

NOAA Fisheries reaches out to states with populations of the affected stock/species for representation on the Team. In Virginia, staff from the Virginia Marine Resources Commission (MRC) serve on TRTs to represent Virginia fisheries and fish management concerns.

The MMPA was amended in 1981, 1984, 1988 and 1994. The 1994 amendment dictated the creation of the Marine Mammal Health and Stranding Response Program and the Unusual Mortality Event Working Group, both managed by NOAA Fisheries (16 U.S.C.S. § 1421, establishing the Marine Mammal Health and Stranding Response Program, and 16 U.S.C.S. § 1421c, establishing the unusual mortality event working group). The term "unusual mortality event" means a stranding that (A) is unexpected; (B) involves a significant die-off of any marine mammal population; and (C) demands immediate response (16 U.S.C.S. § 1421h (9)). The criteria used to determine and/or declare an unusual mortality event are:

1. A marked increase in the magnitude or a marked change in the nature of morbidity, mortality or strandings when compared with prior records.
2. A temporal change in morbidity, mortality or strandings is occurring.
3. A spatial change in morbidity, mortality or strandings is occurring.
4. The species, age, or sex composition of the affected animals is different than that of animals that are normally affected.
5. Affected animals exhibit similar or unusual pathologic findings, behavior patterns, clinical signs, or general physical condition (*e.g.* blubber thickness).
6. Potentially significant morbidity, mortality or stranding is observed in species, stocks or populations that are particularly vulnerable (*e.g.* listed as depleted, threatened or endangered or declining). For example, stranding of three or four right whales may be cause for great concern, whereas stranding of a similar number of fin whales may not.
7. Morbidity is observed concurrent with or as part of an unexplained continual decline of a marine mammal population, stock, or species.

71 Fed. Reg. 75234, 75236 (Dec. 14, 2006).

Virginia has been included in ten marine mammal UMEs since 2004 involving a variety of dolphins, seals, and baleen whales.

USFWS and NOAA Fisheries Section 6 Cooperative Agreements

Section 6 of the federal ESA provides a mechanism for cooperation between states, and NOAA Fisheries and the USFWS, the two federal agencies responsible for overseeing the conservation and recovery of federally threatened, endangered, and candidate species as well as species undergoing review for their status under the federal ESA. Under Section 6, NOAA Fisheries and USFWS are authorized to enter into agreements with any state that establishes and maintains an "adequate and active" program for the conservation of endangered and threatened species. Once a state enters into a cooperative agreement, NOAA Fisheries and USFWS are then authorized to assist in and provide federal funding for implementation of the state's conservation program. The

Virginia Department of Wildlife Resources (DWR) entered into a cooperative agreement with the USFWS in 1976 and signed a cooperative agreement with NOAA Fisheries in 2009. These agreements remain in effect. The USFWS cooperative agreement does not include authorization to respond independently to manatee events. Manatee management is authorized on a case-by-case basis with the USFWS Manatee Coordinator.

Virginia Agencies and Regulations

Two natural resource agencies in Virginia have authority over federally listed sea turtles, marine mammals, and marine fishes (hereafter collectively referred to as "protected marine species"): the Virginia Department of Wildlife Resources (DWR) and the Virginia Marine Resources Commission (MRC). The DWR is charged with the management of all wildlife and inland fish in the Commonwealth (§§ 29.1-103(11) and 29.1-109(A) of the *Code of Virginia*). The Virginia Endangered Species Act, §§ 29.1-563 – 570 of the *Code of Virginia* (Virginia ESA)https://law.lis.virginia.gov/vacodefull/title29.1/chapter5/article6/, confers the DWR the authority to adopt the federal list of endangered and threatened species (§ 29.1-566 of the *Code of Virginia*); to list additional species as endangered or threatened in the Commonwealth (*id.)*; to manage and protect those species throughout the Commonwealth (§§ 29.1-564, -566, -567, -568, -569 and -570 of the *Code of Virginia*); and "to prohibit by regulation the taking, transportation, processing, sale, or offer for sale within the Commonwealth of any threatened or endangered species of fish or wildlife" (§ 29.1-566 of the *Code of Virginia*). Via the DWR's Section 6 cooperative agreement with the USFWS, the DWR is also responsible for protection and management of species listed by the Secretary of Interior under the federal ESA. The DWR's Nongame and Endangered Species Program, Aquatics Division, Wildlife Division, and Law Enforcement Division are primarily responsible for program development and implementation regarding protection and management of the Commonwealth's wildlife and inland fish, including endangered or threatened species, that occur throughout the Commonwealth's lands and jurisdictional waters.

The MRC's geographic jurisdiction includes "the Commonwealth's territorial sea and extend to the fall line of all tidal rivers and streams . . . where jurisdiction extends throughout the Commonwealth" (§ 28.2-101 of the *Code of Virginia*). The MRC has "jurisdiction over all commercial fishing and all marine fish, marine shellfish, marine organisms, and habitat in such areas" (Id). This authority includes marine mammals and their prey bases (Id). It has the authority to develop and enforce fishery regulations pertaining to the protection and conservation of state and federally protected marine species (§§ 28.2-201 and -106 of the *Code of Virginia)*. However, the agency is not responsible for developing or enacting state threatened and endangered species laws or regulations and draws no authority from the Virginia or federal ESA. The MRC has regulatory jurisdiction over activities affecting state-owned bottomlands in tidal waters only (*Code of Virginia* §§ 28.2-1200-1209). The MRC has authority over all commercial fishing activities within its jurisdiction and regulates the take of marine finfish and shellfish in Virginia's tidal waters (*Code of Virginia* § 28.2-200-244). It is also responsible for establishing finfish and shellfish seasons, size, and possession limits, species-specific landings, harvest quotas, and harvest size restrictions (*Code of Virginia* § 28.2-101). The Code of Virginia authorizes the MRC to promulgate regulations that conserve and promote the seafood and marine

resources of the Commonwealth (*Virginia Code* § 28.2-201), establish and limit licenses, *id*., collect fisheries statistics (*Code of Virginia* § 28.2-204), and prepare fishery management plans (*Code of Virginia* §§ 28.2-201, -203 and -203.1). The MRC's Fisheries and Habitat divisions are responsible for development and implementation of programs that carry out these mandates.

The DWR Conservation Police Officers and MRC Marine Patrol Officers share some of the same powers: each is vested with the authority to enforce the criminal laws of the Commonwealth. As it is a criminal offense to violate the provisions of the Virginia ESA (§ 29.1-567 of the *Code of Virginia*), the Conservation Police and the Marine Patrol have equal authority to enforce the Commonwealth's endangered species laws. Moreover, the MRC has standing law enforcement agreements with NOAA Fisheries and the USFWS, enabling Marine Patrol Officers to collaborate with their federal counterparts on protected species investigations, patrols, inspections, warrants, and arrests. The MRC has a Joint Enforcement Agreement with NOAA Fisheries for MMPA enforcement, including assisting with marine mammal stranding events. The DWR has a standing law enforcement agreement with the USFWS that allows Conservation Police Officers to serve as Deputy U.S. Fish and Wildlife Special Agents and conduct investigations both in-state and across state lines when violations of federal wildlife laws have been committed. Finally, the MRC Marine Police receives annual funding from NOAA Fisheries to assist with sea turtle and marine mammal stranding response and fishery management in the Commonwealth through its JEA with NOAA Fisheries.

A third state agency, the Virginia Institute of Marine Science (VIMS), has conservation responsibilities as well, but has no authority to enact or enforce state regulations. VIMS is specifically mandated to serve the state in matters of marine research and has marine conservation duties (*Code of Virginia* §28.2-1100). VIMS has a three-part mission: to conduct interdisciplinary research in coastal and estuarine science; to educate students and citizens; and to provide advisory service to policy makers, industry, and the public (https://www.vims.edu/about/index.php). VIMS' duties include advising, training, providing technical/scientific assistance, and conducting research for the MRC, federal agencies, and other public and private groups on the conservation and management of marine, coastal, and estuarine resources (*Code of Virginia* § 28.2-1100). Research at VIMS extends from inland watersheds to the open ocean and is conducted by teams of scientists with diverse expertise in areas such as plankton and nutrient dynamics; shoreline and wetlands processes; fisheries ecology and stock assessment; fisheries gear engineering and bycatch; aquaculture; genetics; immunology; toxicology; biological, chemical, and physical oceanography; aquatic diseases; computational modeling; and marine geological processes.

Virginia ESA

Virginia's ESA, administered by the DWR, provides for adoption of the federal endangered and threatened list, § 29.1-566 of the Code of Virginia, listing at the state level, id., and protection of those species in the state. § 29.1-567 of the Code of Virginia. Further protective legislation for non-endangered species is found in Sectio 29.1-521 of the *Code of Virginia*, which provides for the protection of wildlife in general. The DWR Executive Office units, along with the following

divisions, are responsible for program development and implementation: Wildlife, Fisheries, Law Enforcement, Outreach, Planning and Finance.

Virginia's Wildlife Action Plan

On November 5, 2001, President Bush signed the Department of the Interior and Related Agencies Appropriations Act, 2002, which created the State Wildlife Grants (SWG) program. As indicated within this legislation, these grants were established to help fund the development and implementation of programs for the benefit of wildlife and associated habitats, with an emphasis on state-defined Species of Greatest Conservation Need. The SWG program receives annual Congressional appropriations that are administered by the USFWS. The USFWS apportions these funds, using a legislated formula based on human population and geographic area, to fish and wildlife management agencies within the 50 states, the five U.S. territories, and the District of Columbia. To receive annual SWG appropriations, Congress stipulated that each fish and wildlife agency must produce a Comprehensive Wildlife Action Plan (WAP), to be updated every 10 years. The latest version of the Virginia WAP, completed in 2015 (http://bewildvirginia.org/wildlife-action-plan/), includes several marine mammal species covered by this plan in its list of Species of Greatest Conservation Need as noted in the relevant species' descriptions. The 2025 Virginia WAP update is currently under development, and this plan will serve as an appendix to the Virginia WAP.

Virginia Marine Mammal Stranding Network

Nationally, the Marine Mammal Health and Stranding Response Program is overseen by NOAA Fisheries. Virginia is the southernmost state in the Greater Atlantic Region of NOAA Fisheries, which extends from Maine to Virginia. A marine mammal stranding is defined as any marine mammal dead on the beach or in the water, alive on the beach or shore and in need of medical attention, or in US waters but unable to return to its natural habitat without assistance (MMPA 1994). The Virginia Marine Mammal Stranding and Disentanglement Network is organized by the Virginia Aquarium & Marine Science Center's Stranding Response Program (VAQS). The VAQS is authorized under a Stranding Agreement (Appendix I), which dictates the level of response for an organization and its reporting responsibilities. Currently, the VAQS is the sole Stranding Agreement holder in Virginia; however, state agencies can respond to marine mammal events under Section 109h of the MMPA. Both the MRC and the DWR have assisted with marine mammal events primarily at the discretion of the VAQS.

Virginia Ocean Plan

The Virginia Ocean Plan (VOP) is a resource and coordinating document that aims to improve ocean resource management in the waters offshore of Virginia. The VOP was developed with the following goals:

1. Promote a sustainable and growing "blue economy".
2. Document and characterize existing/emerging ocean uses and the existing policies/plans that relate to them.
3. Minimize/mitigate conflicts between existing and emerging ocean uses, and minimize/mitigate impacts to ocean habitat, marine life, and ecosystem functions.

4. Increase resilience of ocean uses, ocean habitat, and marine life to a changing ocean.
5. Develop processes for plan implementation, plan maintenance/updates, ongoing stakeholder collaboration, and conflict resolution.

To do this, input from over 120 experts and experienced ocean users was gathered through six different workgroups focused on topics like energy and infrastructure; transportation, navigation, and security; and sustainability and conservation. The latter workgroup developed recommendations related to the conservation of marine species and habitats, and the goal of making ocean uses more sustainable. This Marine Mammal Conservation Plan is included as an appendix in the VOP as the conservation plan's goals, strategies, and actions are critical components of Virginia's ocean resource management.

Relevant Species and Species Descriptions

Owing to the considerable variation in knowledge of species occurrence, habitat use, and life-history in the mid-Atlantic region, the following accounts vary from descriptions of individual species, for which there is adequate to considerable data available, to phylogenetically related groups of species, for which data on individual species is either lacking or very limited. Species were listed individually if two or more of the following criteria were met:

1) Species within Virginia's inshore, nearshore and/or offshore waters that are predictably sighted annually or are predictably present annually in the stranding record;
2) Sufficient regional distribution and/or threat information is available to warrant a species description; or
3) Species meets one of the above criteria *and* is listed as endangered or threatened under the Virginia and US ESA.

Species were grouped rather than listed individually if one or more of the following criteria were met:

1) Minimal information exists on species life-history;
2) There is poor understanding of species distribution in the mid-Atlantic region; or
3) The species is primarily encountered in federal waters within the Economic Exclusive Zone (EEZ)

At least 31 marine mammal species have been documented in Virginia's inshore, nearshore, offshore, and pelagic waters, and they are listed by common and scientific name in Appendix II. The information presented for each species or phylogenetic group is specific to Virginia and/or the mid-Atlantic region. The following information is presented in each species account: (1) a general description of the species appearance; (2) the species' conservation status; (3) a description of each species' occurrence, distribution, and/or abundance in Virginia's waters; (4) species-specific stranding data; (5) species-specific diet information; and (6) species-specific

reproduction information. Each species' conservation status is presented in the narrative below and summarized in Appendix II. Conservation status includes International Union for Conservation of Nature (IUCN), ESA (all listings from NOAA Fisheries excluding manatees from USFWS), MMPA (*i.e.* strategic stock) listing; whether or not it is a Species of Greatest Conservation Need (SGCN) in the Virginia WAP (DWR 2025), and if there was an active TRT or UME as of November 2024. The Viriginia WAP identifies "the distribution and abundance of species of wildlife, including low and declining populations as each State fish and wildlife agency deems appropriate that are indicative of the diversity and health of wildlife of the state" (USFWS 2006) and refers to these species as a SGCN. Models for each species' abundance were created along the entire US Atlantic by Roberts *et al.* (2023) using aerial and shipboard survey data from a variety of sources. For North Atlantic right whales only, the model was updated in 2024 to incorporate passive acoustic monitoring (Roberts *et al.* 2024).

For most species, stranding data from 1988 to 2022 that included the species, stranding location, date, sex, length, and Human Interaction (HI) designation was provided by the VAQS. Data through November 2024 were provided for North Atlantic right whales because of concern for population decline in the western North Atlantic. Each stranding was evaluated for findings of HI, such as attached gear, twine, line or rope lesions, or injuries consistent with vessel strike, and designated as 'Yes', 'No', or 'Could Not Be Determined' (Moore and Barco 2013). For each species, strandings were summarized by five-year averages, season, and month. Seasons were defined as: winter (January-March), spring (April-June), summer (July-September), and fall (October-December). Strandings were also analyzed spatially and temporally, generating a point or kernel density map. The scale for kernel density maps is the same for all maps within a species but differs across species to display where strandings were highest for each species. The kernel density maps included in this document provide a visual display of average occurrence, and when multiple points are in a similar area, the density grid may appear to show presence of stranded animals in enclosed inland waters. With the exception of seals, readers should assume all strandings were initially discovered in open water or on a shoreline. It is also important to note that stranding locations represent location of discovery, not necessarily location of injury or mortality. The number of HI cases is also presented. Because bottlenose dolphin strandings involved a substantial number of HI cases, these data are presented spatially, and the percentage of HI [HI=Yes/(HI=Yes + HI=No)] is calculated by excluding 'Could Not be Determined' cases within and across years.

Lack of stranding and/or survey data does not necessarily mean a species is absent from the state or region. There are several reasons why there may be little or no occurrence data for a species whose published range encompasses Virginia waters, including 1) the species is primarily distributed offshore and thus less likely to be captured in the stranding record (*e.g.* offshore dolphin species); 2) the species occurs in small groups or spends very little time at the surface, making detection less likely during aerial or boat-based surveys (*e.g.* pygmy/dwarf sperm whales [*Kogia* sp.]); 3) the species is transitory and only spends a short amount of time in Virginia waters; 4) the species is relatively rare; and/or 5) the species is exclusively pelagic and occurs in the deep waters off the outer continental shelf (*e.g.* deep-diving species). Additionally, there are a few species that have documented strandings in Virginia waters in extremely low numbers but

are not included in this plan (*e.g.* melon-headed whale [*Peponocephala electra*], pygmy killer whale [*Feresa attenuata*]).

Odontocetes (Toothed whales)

Bottlenose Dolphins (*Tursiops* sp.)

Description

There are two morphologically and genetically distinct species within the genus *Tursiops* in US North Atlantic waters: the common bottlenose dolphin (*T. truncatus*) and the Tamanend's bottlenose dolphin (*T. erebennus*) (Hersch and Duffield 1990; Kenney 1990; Costa *et al.* 2022). *T. truncatus* is the larger of the two species and used to be referred to as the offshore ecotype, while *T. erebennus* is smaller and tends to inhabit inshore and nearshore waters. Because the two species are difficult to tell apart and their distribution in Virginia overlaps, they are grouped together as *Tursiops* sp. in this Plan (see bottlenose dolphins).

Status

The genus is not considered endangered under the state or federal ESA. Bottlenose dolphins are considered species of Least Concern by the IUCN Red List (Wells *et al.* 2019). Bottlenose dolphins vary dramatically in home ranges, habitat, diet and threats and are, therefore, not managed as a single group. Estimates of population sizes exist for specific regions of the world, and management is typically based on local population estimates and threats. Additionally, the two bottlenose dolphin species are often treated differently in management decisions due to their drastically different PBR values and their status (or lack thereof) as a strategic stock. Bottlenose dolphins are an SGCN in Virginia (DWR 2025) largely because of the high percentages of HI cases documented in the state's stranding record.

There are four recognized bottlenose dolphin stocks in Virginia waters: one offshore stock and three coastal stocks, including both the southern and northern migratory stocks (SCMS and NCMS) and the Northern North Carolina Estuarine System Stock (NNCESS), which is believed to extend into the southernmost waters of Virginia (Hayes *et al.* 2021; Urian *et al.* in prep). Abundance estimates for these four stocks vary, ranging from 823 individuals for the NNCESS to 62,851 individuals for the offshore stock. The NCMS and SCMS are estimated at intermediate densities of 6,639 individuals and 3,751 individuals respectively. Both the NCMS and SCMS are considered depleted. Further, all three coastal stocks are considered strategic stocks and managed via a TRT due to fishery-caused mortalities and serious injuries exceeding 10% of the PBR for each stock. The offshore stock is not considered a strategic stock (Hayes *et al.* 2020; Hayes *et al.* 2021).

Occurrence, Distribution and Abundance in Virginia Waters

Bottlenose dolphins occur in Virginia's inshore, nearshore, offshore, and pelagic waters throughout the entire year (Figure 1). The offshore stock's range extends outward from the continental shelf and slope and shows greater heterogeneity of genetic markers than coastal stocks (Hoelzel *et al.* 1998; Natoli *et al.* 2004). The offshore stock is relevant due to its presence in Virginia's nearshore and offshore waters and occasional stranding along the Commonwealth's coastline.

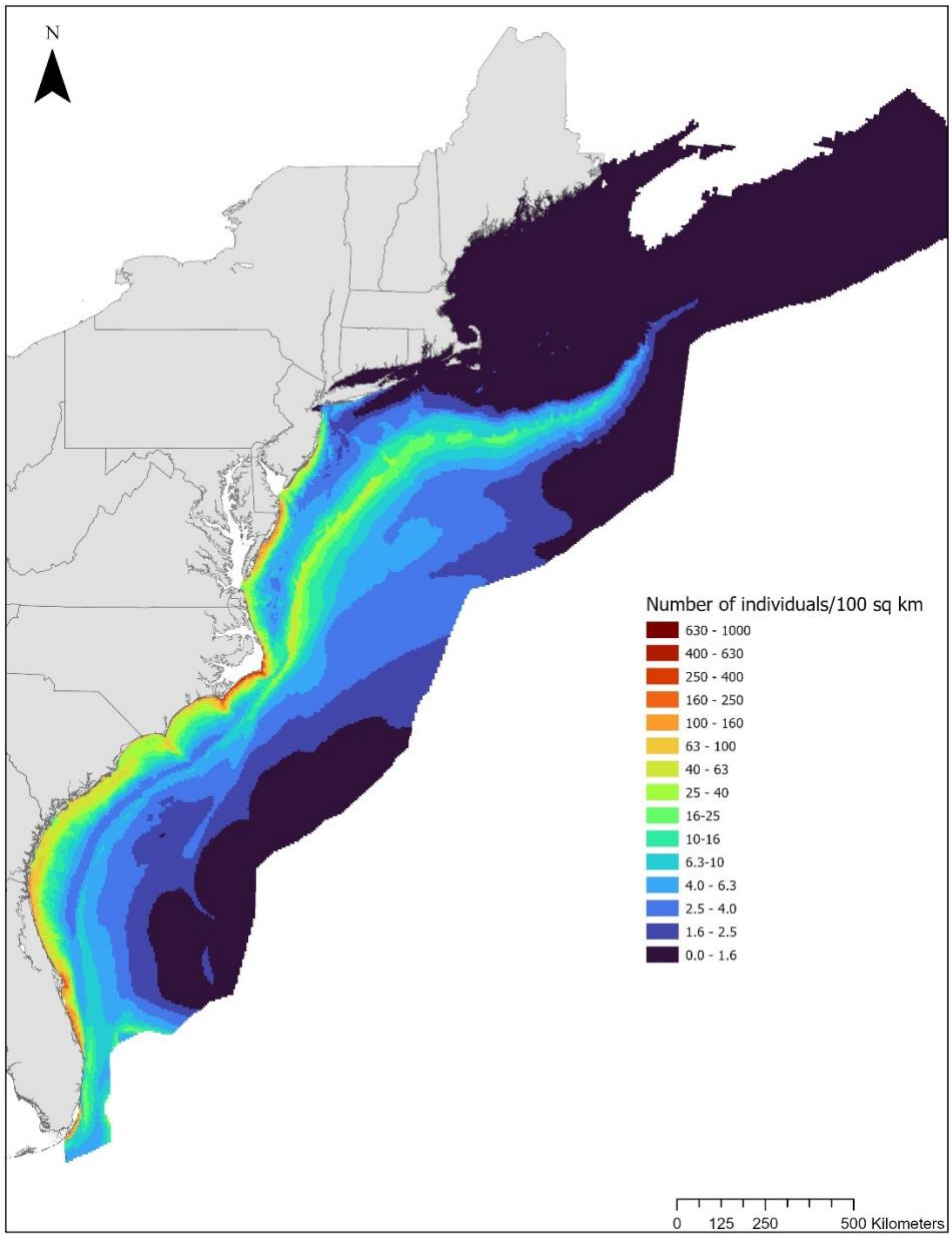

Figure 1. Modeled annual mean bottlenose dolphin density along the US Atlantic coast (Roberts *et al.* 2023).

The coastal stocks primarily inhabit nearshore and offshore waters and vary seasonally in their occupancy of Virginia waters. The NCMS occurs from New Jersey to northern Virginia in the

summer, and southern Virginia to southern North Carolina in the winter. The SCMS occurs from southern Virginia to mid North Carolina in summer, and South Carolina to northern Florida in winter. Both coastal migratory stocks are relevant to Virginia conservation efforts due to their seasonal northern and southern coastal migrations through Virginia waters. Photo-identification and satellite telemetry data suggest that the NNCESS also occur in both inshore and nearshore waters along Virginia Beach and in Chesapeake Bay in the warmer months of July and August, though the regularity of their occurrence is unknown (Urian 2016; Garrison *et al.* 2017a; Garrison *et al.* 2017b).

All four bottlenose dolphin stocks in Virginia waters overlap in their ranges, making it difficult to discern which individuals belong to which stock. Although precise ranges have not been defined, Torres *et al.* (2003) found that within 7.5 km of shore, all biopsied dolphins belonged to the coastal species (*T. erebennus*), while all sampled dolphins beyond 34 km from shore or deeper than 34m were offshore species (*T. truncatus*). Between the two ranges (7.5-34 km), both species occur at undefined frequencies. Based on aerial surveys, Kenney (1990) suggested that coastal bottlenose dolphins north of Cape Hatteras, North Carolina, are restricted to waters shallower than 25 m.

Although bottlenose dolphins are present year-round in Virginia waters, their presence increases dramatically in spring and summer months (Figure 2). Significant dolphin presence in nearshore waters of Virginia typically begins in April or May and appears to be strongly correlated with water temperatures (Barco *et al.* 1999). Consistent *Tursiops* presence commonly extends into September or October, at which point southward migration begins, with dolphin presence significantly reduced by November. Seasonal movement patterns are evident in inshore waters. Vessel-based surveys conducted from 2012 - 2015 revealed that dolphins were present year-round in nearshore waters but did not begin moving inshore until the spring. Peak densities in Chesapeake Bay occurred in the summer (June-August) and fall (September-November), followed by relatively few sightings in the winter (Engelhaupt *et al.* 2016). Bottlenose dolphins are commonly sighted from boat-based and aerial surveys. Sea turtle aerial surveys conducted from May to October in 2011 - 2013 regularly encountered bottlenose dolphins in Virginia's inshore and nearshore waters. Offshore dolphins have been regularly detected year-round along the continental shelf and past the shelf break (McAlarney *et al.* 2016; Mallette *et al.* 2017; McAlarney *et al.* 2017; McAlarney *et al.* 2018; Cotter 2019).

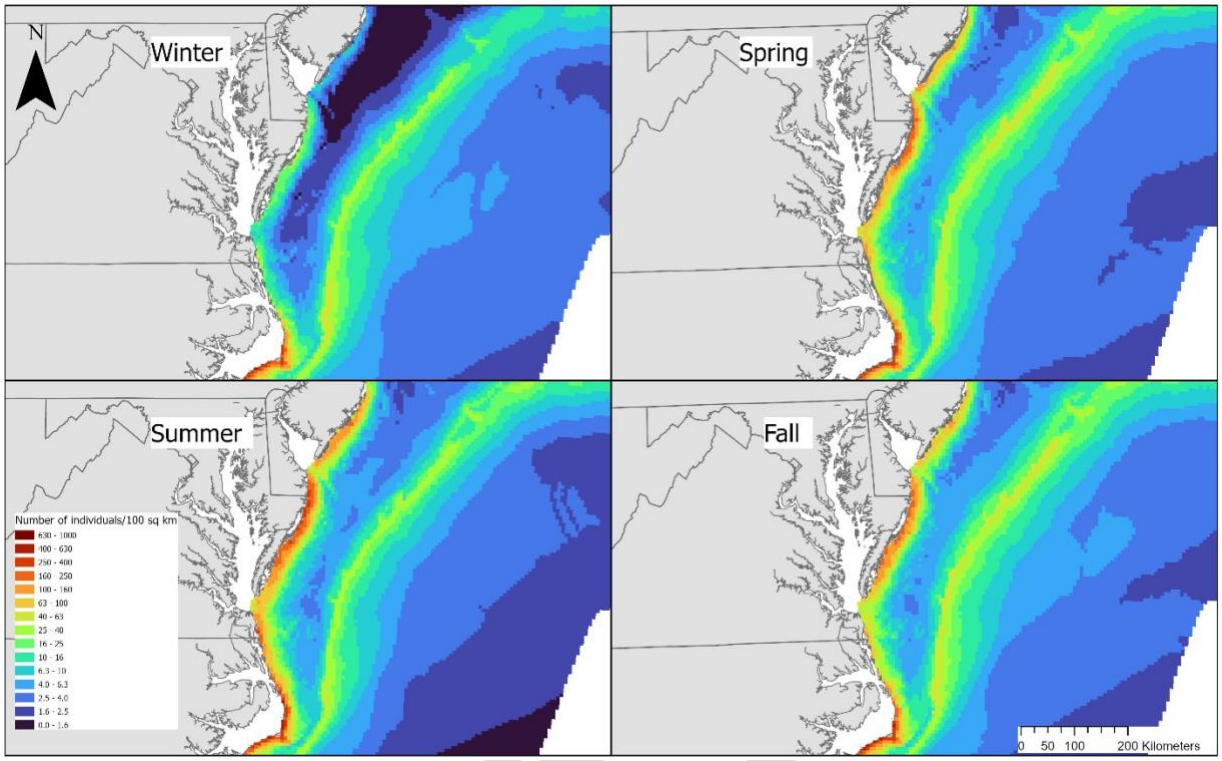

Figure 2. Modeled seasonal mean bottlenose dolphin density along the mid-Atlantic Bight (Roberts *et al.* 2023).

Strandings

The bottlenose dolphin is the most common species in Virginia's marine mammal stranding record, comprising 68% (n = 2,236 strandings) of all reported strandings from 1988 to 2022 (VAQS *unpublished data*, October 2023). An annual average of 64 bottlenose strandings were documented through this period of time. From 2013 to 2015, the Mid-Atlantic Bottlenose Dolphin UME was in effect along most of the US Atlantic coast because of a viral disease outbreak (*i.e.* morbillivirus) The UME peaked in the summer and fall of 2013, and Virginia experienced an almost six-fold increase in strandings that year (n=382; NOAA Fisheries 2023a). The average number of annual strandings showed an increasing trend when summarized in five-year increments, even when the 2013 strandings were excluded from the calculations (Figure 3). Whether this rising trend reflects an actual increase in overall mortality or is the result of more bottlenose dolphins being present in Virginia waters is unknown. Strandings were concentrated

along southern portion of Virginia's ocean-facing coastline and the southern end of Virginia's Eastern Shore (Figure 4).

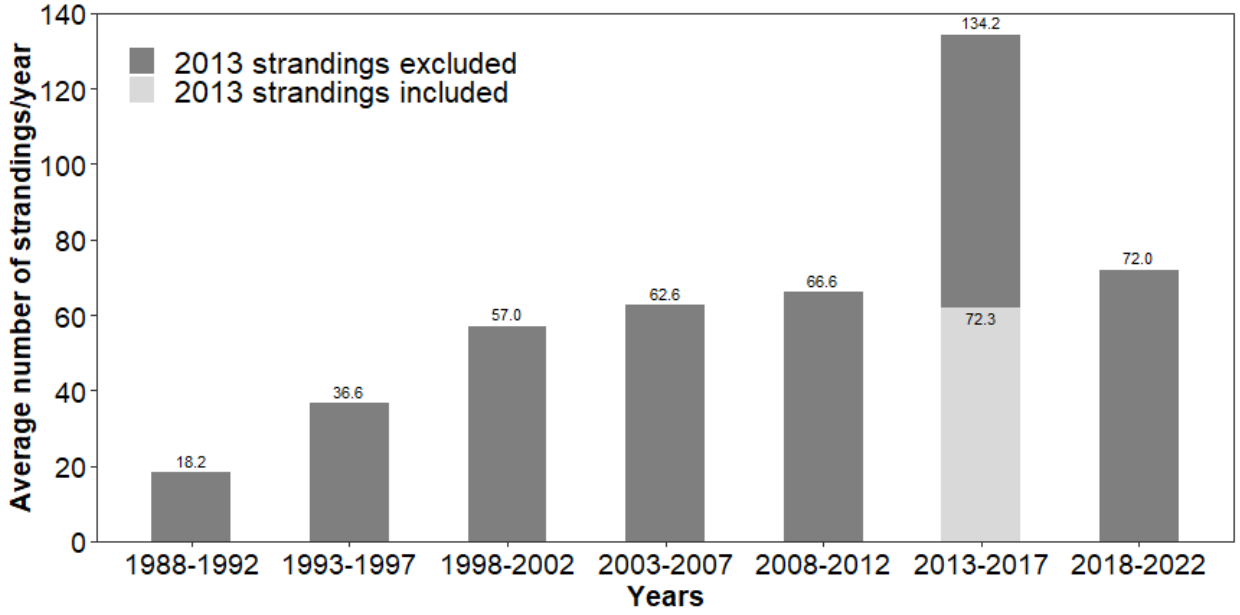

Figure 3. Average number of bottlenose dolphin strandings in Virginia from 1988 to 2022, summarized in five-year increments. The 2013 to 2017 increment encompassed a bottlenose dolphin Unusual Mortality Event (UME) that was in effect from 2013 to 2015, which caused strandings to increase to a level well above average in 2013. To illustrate the impact of the UME on bottlenose dolphin strandings in 2013, two averages were calculated: one that includes the total number of strandings in 2013 and one that excludes it.

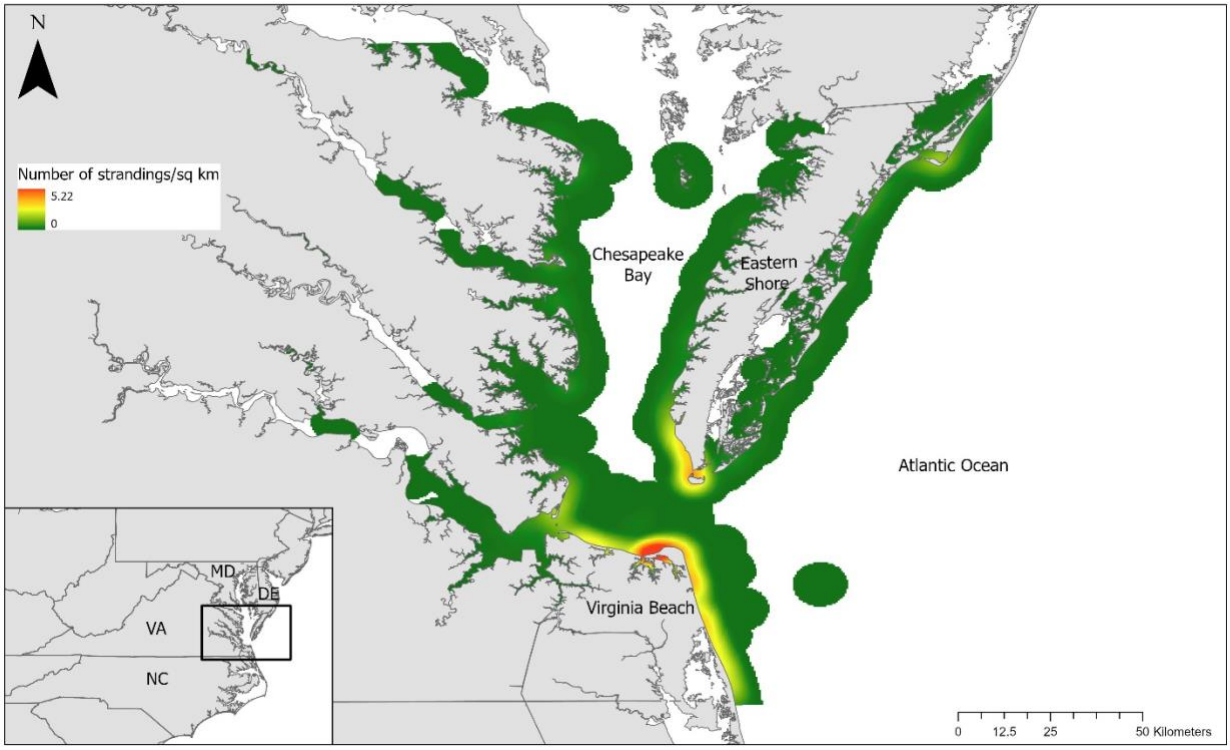

Figure 4. Density map of bottlenose dolphin strandings per square kilometer in Virginia from 1988 to 2022. Offshore points represent carcasses discovered floating offshore.

Seasonally, reported strandings were highest in the summer (43%) and spring (42%), and lowest in the winter (4%; Figure 5). However, when strandings during the 2013 mortality event were excluded, almost half of all strandings occurred in the spring (48%). Seasonal stranding patterns followed boat-based and aerial survey sighting patterns summarized in Barco *et al.* (1999) and Englehaupt *et al*. (2016), which described dolphins concentrating along the southern oceanfront and the mouth of the Chesapeake Bay in the winter, moving farther into Chesapeake Bay and its tributaries in the spring and summer, and moving out of Chesapeake Bay in the fall (Figure 6).

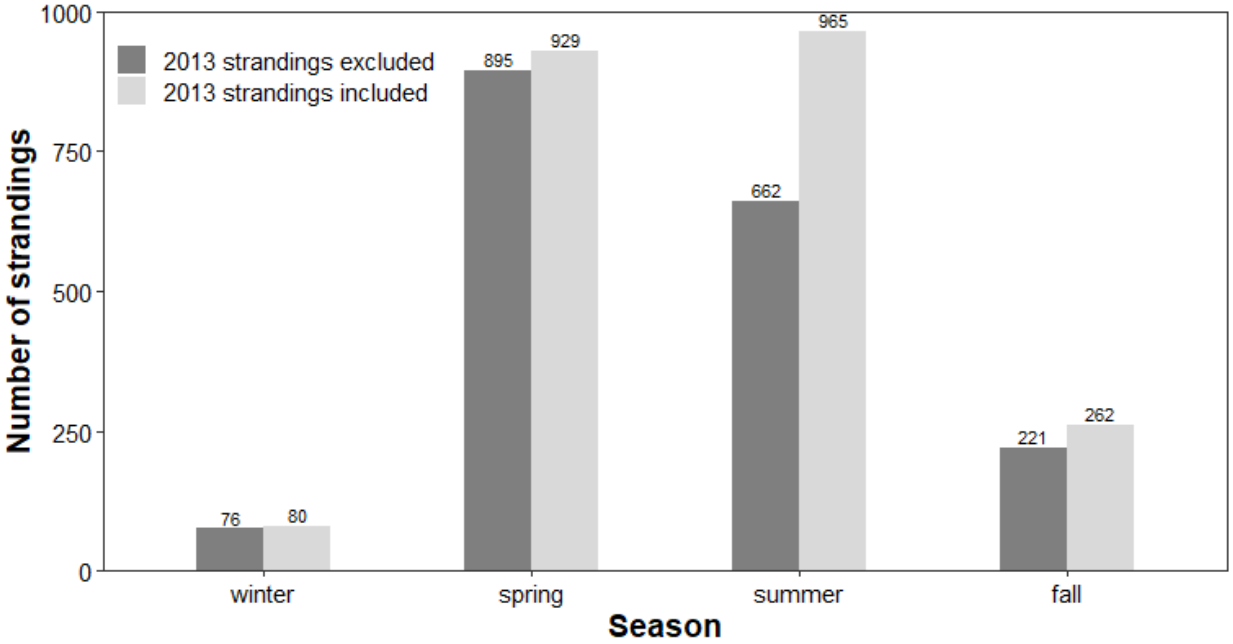

Figure 5. Number of bottlenose dolphin strandings per season in Virginia from 1988 to 2022.

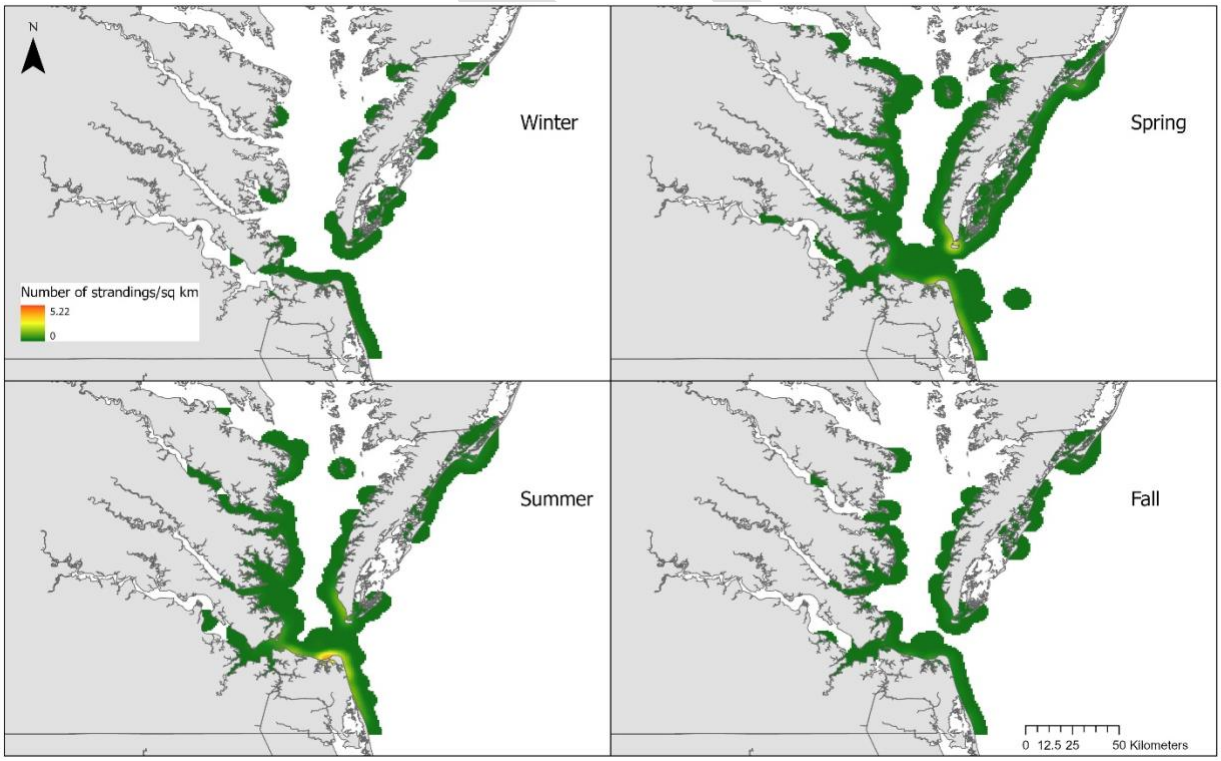

Figure 6. Density map of seasonal bottlenose dolphin strandings per square kilometer in Virginia from 1988 to 2022.

Strandings were highest in the months of May (20%) and August (20%), and lowest in February (0.6%) when including strandings during the 2013 UME (Figure 7). However, monthly stranding patterns varied when excluding strandings from the 2013 UME, peaking in May (24%) and June

(18%). Within a calendar year, strandings tend to increase dramatically starting in May and remain relatively high through October. The May peak appears to be driven by high infant mortality (*e.g.* stillbirth, failure to thrive, infanticide, etc.), as many of the strandings are perinates (near time of birth).

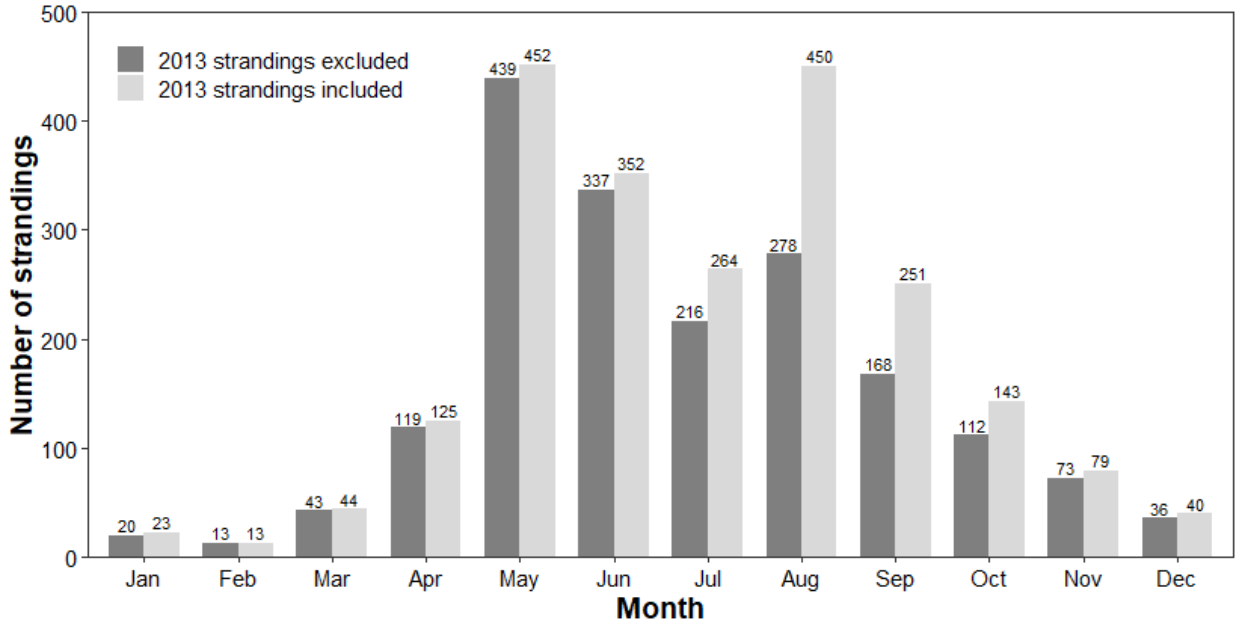

Figure 7. Number of bottlenose dolphin strandings per month in Virginia from 1988 to 2022.

A total of 418 HI cases were detected among strandings that were reported between 1988 and 2022, including numerous fishery interaction cases. For cases in which there was a 'Yes' or 'No' HI designation, the percentage of HI was 60%. The percentage of HI varied annually, ranging from 0% in 1991 to 92% in 2017. Although there was a significant increasing trend in the percentage of HI over time (Spearman rank correlation $S=3648.8$, $p<0.01$; Figure 8), this relationship requires further investigation because data resulting from anecdotal reports where effort was variable may not represent a true statistical trend. The majority of HI cases occurred near Cape Henry and to a lesser extent on the bayside of the Eastern Shore's southern tip (Figure 9).

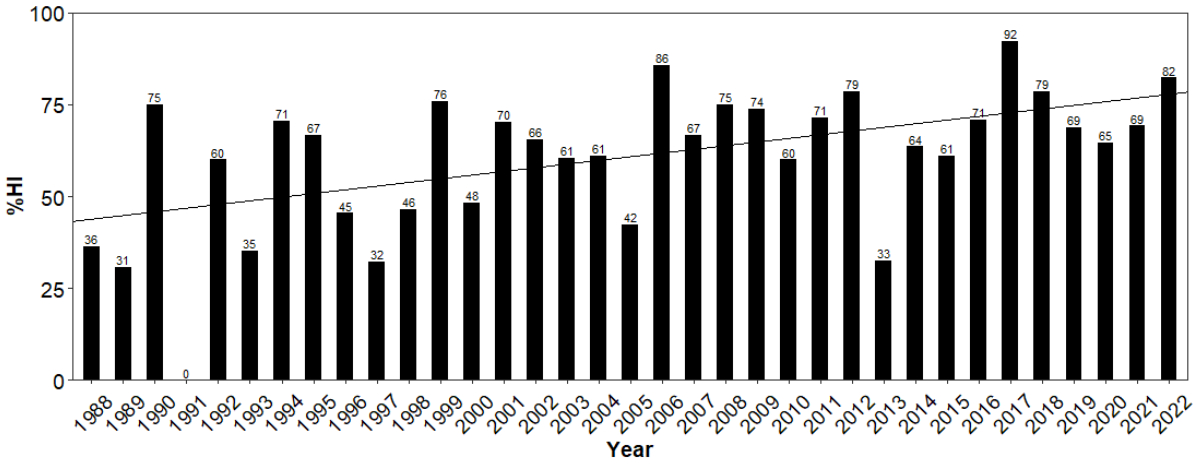

Figure 8. The percentage of human interaction (HI) cases and linear trend documented among stranded bottlenose dolphins in Virginia from 1988 to 2022.

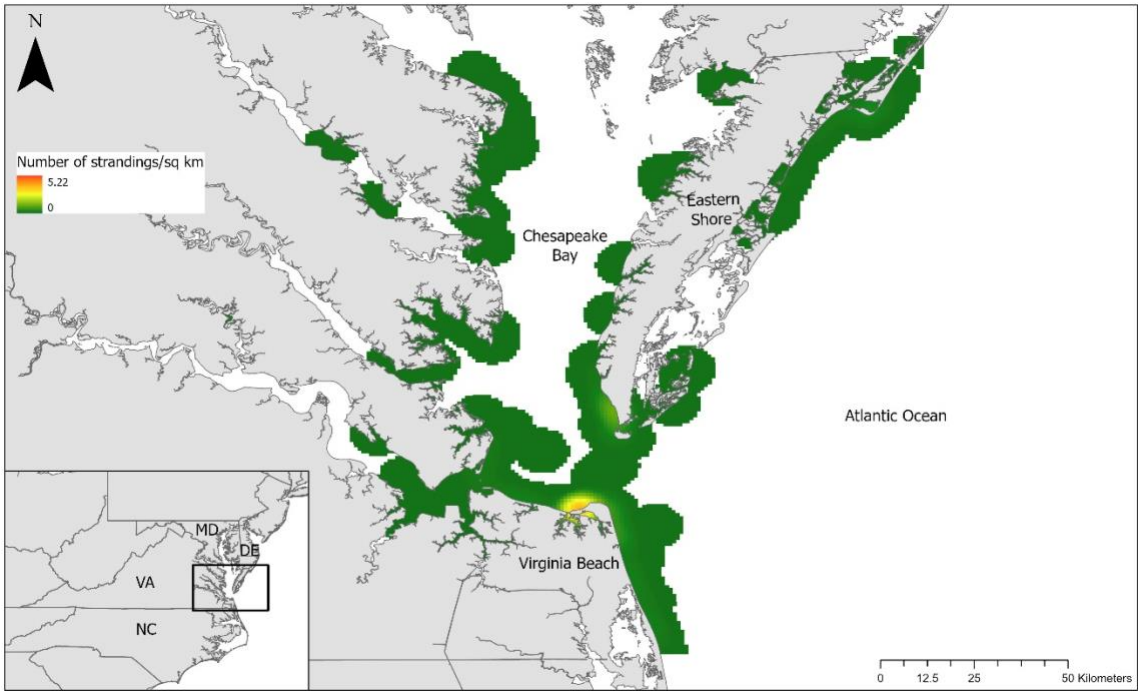

Figure 9. Density map of bottlenose dolphin strandings with evidence of human interaction per square kilometer in Virginia from 1988 to 2022.

Diet and Foraging in Virginia Waters

Most of what is known about the diet of bottlenose dolphins in Virginia waters is based on stomach content analyses conducted on dead stranded individuals. Volker (2020) analyzed the stomach contents of 200 bottlenose dolphins that stranded between 1998 and 2012. In this analysis, Volker identified 32 prey species from 22 families using hard parts such as otoliths and squid beaks. The family *Sciaenidae* (drums/croakers) dominated the diet, occurring in 93% of dolphin stomachs and accounting for 71% of the diet numerically based on the total number of prey items identified. Other common prey items were in the families Clupeidae, Phycidae,

Engraulidae, Moronidae, and Loliginidae. Atlantic croaker (*Micropogonias undulatus*) was the most important prey species by number, frequency and reconstructed mass, followed by spot (*Leiostomus xanthurus*) and seatrout species (*Cynoscion* spp.). Other, less frequently consumed prey species included the Atlantic menhaden (*Brevoortia tyrannus*), hake (*Urophycis* spp.), anchovy (*Anchoa* spp.), longfin inshore squid (*Doryteuthis pealeii*), silver perch (*Bairdiella chrysoura*), and striped bass (*Morone saxatilis*). While significant differences in the diet did not exist between male and female dolphins, prey size increased with dolphin size. Seasonal diet shifts were also identified numerically, with seatrout spp. (>25%) being the dominant prey species in the spring, and Atlantic croaker (~50%) and spot (22%) being consumed primarily in the summer and fall. Although present in smaller numbers, Atlantic menhaden and striped bass consumption was highest in the spring and hake spp. and anchovy spp. consumption was lowest in the fall (Volker 2020). This study suggested that while many of the aforementioned prey species comprised significant portions of local bottlenose dolphin diet, seatrout, Atlantic croaker, and spot, all of which are commercially important species for Virginia fishers, appeared to be critical prey species at different times of the year. Additionally, the correlation between dolphin size and prey size suggests that robust populations of dolphins in which all age and size classes are well represented depend on prey populations with similar diversity in size classes.

Reproductive Activity in Virginia Waters

Reproductive activity is challenging to assess in turbid coastal waters. Although not much is known about *Tursiops* sp. reproductive activity in Virginia waters, a well-known bottlenose dolphin nursery exists along the southern tip of the mouth of the Chesapeake Bay. Mother/calf pairs and groups with numerous perinatal dolphins were seen every year along the Cape Henry-Fort Story coastline, with a peak occurring in July (Barco *et al.* 1999; Englehaupt *et al.* 2016). These nursing groups tended to preferentially use shallow, low wave energy waters inshore of Cape Henry at the mouth of the Chesapeake Bay.

Harbor Porpoise (*Phocoena phocoena*)

Description

The harbor porpoise (*Phocoena phocoena*) is a small, stocky toothed whale with spade-shaped teeth which distinguishes it from delphinids. It is the only member of the porpoise family that is seasonally endemic to the waters of Virginia.

Status

The harbor porpoise is considered a species of Least Concern on the IUCN Red List of Threatened Species (Braulik *et al.* 2023), and it is not listed as threatened or endangered under the state and federal ESA (Hayes *et al.* 2022). They are also not considered an SGCN in Virginia (DWR 2025). There are four proposed populations, or stocks, of harbor porpoises in the western North Atlantic (Gaskin 1984, 1992), and numerous analyses have been conducted which support those population distinctions. While the Gulf of Maine/Bay of Fundy stock is the southernmost

one with relevance to Virginia, mitochondrial DNA and microsatellite analyses indicate that the Gulf of Maine/Bay of Fundy population is not the only stock found in the mid-Atlantic in the winter. The Gulf of Maine/Bay of Fundy stock is not considered strategic. The latest population estimate for this stock is 95,543 individuals and a PBR of 851 individuals. Fishery-related mortality and serious injury from US fisheries is greater than 10% of the PBR and is therefore managed with a TRT (Hayes *et al.* 2022).

Occurrence, Distribution and Abundance in Virginia Waters

Harbor porpoises are not highly abundant in Virginia waters, and their occurrence is seasonal (Figures 10 and 11). During the summer months, harbor porpoises occur in the northern waters off the Canadian maritime provinces and the US northeast coast. In winter months, harbor porpoises disperse more widely and can be encountered in waters off Virginia in low densities. Harbor porpoises can be found from shallow nearshore waters to offshore waters with highest densities located over the continental shelf (Westgate *et al.* 1998).

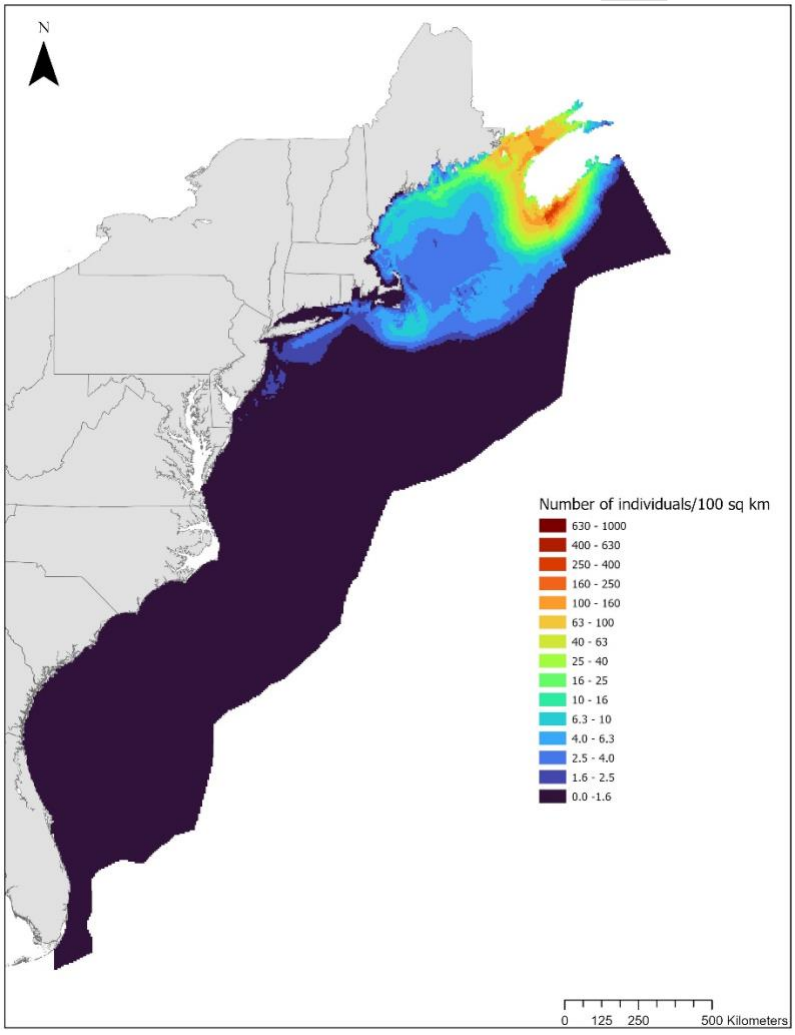

Figure 10. Modeled annual mean harbor porpoise density along the US Atlantic coast (Roberts *et al.* 2023).

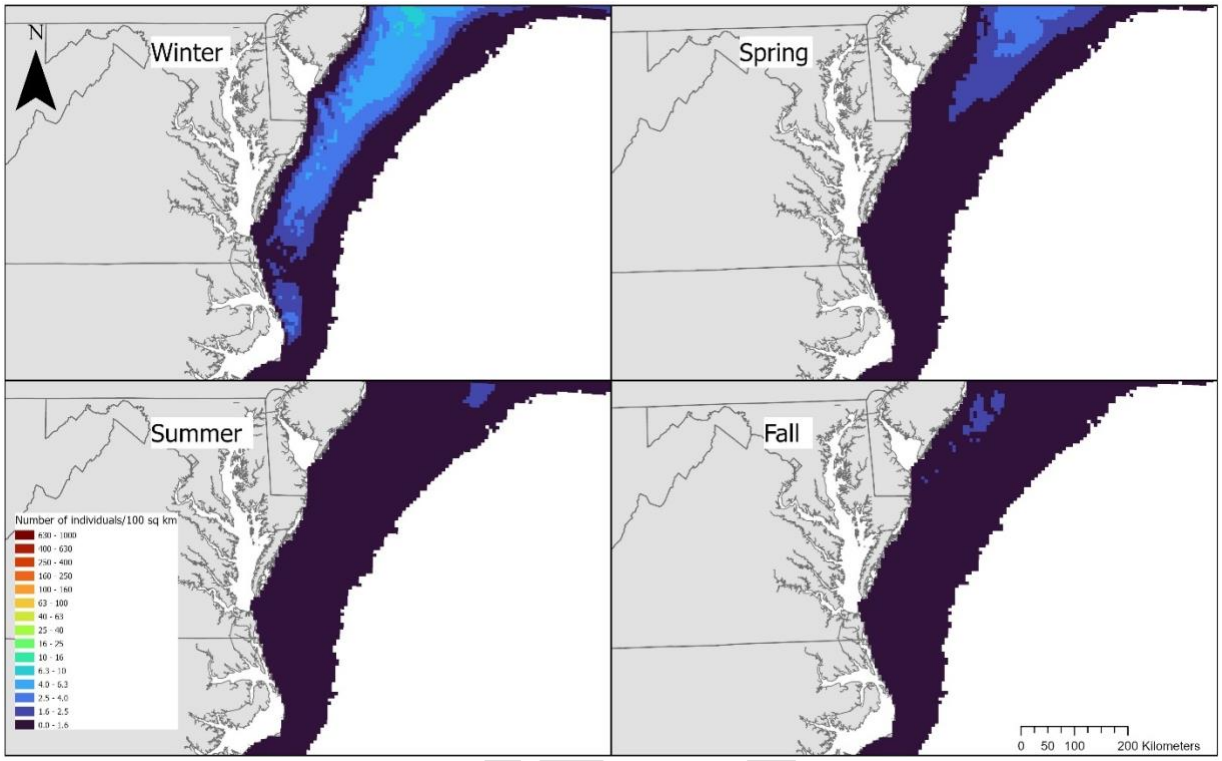

Figure 11. Modeled seasonal mean harbor porpoise density along the mid-Atlantic Bight (Roberts *et al.* 2023).

Harbor porpoise observations in Virginia waters are somewhat rare because this species occurs in small groups and can be cryptic, making them difficult to detect during aerial and boat-based surveys. Winter aerial surveys conducted from 2007 – 2017, during which over 32,706 km were flown over Virginia waters, revealed zero detections of harbor porpoises (VAQS *unpublished data*, October 2023). It is for this reason that most porpoise surveys in the western North Atlantic are conducted using ships as platforms (Hayes *et al.* 2022). Two sightings of harbor porpoise groups occurred in April 2015 from boat-based surveys: one group of two individuals approximately 20 km offshore and one group of four individuals in mid-continental shelf waters (Engelhaupt *et al*. 2016; Engelhaupt *et al.* 2017). Another sighting of one group of two individuals from a boat-based survey occurred in May 2017 in deeper continental shelf waters (Engelhaupt *et al.* 2018). Other methods to detect harbor porpoises include acoustic detections using passive acoustic monitors (PAM). A study conducted off the coast of Maryland detected harbor porpoises primarily in the winter and spring, when waters were cooler and chlorophyll concentrations were high (Wingfield *et al.* 2017), which suggests that harbor porpoises are likely to be present in Virginia waters during the same timeframe and under similar conditions

Strandings

The harbor porpoise is the second most common marine mammal to strand in Virginia after the bottlenose dolphin. Harbor porpoises comprised 10% (n = 340) of the marine mammal strandings reported from 1988 to 2022. The number of annual strandings was highly variable, ranging from zero to 46 with an average of 9.7 strandings per year. Stranding averages have been decreasing over time (Figure 12), and this decrease is likely related to both the decline of the

spiny dogfish fishery, which saw an increase in the number of fishers in the early to mid-1990s then later collapsed in the early to mid-2000s and increasing winter water temperatures potentially shifting the distribution northward. The harbor porpoise TRT identified the spiny dogfish fishery as the primary contributor to mid-Atlantic fishery interactions, along with the monkfish fishery which, as of 2024, was prosecuted north of Virginia (North Carolina Division of Marine Fisheries, *personal communication*, December 13, 2024). Strandings were concentrated on the ocean-facing beaches of Virginia Beach but were also encountered on the Eastern Shore's barrier islands (Figure 13).

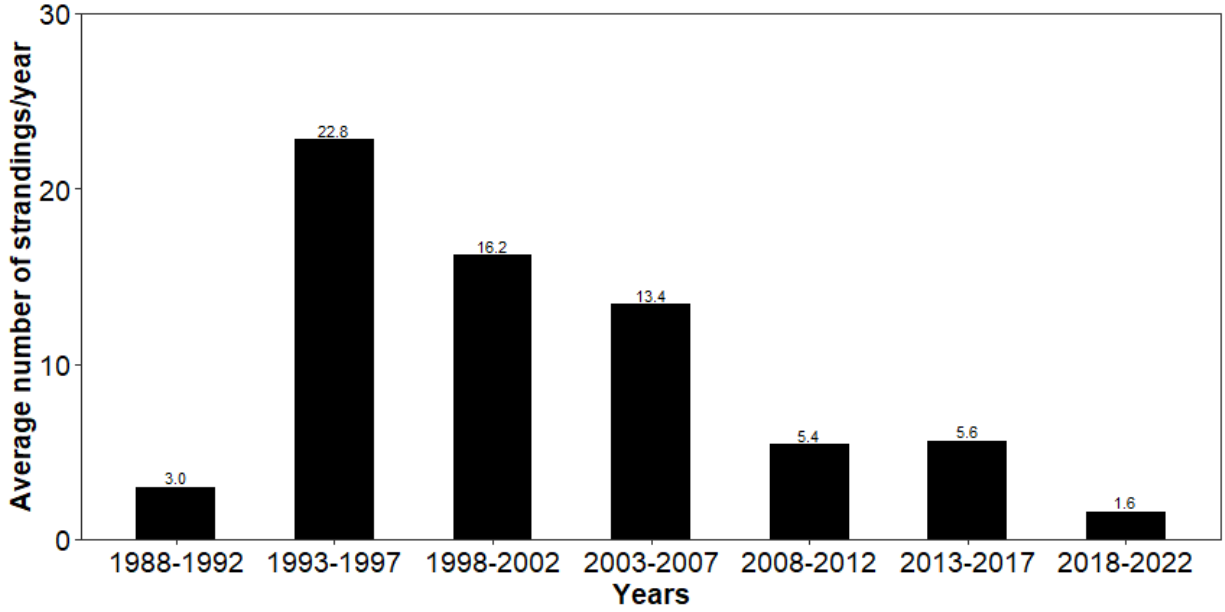

Figure 12. Average number of harbor porpoise strandings in Virginia from 1988 to 2022, summarized in five-year increments.

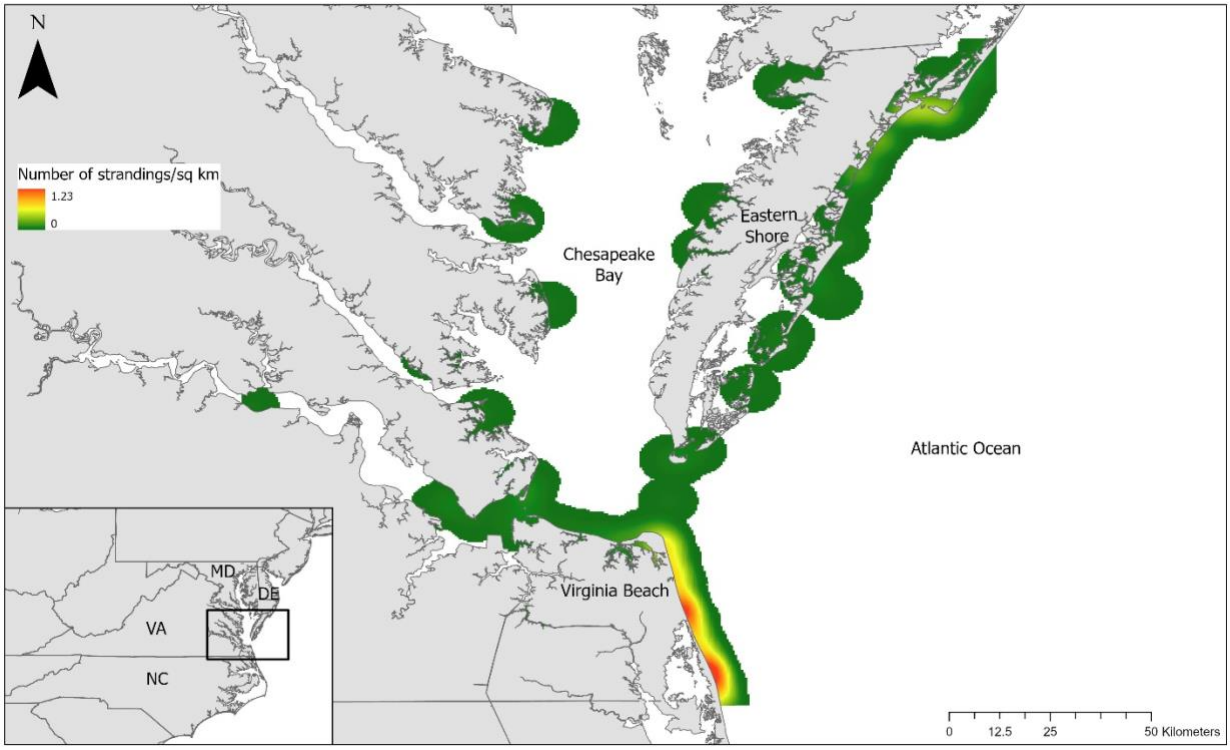

Figure 13. Density map of harbor porpoise strandings per square kilometer in Virginia from 1988 to 2022.

Harbor porpoise strandings were highly seasonal, with 61% occurring in the spring and 39% occurring in the winter (Figure 14). Strandings in the winter and spring were concentrated along the oceanfront of Virginia Beach. A few additional strandings were detected in the Chesapeake Bay in the spring (Figure 15). Ninety-eight percent (n = 332) of all harbor porpoise strandings were reported between February and May and peaked in April (43%) and March (31%; Figure 16). A total of 91 HI cases were documented, primarily consisting of fishery interactions.

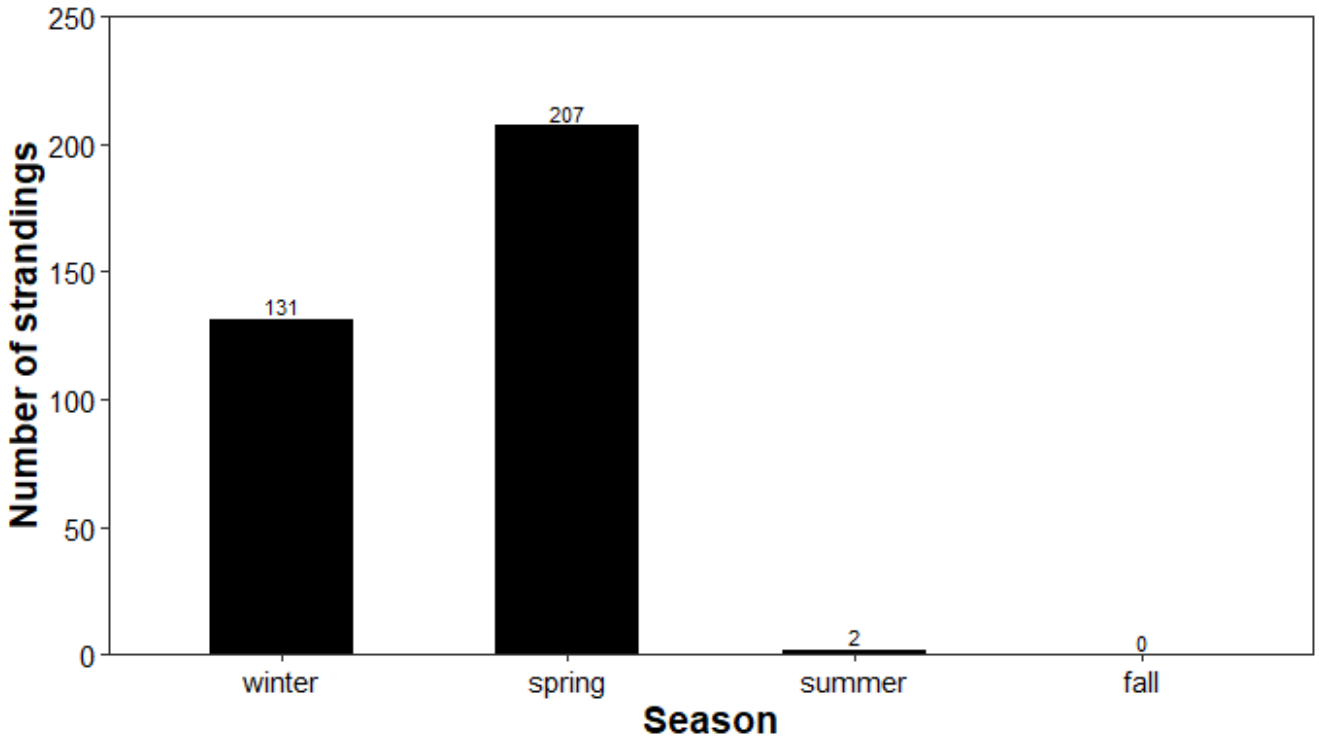

Figure 14. Number of harbor porpoise strandings per season in Virginia from 1988 to 2022.

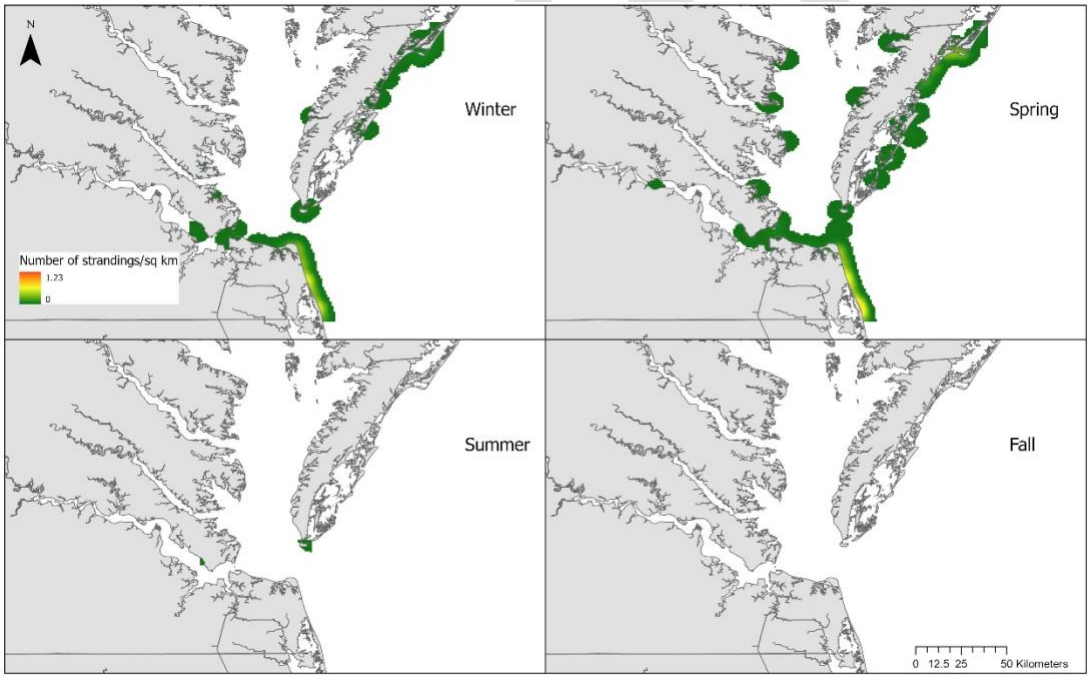

Figure 15. Density map of seasonal harbor porpoise strandings per square kilometer in Virginia from 1988 to 2022.

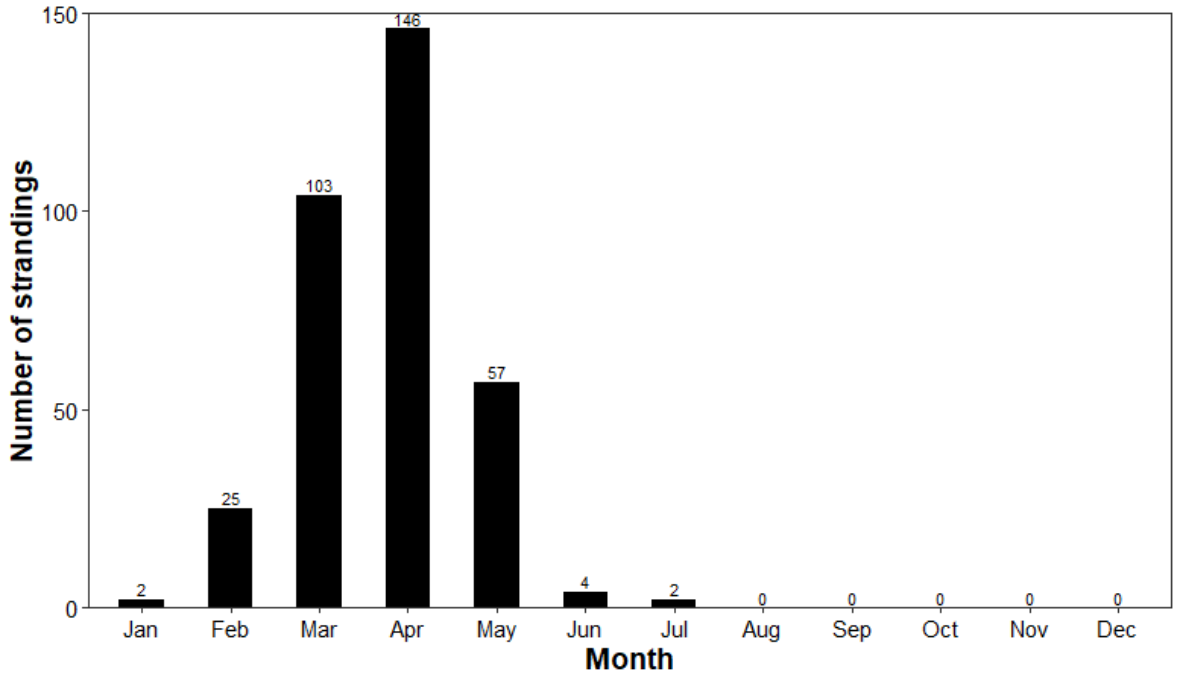

Figure 16. Number of harbor porpoise strandings per month in Virginia from 1988 to 2022.

Diet and Foraging in Virginia Waters

In a study conducted in 2013, the stomach contents of 37 harbor porpoises that stranded on the northern Outer Banks of North Carolina (n=3) and in Virginia (n=34) between 1997 and 2010 were examined. The study identified bay anchovy (*Anchoa mitchilli*) and spotted hake (*Urophycis regia*) as the most important prey. Atlantic herring (*Clupea harengus*), Atlantic menhaden, longfin squid, and shrimp (Penaeid family) were also common in the diet (Schoettle 2013).

Reproductive Activity in Virginia Waters

There have not been any reports of reproductive activity in Virginia waters.

Short-Beaked Common Dolphin (*Delphinus delphis delphis*)

Description

Short-beaked common dolphins (*Delphinus delphis delphis*) are relatively sleek in profile and have a fairly long and slender beak, a tall, pointed dorsal fin, and a white and cream colored "hourglass" pattern on its sides.

Status

Common dolphins (*Delphinus delphis*), as a whole, are categorized as a species of Least Concern on the IUCN Red List of Threatened Species (Braulik *et al.* 2021), and they are not listed as threatened or endangered under the state and federal ESA (DWR 2025). Further, they are not

considered an SGCN in Virginia (DWR 2025). The western North Atlantic stock is not considered a strategic stock under the MMPA. There are an estimated 172,947 short-beaked common dolphins off the Atlantic coast of North America (Hayes *et al.* 2020).

Occurrence, Distribution and Abundance in Virginia Waters

Short-beaked common dolphins are an oceanic species that occur in temperate and subtropical waters of the Pacific and Atlantic oceans. In the mid-Atlantic region, they are primarily found in offshore and pelagic waters (Figure 17). The occurrence of common dolphins in Virginia waters is not well understood; however, inshore waters, including the Chesapeake Bay, are not considered normal habitat for this species.

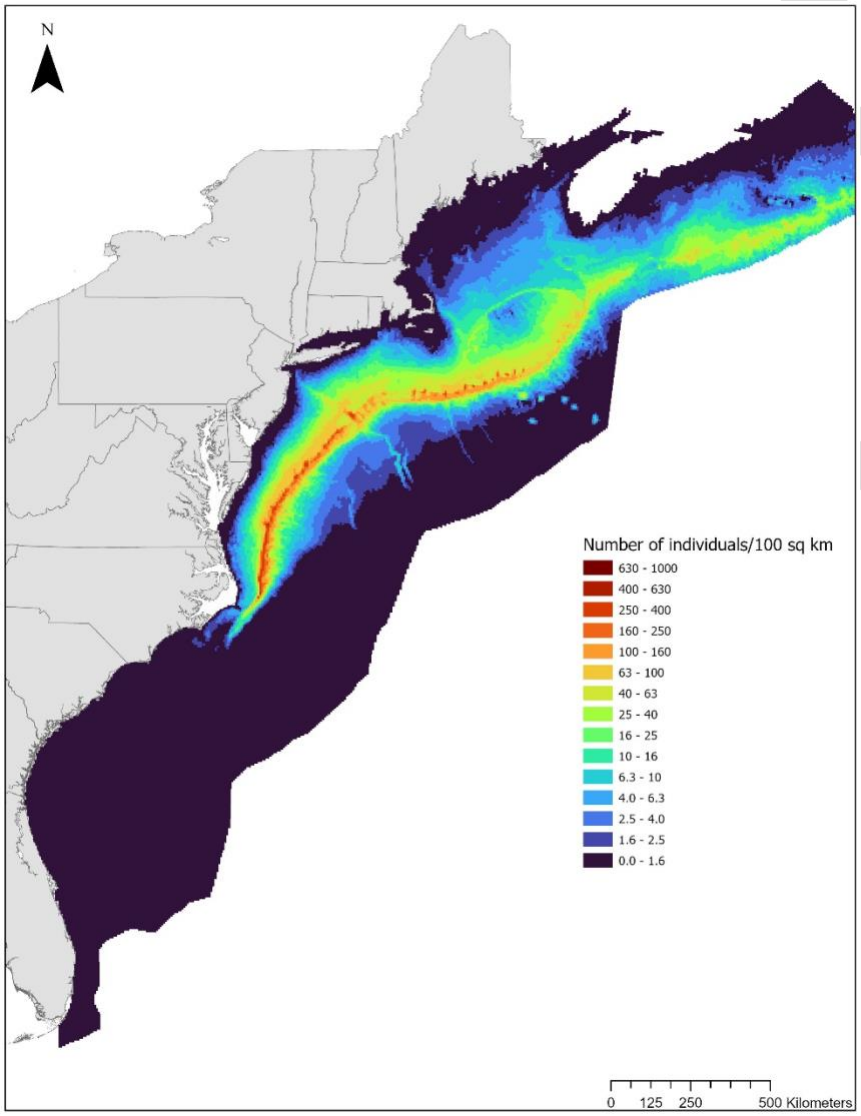

Figure 17. Modeled annual mean short-beaked common dolphin density along the US Atlantic coast (Roberts *et al.* 2023).

Intensive aerial sea turtle abundance surveys conducted from May - October in 2011 and 2012 revealed zero detections of short-beaked common dolphins in Virginia's inshore, nearshore, and offshore waters (Barco *et al.* 2015). However, during marine mammal and protected marine

species aerial surveys conducted in Virginia waters between 2015 and 2019 that covered the entire continental shelf, short-beaked common dolphins were detected in groups consisting of thousands of individuals year-round, with peak sightings occurring in the winter and spring (Mallette *et al*. 2017). The majority of the sightings occurred in offshore and pelagic waters (McAlarney *et al.* 2016; Mallette *et al.* 2017; McAlarney *et al.* 2017; McAlarney *et al.* 2018; Cotter 2019). Only one small group was detected landward of the 50 m isobath during a boat-based survey in the winter (Engelhaupt *et al.* 2016).

Strandings

A total of 144 short-beaked common dolphins strandings were reported in Virginia from 1988 to 2022. Only one stranding was documented between 1988 and 1997, while the rest occurred after 1997 at an average rate of 5.7 strandings per year (range 0-20). When summarized in five-year increments, the average number of strandings peaked between 2008 and 2012 (Figure 18). This species is known to strand in large groups, and six mass stranding events have occurred in Virginia waters. Strandings have been concentrated on the barrier islands, particularly on Assateague and Fisherman Islands, and along the bayside portion of the Eastern Shore and on the Virginia Beach oceanfront (Figure 19).

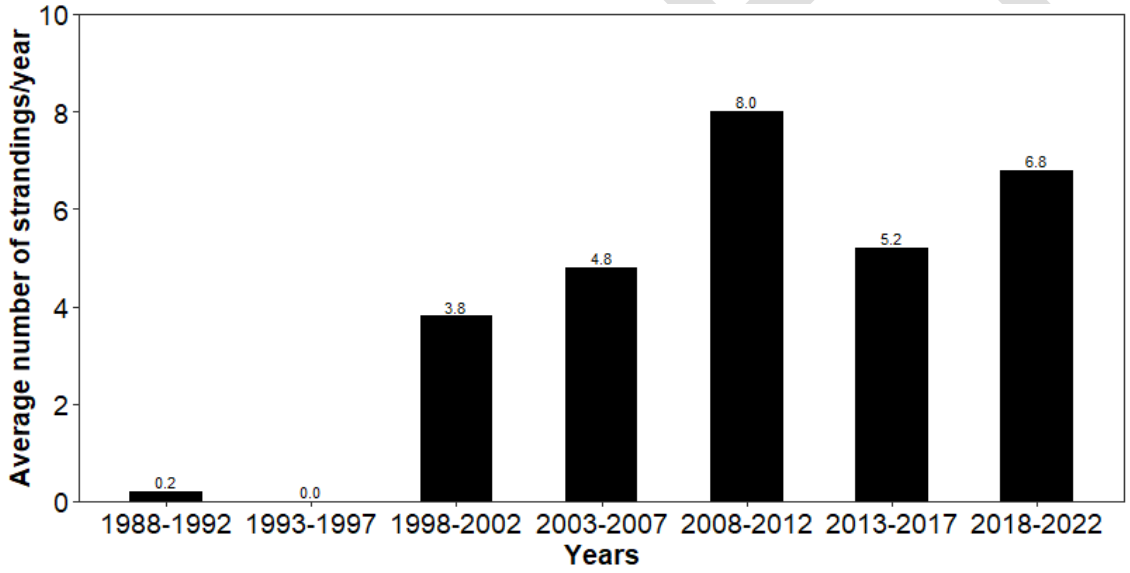

Figure 18. Average number of short-beaked common dolphin strandings in Virginia from 1988 to 2022, summarized in five-year increments.

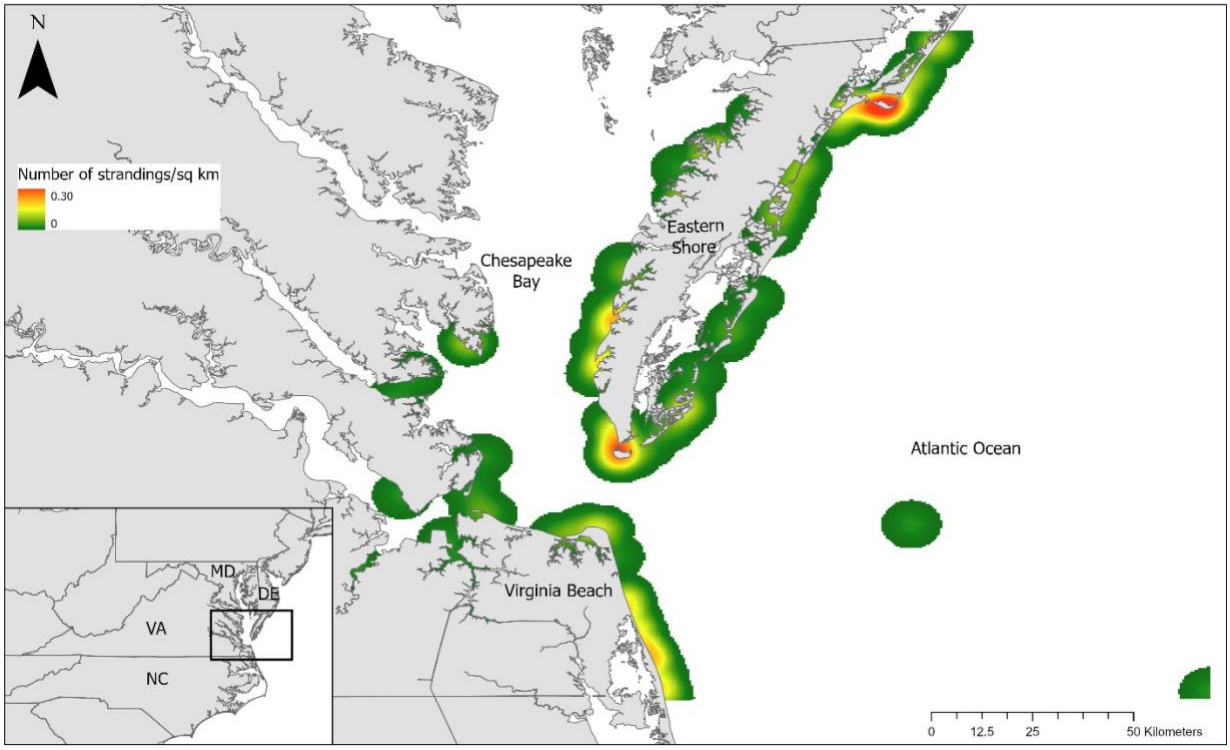

Figure 19. Density map of short-beaked common dolphin strandings per square kilometer in Virginia from 1988 to 2022. There were six mass stranding events documented in Virginia during this period of time, involving between two and 18 dolphins, and each individual's stranding location is depicted in the map. Offshore points represent carcasses discovered floating offshore.

Strandings were highest in the winter (53%, n=76), followed by the spring (33%, n=48; Figure 20). Strandings occurred year-round along oceanfront beaches and the mouth and southern portions of the Chesapeake Bay, with several occurrences further north in the Bay during winter and spring (Figure 21). Most strandings occurred in March (40%, n=57) and April (21%, n=30; (Figure 22). Interestingly, September is the only month in which no short-beaked common dolphin strandings were reported or observed alive during aerial or boat-based surveys (Engelhaupt *et al.*, 2016; McAlarney *et al.*, 2016; Mallette *et al.*, 2017; McAlarney *et al.*, 2017; McAlarney *et al.*, 2018; Cotter, 2019). Twelve short-beaked common dolphins have stranded with evidence of HI, including fishery interactions such as healed longline hook scars and marks consistent with monofilament net interaction (VAQS *unpublished data*, October 2023).

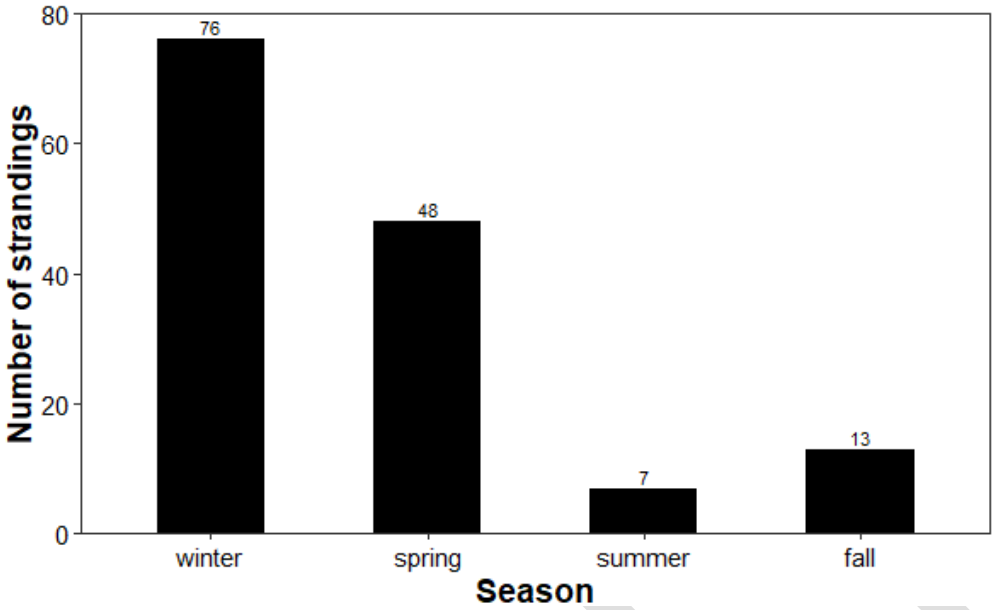

Figure 20. Number of short-beaked common dolphin strandings per season in Virginia from 1988 to 2022.

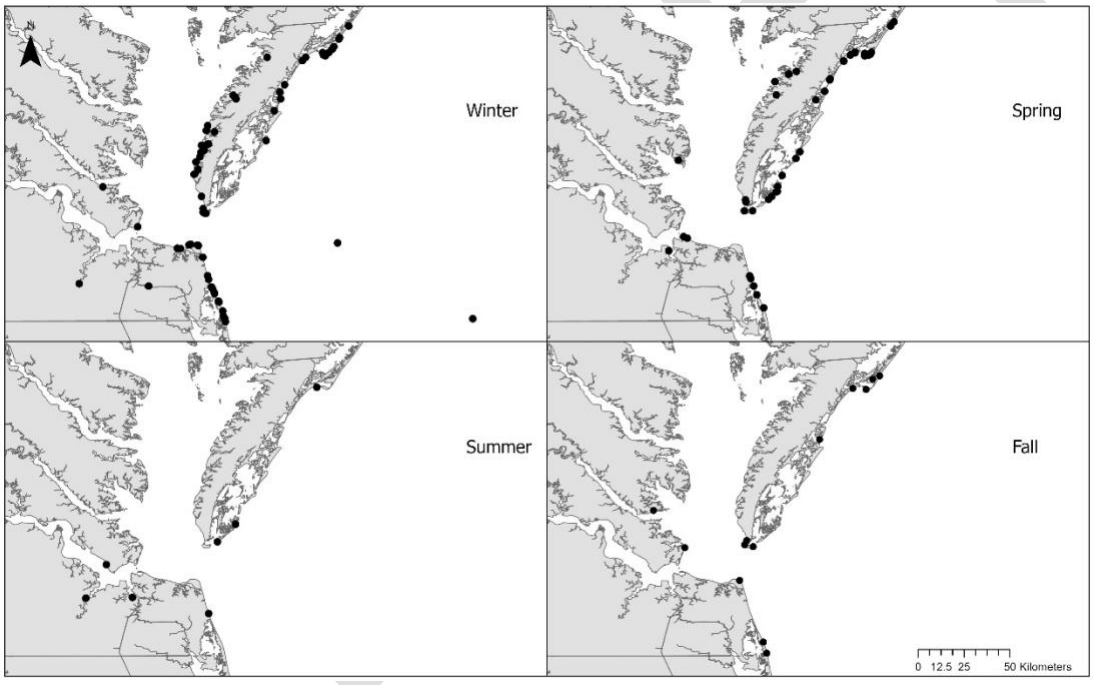

Figure 21. Map of seasonal short-beaked common dolphin stranding locations in Virginia from 1988 to 2022.

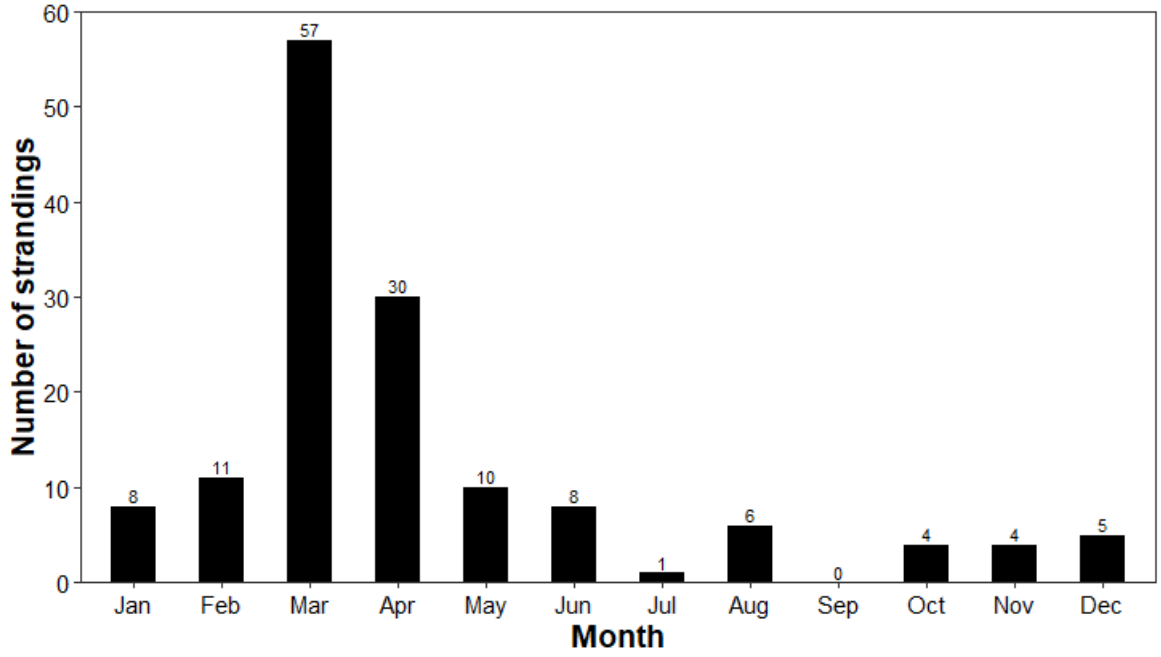

Figure 22. Number of short-beaked common dolphin strandings per month in Virginia from 1988 to 2022.

Diet and Foraging in Virginia Waters

Short-beaked common dolphins in the Northwest Atlantic consume fish and cephalopods, such as Atlantic mackerel (*Scomber scombrus*), hake, and longfin squid (Overholtz and Waring 1991).

Reproductive Activity in Virginia Waters

There is no known reproductive season in Virginia waters; however, strandings of pregnant and young-of-the-year dolphins have been reported in the Commonwealth in January and March. It is possible there is a calving season in Virginia waters, but this information has not been verified.

Other Delphinids

Other delphinids are present in Virginia waters based on stranding records, including Atlantic spotted dolphins (*Stenella frontalis*), Atlantic white-sided dolphins (*Lagenorhynchus acutus*), striped dolphins (*Stenella coeruleoalba*), short-finned pilot whales (*Globicephala macrorhynchus*), long-finned pilot whales (*Globicephala melas melas*), rough-toothed dolphins (*Steno bredanensis*), and Risso's dolphins (*Grampus griseus*). The IUCN Red List of Threatened Species considers each species of Least Concern (Braulik and Jefferson 2018; Kiszka and Braulik 2018; Minton *et al.* 2018a; Minton *et al.* 2018b; Braulik 2019a; Braulik 2019b; Kiszka *et al*. 2019). None of these species are state or federally listed, considered a strategic stock, or an SGCN (Hayes *et al.* 2019; Hayes *et al.* 2020; Hayes *et al.* 2022; DWR 2025). However, fishery-related mortality and serious injury exceeds 10% of the stock's PBR for short-finned pilot whales and Risso's dolphins (Hayes *et al.* 2019; Hayes *et al.* 2022), which has triggered the formation of a TRT for these species primarily addressing longline fishery bycatch.

Atlantic white-sided dolphins and rough-toothed dolphins have not been detected in Virginia waters during aerial and boat-based surveys, as Virginia represents the southern and northernmost portions of their ranges, respectively (Hayes *et al*. 2019; Hayes *et al.* 2022). The remaining species are seen along the outer edge of the continental shelf during aerial and boat-based surveys but primarily occur in pelagic waters (McAlarney *et al.* 2016; Mallette *et al.* 2017; McAlarney *et al.* 2017; McAlarney *et al.* 2018; Cotter 2019; Englehaupt *et al.* 2024). These species strand relatively infrequently in Virginia. From 1988 to 2022, stranding frequency for these delphinids ranged from four striped dolphins to 23 Risso's dolphin. Except for Atlantic spotted and Atlantic white-sided dolphins, all of these species have mass stranded in Virginia, in groups ranging from two to 14 individuals.

Other Toothed Whales (Physeteriids, Kogiids and Ziphiids)

Virginia's stranding records from 1988 to 2022 indicate that other toothed whales are present in Virginia waters including sperm whales (*Physeter macrocephalus*), pygmy sperm whales (*Kogia breviceps*), dwarf sperm whales (*Kogia sima*), and *Mesoplodon* sp. (Blainville's, Gervais', Sowerby's, and True's Beaked Whales). *Kogia* sp. and *Mesoplodon* sp. are listed as Least Concern on the IUCN Red List and are not state or federally listed, an SGCN, or a strategic stock (Hayes *et al.* 2020; Kiszka and Braulik 2020a; Kiszka and Braulik 2020b; Pitman and Brownell Jr. 2020a; Pitman and Brownell Jr. 2020b; Pitman and Brownell Jr. 2020c; Pitman et al. 2022; DWR 2025). Sperm whales, however, are listed as Vulnerable on the IUCN Red List, endangered under the state and federal ESA, and depleted under the MMPA (Taylor *et al.* 2019; DWR 2025). Therefore, they are considered a strategic stock due to their endangered status (Hayes *et al.* 2020) but are not considered an SGCN in Virginia (DWR 2025).

Collectively, these species are pelagic species only observed past the continental shelf break. Sperm whale sightings from aerial surveys were regular and occurred year-round, while *Kogia* sp. and beaked whales (*Mesoplodon* sp.). are cryptic, deep-diving species that yield infrequent detections during aerial surveys (McAlarney *et al.* 2016; McAlarney *et al.* 2017; McAlarney *et al.* 2018; Cotter 2019). Strandings of these species are relatively few and have consisted of two sperm whales, 43 *Kogia* sp. (14 dwarf sperm whale, 27 pygmy sperm whales, and two *Kogia* sp.), and 11 beaked whales (six Gervais' beaked whales, two Sowerby's beaked whales, two True's beaked whales, and one Blainville's beaked whale) between 1988 and 2022. Although not observed in Virginia's stranding record or highly detectable during aerial and boat-based surveys, the goose-beaked whale (*Ziphius cavirostris*) is regularly present in pelagic waters from Cape Hatteras, North Carolina, to the Norfolk Canyon off Virginia, based on tagging and acoustic surveys (McLellan *et al.* 2018; Shearer *et al*. 2019; Boisseau *et al.* 2023).

Mysticetes (Baleen whales)

North Atlantic Right Whale (*Eubalaena glacialis*)

Description

North Atlantic right whales (*Eubalaena glacialis*) are distinguished from other baleen whales by their black bodies; head callosities; lack of a dorsal fin; and a distinctive, bushy, V-shaped blow.

Status

North Atlantic right whales are considered Critically Endangered under the IUCN Red List of Threatened Species (Cooke 2020). Further, this species is listed as endangered under the state and federal ESA and is an SGCN in Virginia (DWR 2025). The exact number of North Atlantic right whales in the western Atlantic stock is not known; however, the most recent published population estimate (November 2020) was 338 individuals, with a minimum estimate of 332 individuals (Pace *et al.* 2017; Pace 2021). The North Atlantic Right Whale Consortium (NARWC) produces a NARWC annual report card and the 2023 population estimate for 2022 was 356 (+7/-10) individuals (Pettis and Hamilton 2024). The species has been declining since 2011, with a 24% decline observed between 2011 and 2020. Because of its endangered status and high rates of human-caused (*e.g.* vessel strikes and fishery entanglements) mortality and serious injury, the North Atlantic right whale population is considered a strategic stock with a PBR of 0.7 individuals and is managed under the Atlantic large whale TRT (Hayes *et al.* 2023).

There is an ongoing North Atlantic Right Whale UME that was declared by NOAA Fisheries in June 2017. The cause of this UME has been attributed to human activities, particularly vessel strikes and rope entanglements. As of November 2024, 148 right whales were part of this event that included 41 deaths, 37 serious injuries, and 70 individuals with sublethal injuries or illness (NOAA Fisheries 2024a).

Occurrence, Distribution and Abundance in Virginia Waters

The North Atlantic right whale range extends from its winter calving grounds off the northeast Florida/southeast Georgia coast to its summer feeding grounds between New England and Newfoundland (Figure 23). Gowan and Ortega-Ortiz (2014) suggested that one of the primary drivers of winter right whale calving habitat in the southeastern US is sea surface temperature, suggesting that current and projected ocean temperature increases may push calving northward from the traditional calving grounds. Winter surveys have demonstrated neonate calf presence as far north as Cape Fear, North Carolina. Due to their migration through Virginia waters, the mouth of the Chesapeake Bay has a seasonal management area (SMA) from November 1-April 30, mandating reduced ship speeds out to approximately 20 nm (73 FR 60173).

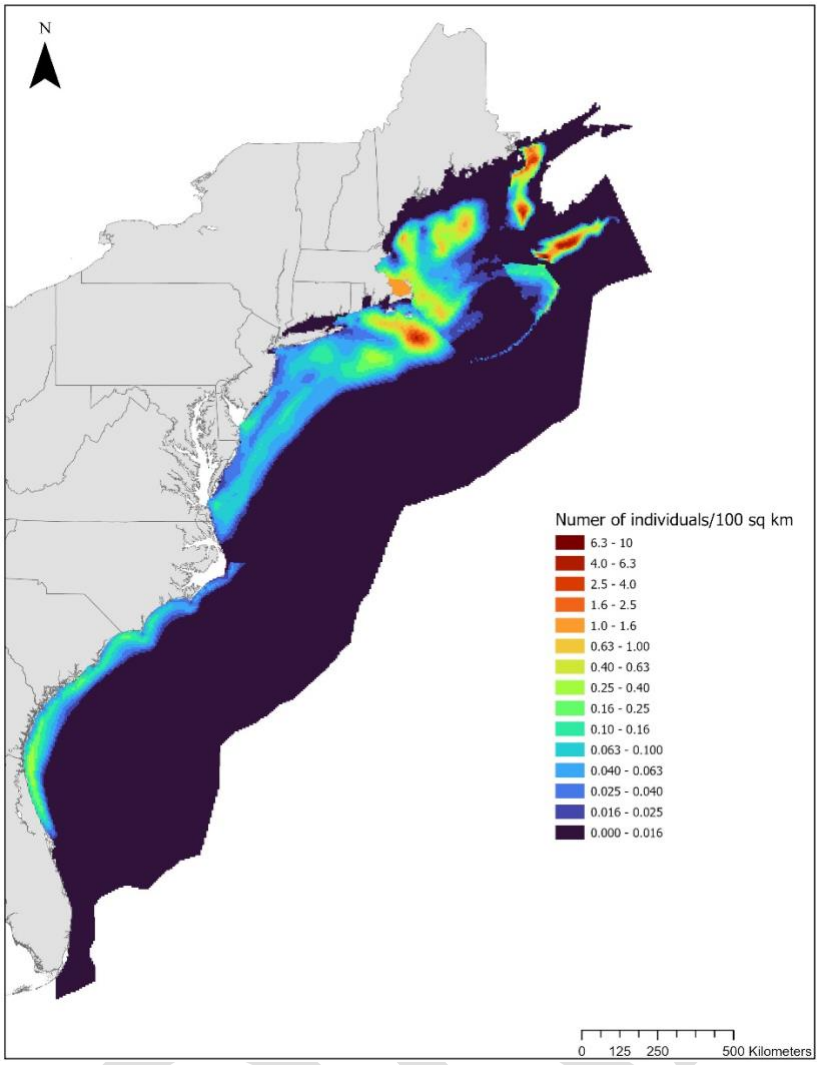

Figure 23. Modeled annual mean North Atlantic right whale density along the US Atlantic coast (Roberts *et al.* 2024).

Aerial survey data show a strong affinity for coastal waters and/or waters within the 100 m isobath; however, these same surveys, along with telemetry data, have shown right whales also occur in deep pelagic waters past the continental shelf break (Mate *et al.* 1997; McLellan *et al.* 2003; Baumgartner and Mate 2005). Virginia waters were previously only considered transit waters for North Atlantic right whales during their seasonal migrations (Figure 24). Right whale call detections from acoustic surveys utilizing PAM in Virginia waters peaked in the fall and late winter/early spring, coinciding with the timing of the southward and northward migration, respectively. The same acoustic surveys, however, detected right whales in Virginia waters year-round, suggesting these waters may be used for more than seasonal transits by some individuals (Salisbury *et al.* 2015). Aerial and boat-based survey sightings and drone observations collected since 2016 suggest that North Atlantic right whales may be regularly feeding off the Virginia coast, further supporting that this area serves as more than a migratory corridor during seasonal migrations (Mallette *et al.* 2017; Cotter 2019; Englehaupt *et al*. 2023). Additionally, Aschettino *et al*. (2024) recently observed groups of right whales engaged in a surface active group, or SAG,

in Virginia waters. According to the New England Aquarium's right whale research blog, a SAG occurs when two or more whales within a body length of each other interact at the surface. Typically, a SAG is comprised of one female and a number of males competing with each other in order to mate with her.

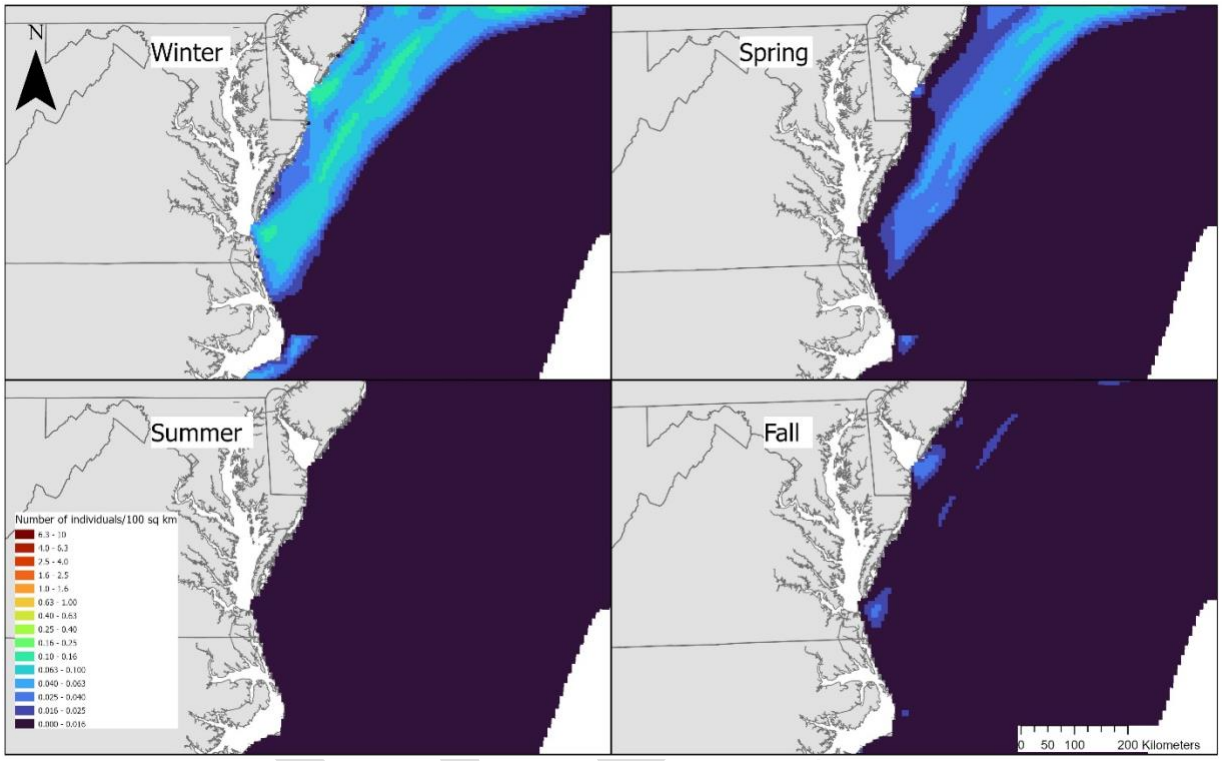

Figure 24. Modeled seasonal mean North Atlantic right whale density along the mid-Atlantic Bight (Roberts *et al.* 2024).

Aerial survey sightings of right whales in Virginia waters have been sporadic. Seven detections of up to four individuals were made between 2011 and 2016, and in 2016, two individual right whales were spotted in the winter over the mid-continental shelf (Mallette *et al.* 2017). Eight individual right whales were sighted in April 2018 within the 100 m isobath (Cotter 2019). Boat-based survey observations have increased as survey effort in mid-shelf waters has increased, with almost all sightings occurring in the winter. There were four sightings of seven individuals in the winter of 2021, three sightings of five individuals in the winter of 2022, and eight sightings of 34 individuals in the winter of 2023. There was one sighting of two individuals in November 2022. Almost all of these sightings occurred in mid-continental shelf waters, with the exception of one individual observed in the mouth of the Chesapeake Bay and another in the nearshore waters off of Virginia Beach in the winter of 2023. Location data obtained from three tagged calves also support the species' primary use of mid-continental shelf waters in Virginia, with one whale occupying waters closer to shore when it was east of the northern half of the Eastern Shore and another utilizing deep continental shelf waters during its northern migration (Aschettino *et al.* 2022; Aschettino *et al.* 2023; Aschettino *et al.* 2024). Although there are numerous unconfirmed reports of right whales inside Chesapeake Bay, their presence in the Bay is rare and may be accidental.

Strandings

Because of the critical conservation status of this species, all North Atlantic right whale strandings as of November 2024 were included. There have been seven total right whale strandings to date consisting of single whales stranded in Virginia in each of the following years: 2001, 2002, 2004, 2005, 2018, 2022 and 2023. Six of the right whale strandings in Virginia occurred on ocean-facing beaches or were found floating offshore, and one was first reported on a beach in the southern Bay mouth (Figure 25). Excluding one stranding in September, all strandings occurred in the winter. Three strandings occurred in March, two in February, and one in January. Six of the seven whales stranded with evidence of HI, consisting of vessel strikes and fishery interactions. In addition, a pregnant female whale that stranded in northeastern North Carolina with vessel strike injuries was likely struck by a large vessel in Virginia waters in November 2004 (S. Barco, *personal communication*, October 3, 2023).

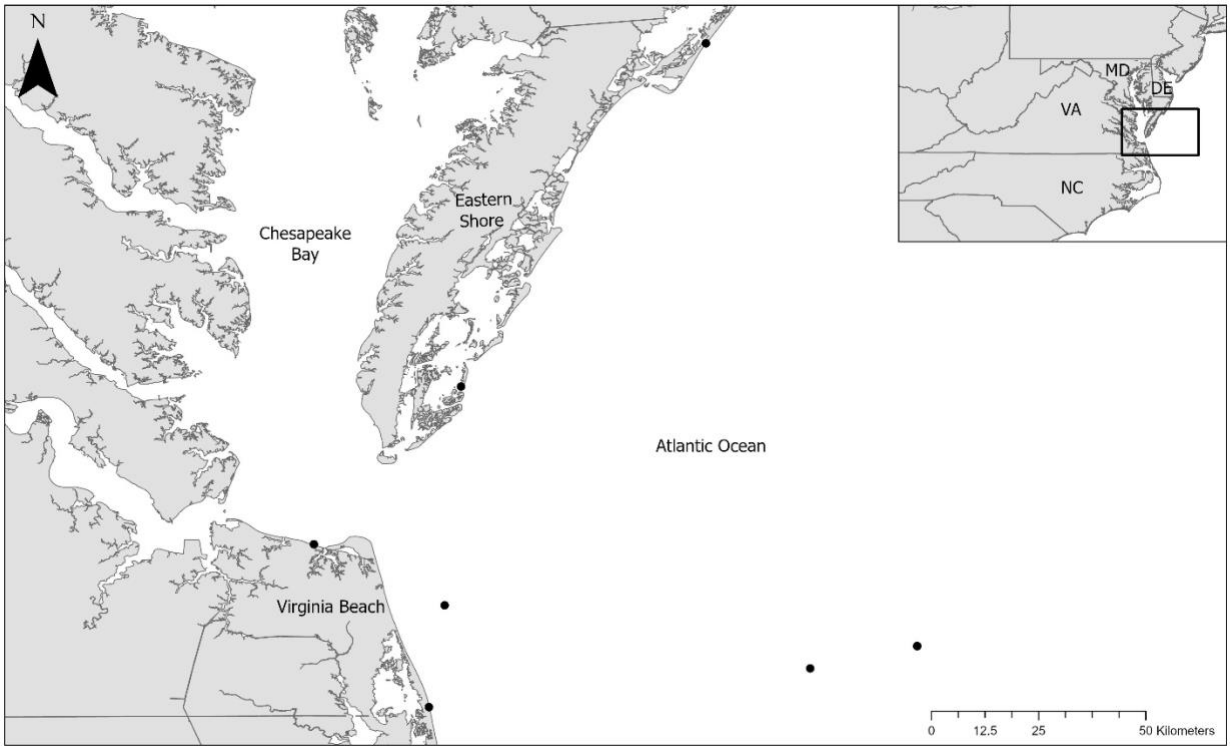

Figure 25. Map of North Atlantic right whale stranding locations in Virginia from 1988 to November 2024.

Diet and Foraging in Virginia Waters

Right whale diet consists almost exclusively of copepods in the genus *Calanus*, and right whales have been shown to require high density patches of copepods to optimize foraging efficiency (Baumgartner and Mate 2003; Baumgartner *et al.* 2007). Aerial and boat-based surveys and drone observations since 2016 have documented right whales foraging in Virginia waters (Mallette *et al.* 2017; Cotter 2019; Englehaupt *et al*. 2023).

Reproductive Activity in Virginia Waters

The first reports of reproductive activity in Virginia occurred in January and February 2023 when multiple surface-active groups exhibited behaviors consistent with sexual activity were

observed (Aschettino *et al.* 2024). In addition, pregnant right whales with near term fetuses stranded in Virginia and northeastern North Carolina in February and November 2004, respectively (S. Barco, *personal communication*, November 15, 2024).

Humpback Whale (*Megaptera novaeangliae*)

Description

Humpback whales (*Megaptera novaeangliae*) are distinguished from other mysticetes by their extremely long pectoral flippers (up to one-third of the body length).

Status

Humpback whales are considered a species of Least Concern on the IUCN Red List of Threatened Species (Cooke 2018a). In September 2016, NOAA Fisheries issued a final determination (81 FR 62260) that divided the humpback whale into 14 global distinct population segments (DPSs). This ruling also removed the species-level endangered status, and listed four DPSs as endangered, one as threatened, and the remaining nine as de-listed under the state and federal ESA. Humpback whales occurring in the northwest Atlantic Ocean are part of the West Indies DPS, which is not considered threatened or endangered as part of this ruling. The humpback whale population is stable or growing according to recent abundance estimates. One stock that is part of the West Indies DPS and relevant to Virginia waters is the Gulf of Maine stock, which is estimated at 1,396 individuals with a PBR of 22 individuals. Currently, this stock is not a strategic stock (Hayes *et al.* 2020). Due to its previous endangered status, humpback whales were included in the Atlantic large whale TRT and are still managed under this TRT (72 FR 57104). It is also considered an SGCN in Virginia (DWR 2025).

The Atlantic Humpback Whale UME was declared along the US Atlantic coast in April 2017 by NOAA Fisheries. The UME began in January 2016 and was ongoing as of November 2024. This UME is suspected to be caused by vessel strikes. Of the 232 total humpback whales that stranded between January 2016 and November 2024, 33, or 14%, stranded in Virginia, including some with evidence of vessel strike injuries (NOAA Fisheries 2024c). With the ongoing UME, there is increasing evidence that human-caused mortality and injury may be exceeding PBR for the Gulf of Maine stock, prompting closer examination of its status (Hayes *et al.* 2020).

Occurrence, Distribution and Abundance in Virginia Waters

Humpback whales are distributed along the entire US Atlantic coast, although they are more prominent in higher latitudes (Figure 26). Humpback whales make seasonal migrations from their summer feeding grounds to winter breeding grounds in the West Indies, transiting through Virginia waters during these migrations (Figure 27). The West Indies DPS consists of six subpopulations based on feeding grounds in the North Atlantic (Hayes e*t al.* 2020). Barco *et al.* (2002) identified stranded and live-sighted individuals through photo-identification in the mid-Atlantic as belonging to three of these subpopulations: Gulf of Maine, Gulf of St. Lawrence, and Newfoundland. Although recent photo-identification efforts have not matched individuals to

specific subpopulations, resighting rates of known individuals in the photo-identification catalog suggest humpback whales exhibit site fidelity to Virginia waters (Aschettino *et al.* 2022). Barco *et al.* (2002) suggested that the mid-Atlantic waters may serve as supplemental winter feeding grounds for juvenile and occasionally mature animals.

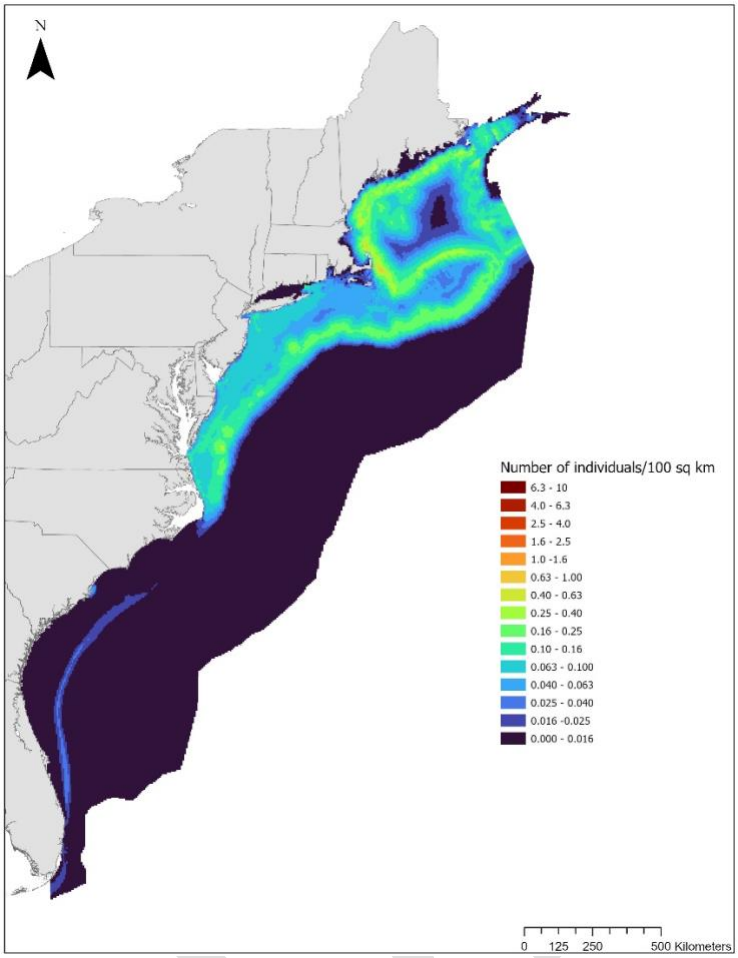

Figure 26. Modeled annual mean humpback whale density along the US Atlantic coast (Roberts *et al.* 2023).

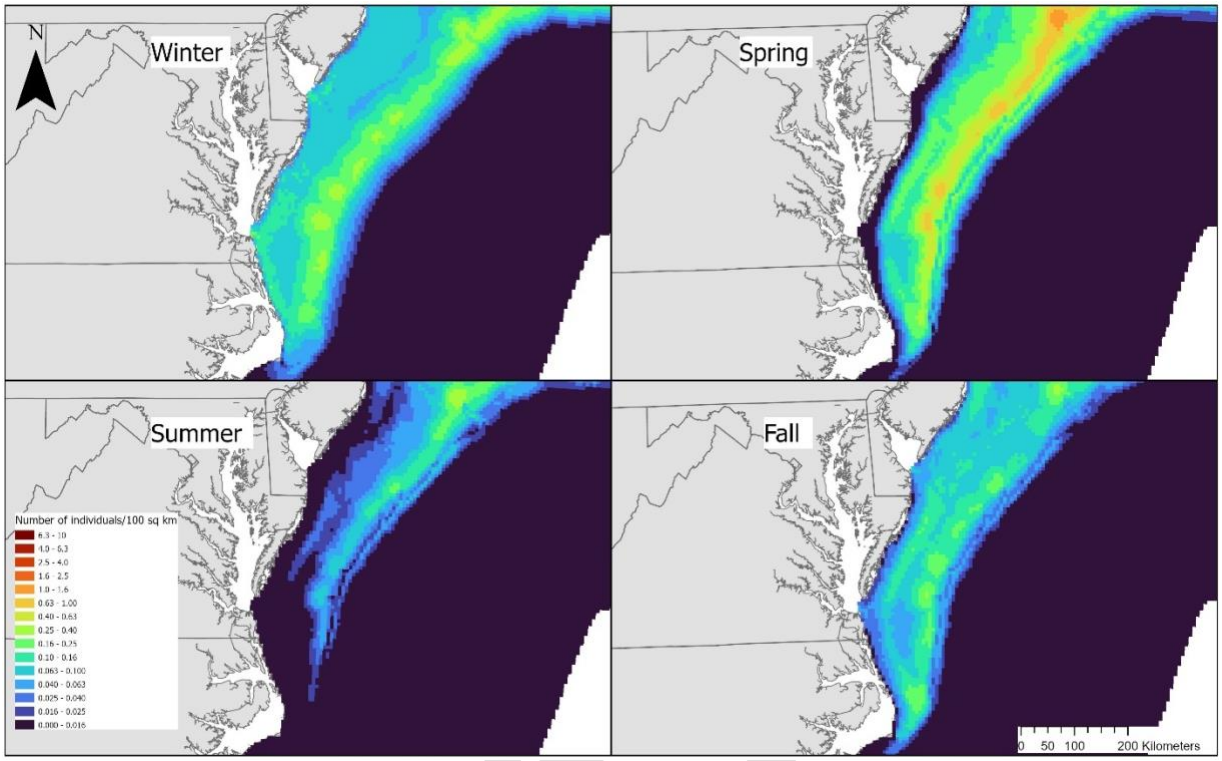

Figure 27. Modeled seasonal mean humpback whale density along the mid-Atlantic Bight (Roberts *et al.* 2023).

Live sighting records from vessel and aerial surveys indicate that humpback whales are seasonally present in Virginia waters from November to April, with the highest concentrations detected off of Cape Henry and the mouth of the Chesapeake Bay. Boat-based and aerial surveys, along with location data obtained from tagged individuals, show varied annual movements, occupying waters extending from the mouth of and occasionally inside the Chesapeake Bay to the offshore waters of the continental shelf break (Engelhaupt *et al.* 2016; McAlarney *et al.* 2016; McAlarney *et al.* 2017; McAlarney *et al.* 2018; Aschettino *et al.* 2018; Aschettino *et al.* 2019; Cotter 2019; Aschettino *et al.* 2020a; Aschettino *et al.* 2020b; Aschettino *et al.* 2022; Aschettino *et al.* 2023). Aschettino *et al.* (2022) suggested that these wide-ranging movements may be due to varied oceanographic conditions causing shifting prey distributions. Most of the detected animals were estimated to be between 8 and 12 m in length, indicating that a large portion of humpback whales that occur in Virginia waters are juveniles.

Strandings

Humpback whales make up the highest proportion of large whale strandings in Virginia. A total of 65 strandings were reported between 1988 and 2022, and strandings were significantly correlated with year (R^2=0.16, F(33)=7.31, p<0.05). The increase in strandings coincided with the onset of the UME in 2016 (Figure 28). Strandings primarily occurred on ocean-facing beaches around Virginia Beach and the northern barrier islands, and near or in the mouth of the Chesapeake Bay, particularly around Cape Henry (Figure 29). Most stranded whales (63%) were in the size class that is characteristic of newly independent juvenile animals (Wiley *et al.* 1995,

Clapham *et al.* 1999). Only five individuals were larger than 11 m, including a 12.5 m male and 15.4 m female.

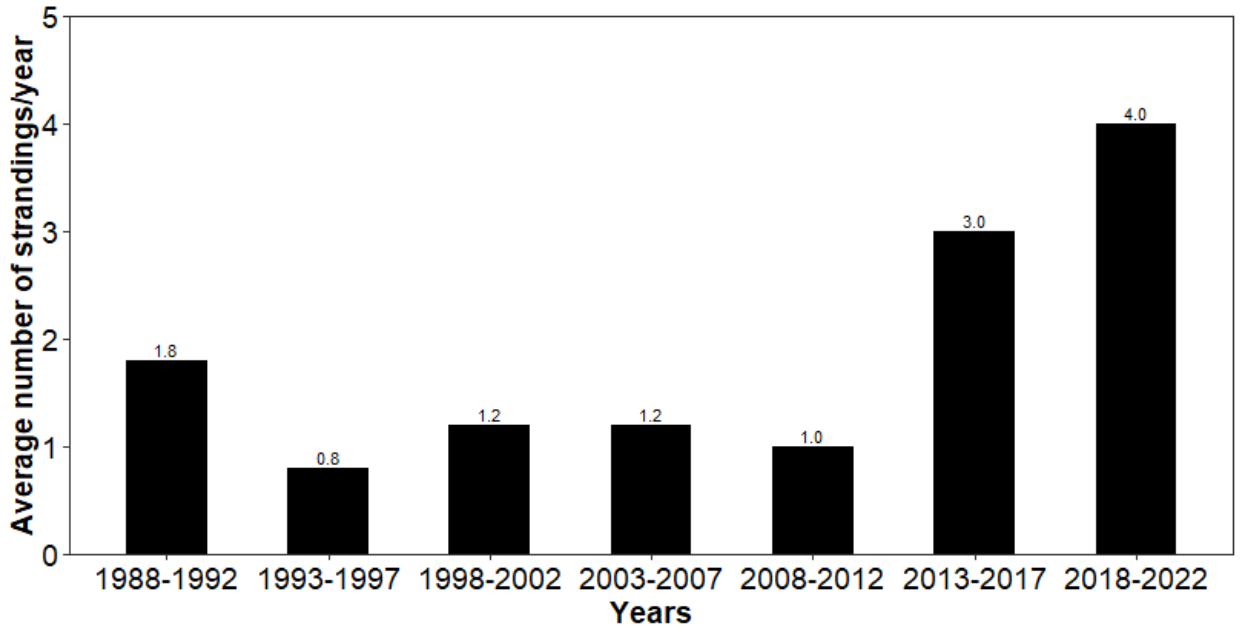

Figure 28. Average number of humpback whale strandings in Virginia from 1988 to 2022, summarized in five-year increments.

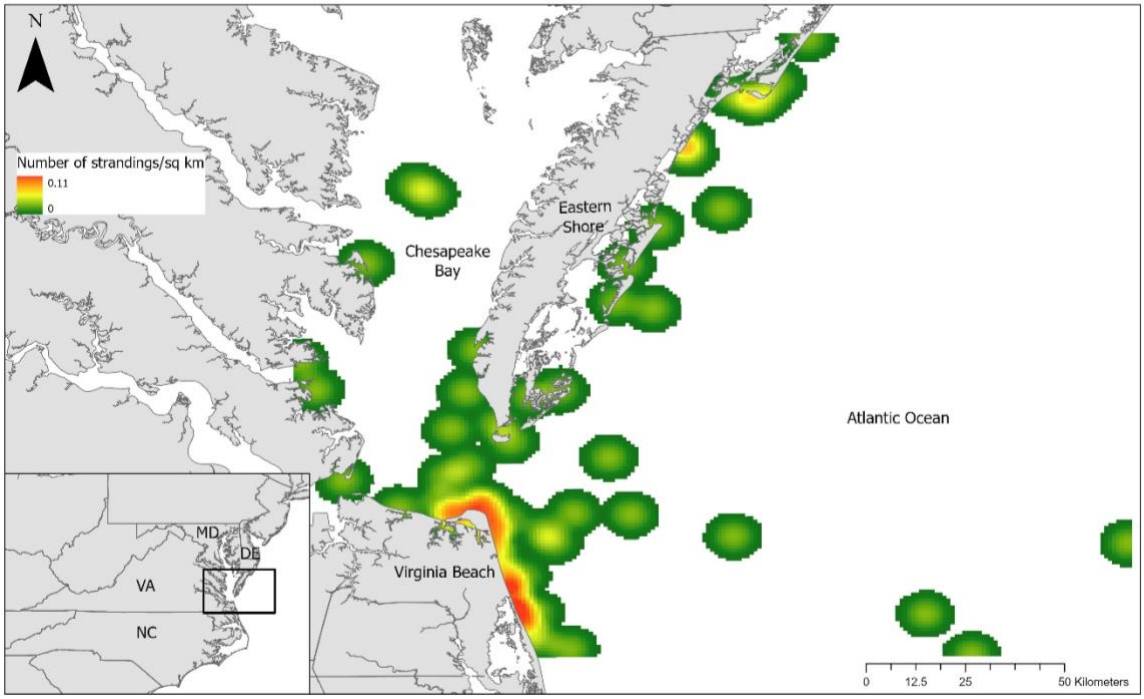

Figure 29. Density map of humpback whale strandings per square kilometer in Virginia from 1988 to 2022. Offshore points represent carcasses discovered floating offshore.

Over half of all strandings occurred in the winter and spring (66%; Figure 30) and in relatively similar locations across seasons (Figure 31). Humpback whale strandings occurred throughout the annual cycle with a slight monthly uptick in February (Figure 32). A total of 35 HI cases were documented between 1988 and 2022, which were nearly evenly split between fishery interactions and vessel strikes.

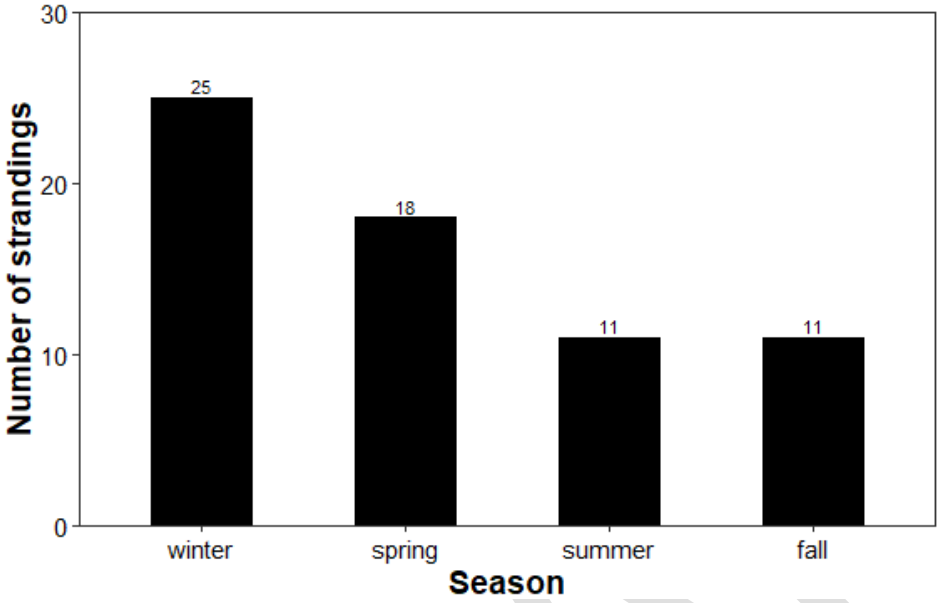

Figure 30. Number of humpback whale strandings per season in Virginia from 1988 to 2022.

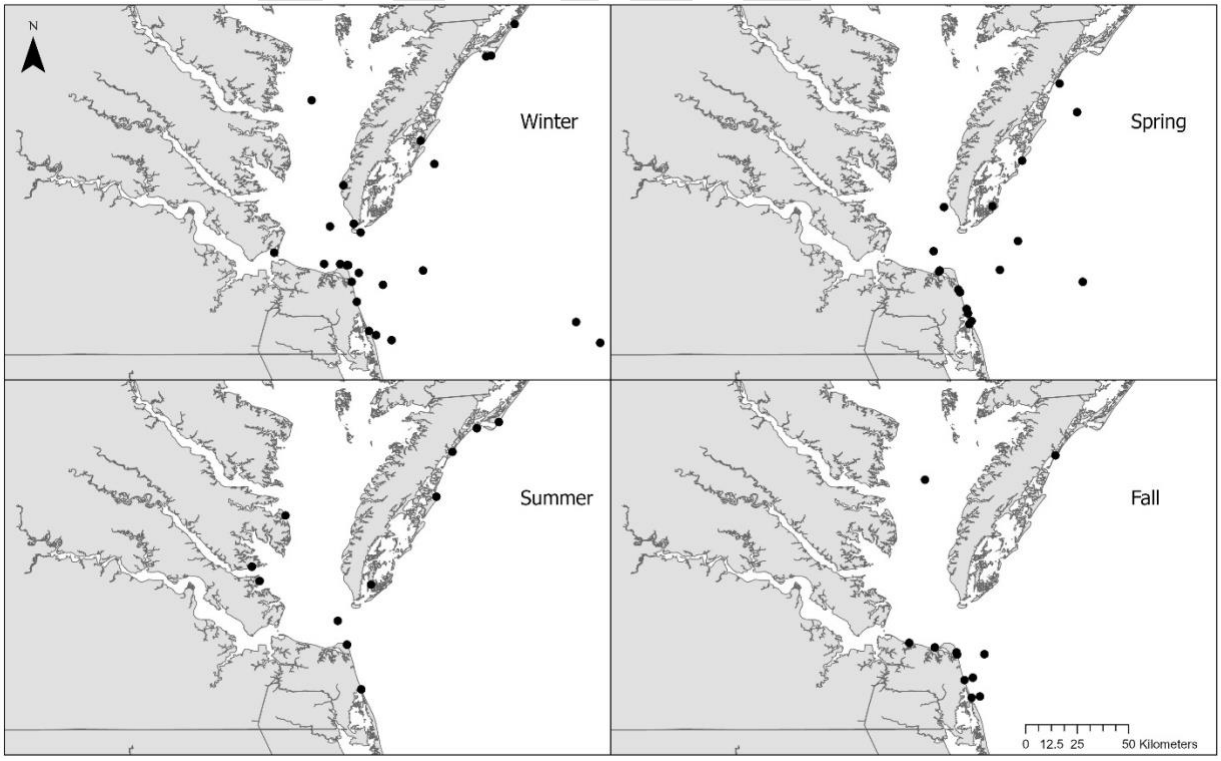

Figure 31. Map of seasonal humpback whale stranding locations in Virginia from 1988 to 2022.

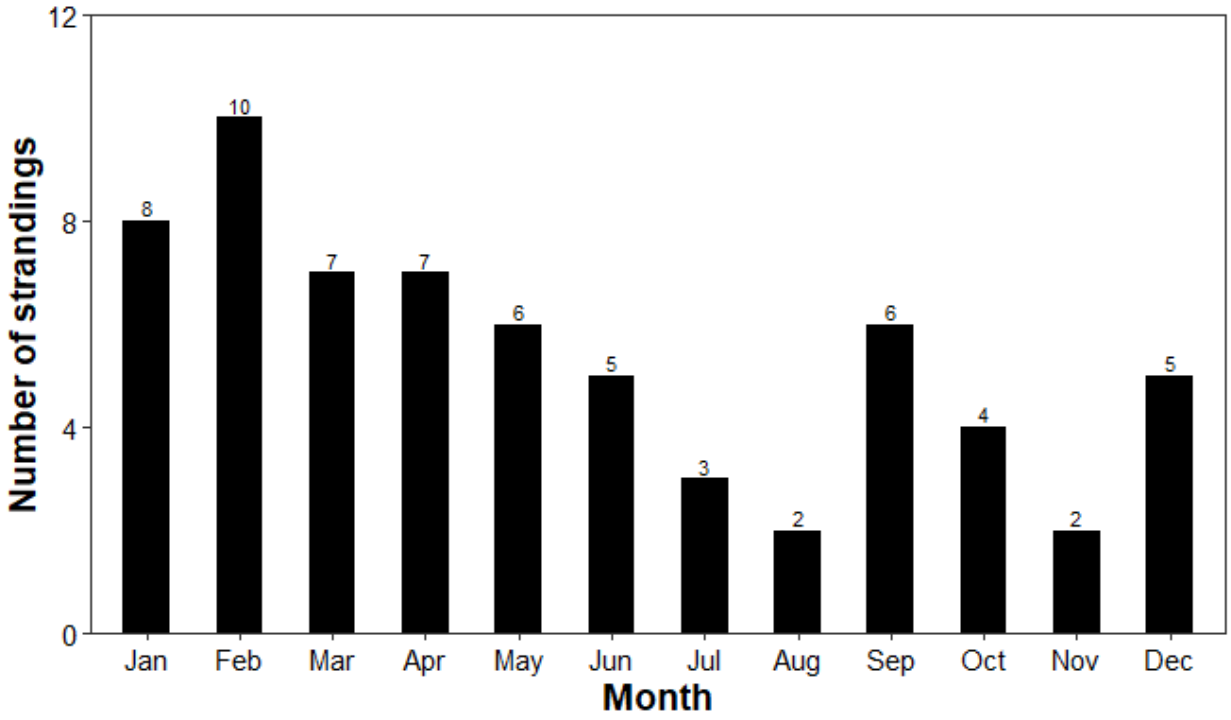

Figure 32. Number of humpback whale strandings per month in Virginia from 1988 to 2022.

Diet and Foraging in Virginia Waters

The primary prey for humpback whales in Virginia waters is thought to be Atlantic menhaden. Whales have been observed foraging on schools of menhaden during boat-based surveys, and necropsies of individuals stranded in Virginia have revealed large numbers of menhaden in the stomachs (VAQS *unpublished data*, October 2023). During vessel and aerial surveys, they have been observed engaging in lunge-feeding and, more rarely, bubble-net foraging behaviors (Mallette *et al*. 2019; Cotter 2019), suggesting that Virginia may be an important non-summer feeding area for this species.

Reproductive Activity in Virginia Waters

There is currently no indication that reproductive activity occurs in Virginia waters. Additionally, there have been no confirmed reports of live mother/calf pairs or stranded pregnant females in the Commonwealth (VAQS *unpublished data*, October 2023).

Minke Whale (*Balaenoptera acutorostrata*)

Description

Minke whales (*Balaenoptera acutorostrata*) are the smallest baleen whale in North American waters and are identified by a distinct white band on their pectoral flippers.

Status

Minke whales are categorized as a species of Least Concern on the IUCN Red List of Threatened Species (Cooke 2018b) and are not listed as endangered or threatened under the state and federal ESA (DWR 2025). They are also not considered an SGCN in Virginia (DWR 2025). Four populations in the Atlantic are recognized: Canadian East Coast, west Greenland, central North Atlantic, and northeastern North Atlantic (Donovan 1991). Due to limited information, minke whales in US Atlantic waters are considered part of the Canadian East Coast stock, which ranges from the Davis Strait between Canada and Greenland to the Gulf of Mexico. This stock is currently estimated at 21,968 individuals and is currently not considered a strategic stock (Hayes *et al.* 2022).

An Atlantic Minke Whale UME was declared along the US Atlantic coast in January 2017 by NOAA Fisheries due to elevated mortalities along the Atlantic coast from Maine to South Carolina. While the exact cause of this UME is unknown, it is thought to be due to human interactions or infectious diseases. Of the 188 whales included in this event as of November 2024, 13 have stranded in Virginia (NOAA Fisheries 2024d).

Occurrence and Distribution in Virginia Waters

Minke whales are a widespread species that occupy temperate, tropical, and high-latitude waters, and are common in the US EEZ (Hayes *et al.* 2022; Figure 33). Similar to other baleen whales, minke whales make seasonal migrations to and from high latitude summer feeding grounds and low latitude winter breeding grounds. In the winter, minke whales move as far south as the southeastern US and Bermuda. Based on acoustic data, most detections offshore on the continental shelf were recorded between spring and fall, while most detections in pelagic waters beyond the shelf break were recorded between September and April, indicating that the southbound migration occurs in pelagic waters while the northbound migration occurs in offshore waters (Clark and Gagnon 2002; Risch *et al.* 2013; Risch *et al.* 2014).

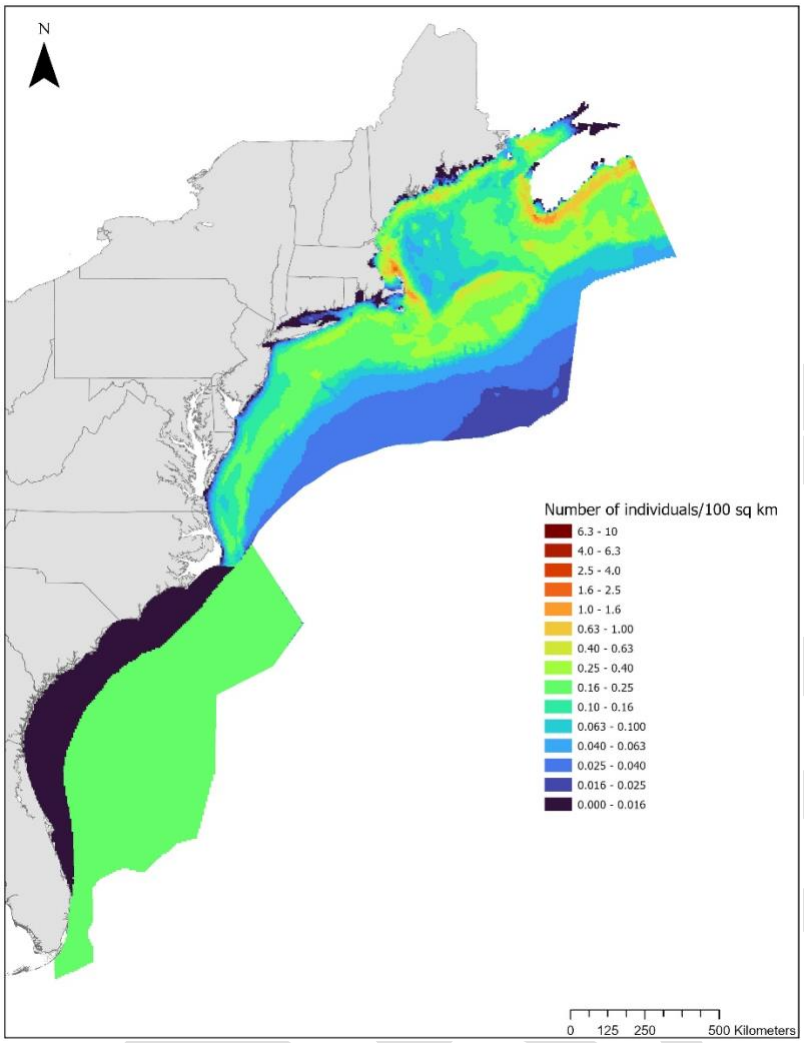

Figure 33. Modeled annual mean minke whale density along the US Atlantic coast (Roberts *et al.* 2023).

Sightings of minke whales from boat-based and aerial surveys primarily consist of single individuals, with some observations consisting of two individuals. Sightings have occurred year-round mainly over the continental shelf in offshore waters. There have also been sightings nearshore at the mouth of the Chesapeake Bay and in pelagic waters (McAlarney *et al.* 2016; McAlarney *et al.* 2017; Aschettino *et al.* 2018; Aschettino *et al.* 2019; Cotter 2019; Aschettino *et al.* 2020a; Aschettino *et al.* 2020b; Aschettino *et al.* 2023). To date, only one individual was possibly observed feeding in Virginia waters (Cotter 2019).

Strandings

A total of 22 minke whales stranded in Virginia between 1988 and 2022 ranging from zero to four strandings annually. However, strandings have increased within the last 10 years, coinciding with the onset of the 2017 UME (Figure 34). Strandings were equal across seasons and months and did not have a predominant peak. No strandings occurred in the month of July. Nine minke whales stranded with evidence of HI, mostly consisting of fishery interaction cases with at least one vessel strike and one case of debris ingestion (VAQS *unpublished data*, October 2023).

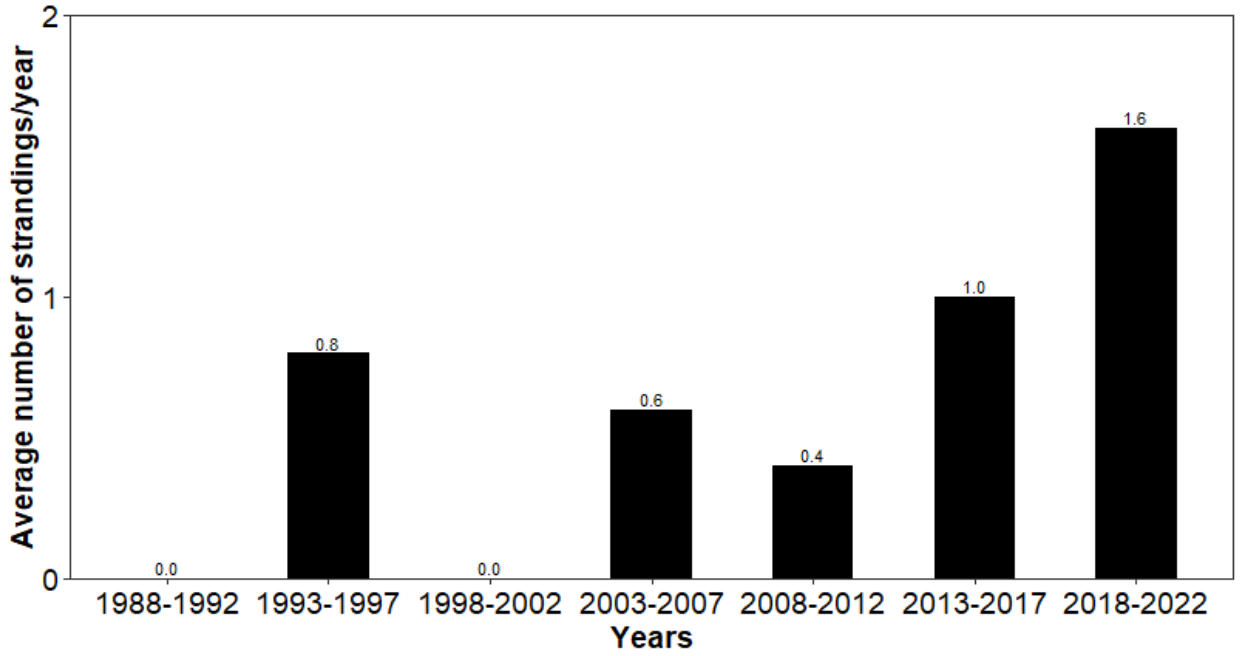

Figure 34. Average number of minke whale strandings in Virginia from 1988 to 2022, summarized in five-year increments.

Diet and Foraging in Virginia Waters

Minke whales feed on copepods, zooplankton (such as northern (*Meganyctiphanes norvegica*) and arctic (*Thysanoessa raschii*) krill), and forage fish (such as sand lance (*Ammodytes americanus*), capelin (*Mallotus villosus*), and herring) (Gavrilchuk *et al.* 2014). While minke whales primarily feed in their northern summer grounds, they may opportunistically feed in Virginia waters based on one aerial survey sighting of a minke whale possibly engaged in foraging behavior (Cotter 2019).

Reproductive Activity in Virginia Waters

There are no reports of reproductive activity in Virginia. Virginia waters are considered transit waters to an unknown southern migratory endpoint further south where they overwinter and breed (Risch *et al.* 2014). A neonatal minke whale stranded alive in northeastern North Carolina in January 2005 during an extreme weather event. The individual retained visible fetal lines and was estimated to be less than two months old. The whale was euthanized and subsequently necropsied but cause of death could not be determined. This stranding coincided with a short-finned pilot whale mass stranding event that involved over 50 individuals, and weather was suspected to be a contributing factor to both incidents (VAQS *unpublished data*, October 2023).

Fin Whale (*Balaenoptera physalus*)

Description

Fin whales (*Balaenoptera physalus*) are the second largest whale species found in the world, with blue whales being the largest.

Status

The IUCN Red List categorizes fin whales as Vulnerable (Cooke 2018c). Fin whales are listed as state and federally endangered and are an SGCN in Virginia (DWR 2025). Fin whales along the Atlantic coast from Florida to the southeastern coast of Newfoundland are recognized as the western North Atlantic stock. There is debate over stock boundaries in the Atlantic Ocean and whether the North Atlantic is a single stock or comprises multiple stocks or subpopulations. The stock is currently estimated at 6,802 individuals. This stock is considered a strategic stock because of its endangered status (Hayes *et al.* 2022). Moreover, total fishery-related mortality and serious injury exceeds 10% of the stock's PBR and is managed under the Atlantic large whale TRT (72 FR 57104). Current population trends are unknown (Hayes *et al.* 2022).

Occurrence and Distribution in Virginia Waters

Fin whales are globally distributed and relatively common in the US EEZ from Cape Hatteras northward (Figure 35). They have been detected as far south as the southeastern US, primarily in pelagic waters in their southernmost range (Davis *et al.* 2020), and major feeding areas include the waters off of New England and the Gulf of St. Lawrence. Unlike other baleen whales, fin whales are not believed to make annual latitudinal seasonal migrations, but their distribution varies seasonally (Hayes *et al.* 2022). Edwards *et al.* (2015) found more fin whales were present at higher latitudes, primarily northern US waters into Canada, in warmer months and at lower latitudes in cooler months. However, not all whales followed this distributional pattern.

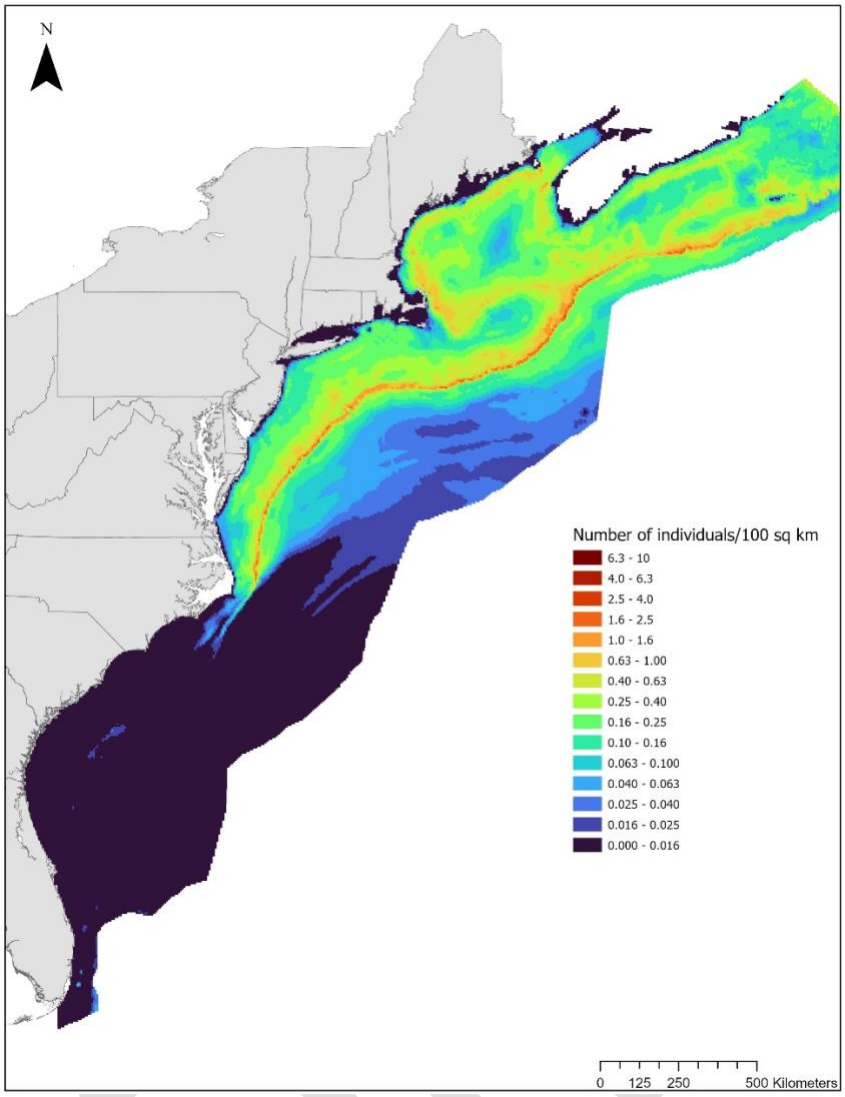

Figure 35. Modeled annual mean fin whale density along the US Atlantic coast (Roberts *et al.* 2023).

Acoustic surveys detected fin whales in Virginia waters year-round. Detections were greatest between August and April and lowest between May and July. Vocalizations were detected over the entire continental shelf (Davis *et al.* 2020), but it should be noted that fin whale vocalizations can be detected nearly 100 km from the source (Stimpert *et al.* 2015) and identifying the location of the sound source was not conducted in the Davis *et al.* (2020) study. Boat-based and aerial surveys commonly sighted fin whales off Virginia in all seasons. The majority of sightings occurred offshore, but some sightings occurred nearshore and in pelagic waters (McAlarney *et al.* 2016; Mallette *et al.* 2017; McAlarney *et al.* 2017; Aschettino *et al.* 2018; McAlarney *et al.* 2018; Cotter 2019; Aschettino *et al.* 2020a; Aschettino *et al.* 2022; Aschettino *et al.* 2023; Aschettino *et al.* 2024). Location data obtained from two fin whales tagged in 2021 showed they remained exclusively in offshore waters with periodic east to west and west to east fluctuations in their movement patterns (Aschettino *et al.* 2022).

Strandings

There were a total of 12 fin whale strandings in Virginia from 1988 to 2022. Half of the strandings occurred on ocean-facing beaches, and the other half occurred in Chesapeake Bay. The majority of strandings occurred in the winter (February and March), with one stranding each in April, September, and December. Five whales stranded with evidence of HI, primarily consisting of vessel collisions.

Diet and Foraging in Virginia Waters

Fin whales primarily consume euphausiids (krill), but also consume copepods, cephalopods, and fish (Flinn *et al.* 2002). Fin whales have been observed feeding in Virginia waters during aerial surveys (Cotter 2019).

Reproductive activity in Virginia Waters

No reproductive activity has been reported in Virginia waters. Mating and calving grounds are unknown. Hain *et al.* (1992) suggested that calving occurs along mid-Atlantic latitudes from October to January based on neonatal stranding data, but this has not been confirmed.

Sei Whale (*Balaenoptera borealis*)

Description

Sei whales (*Balaenoptera borealis*) have a tall, hooked dorsal fin, and are often identified by their columnar, bushy blow pattern.

Status

Sei whales are categorized as endangered in the IUCN Red List and under the state and federal ESA (DWR 2025; Cooke 2018d). However, they are not considered an SGCN in Virginia (DWR 2025). The Nova Scotia stock is the only stock of sei whales that is currently recognized in the Atlantic Ocean; however, there are two distinct feeding grounds in the Gulf of Maine and Labrador Sea that may support different stocks. The Nova Scotia stock is currently estimated between 3,098 and 6,292 individuals. Because sei whales are endangered, this stock is considered a strategic stock. Population trends are unknown (Hayes *et al.* 2022).

Occurrence and Distribution in Virginia Waters

The Nova Scotia stock primarily occupies the deeper waters of the continental shelf from the Gulf of Maine to Newfoundland (Figure 36). Spring and summer are the primary seasons sei whales are seen in US waters, ranging from off New England to the Gulf of Maine. The southern limit of their range is unknown, but they have been detected via acoustic surveys in pelagic waters off the southeastern US coast exclusively in the winter. They are thought to make seasonal migrations from New England up to their summer feeding grounds in Canadian waters (Davis *et al.* 2020; Hayes *et al.* 2022).

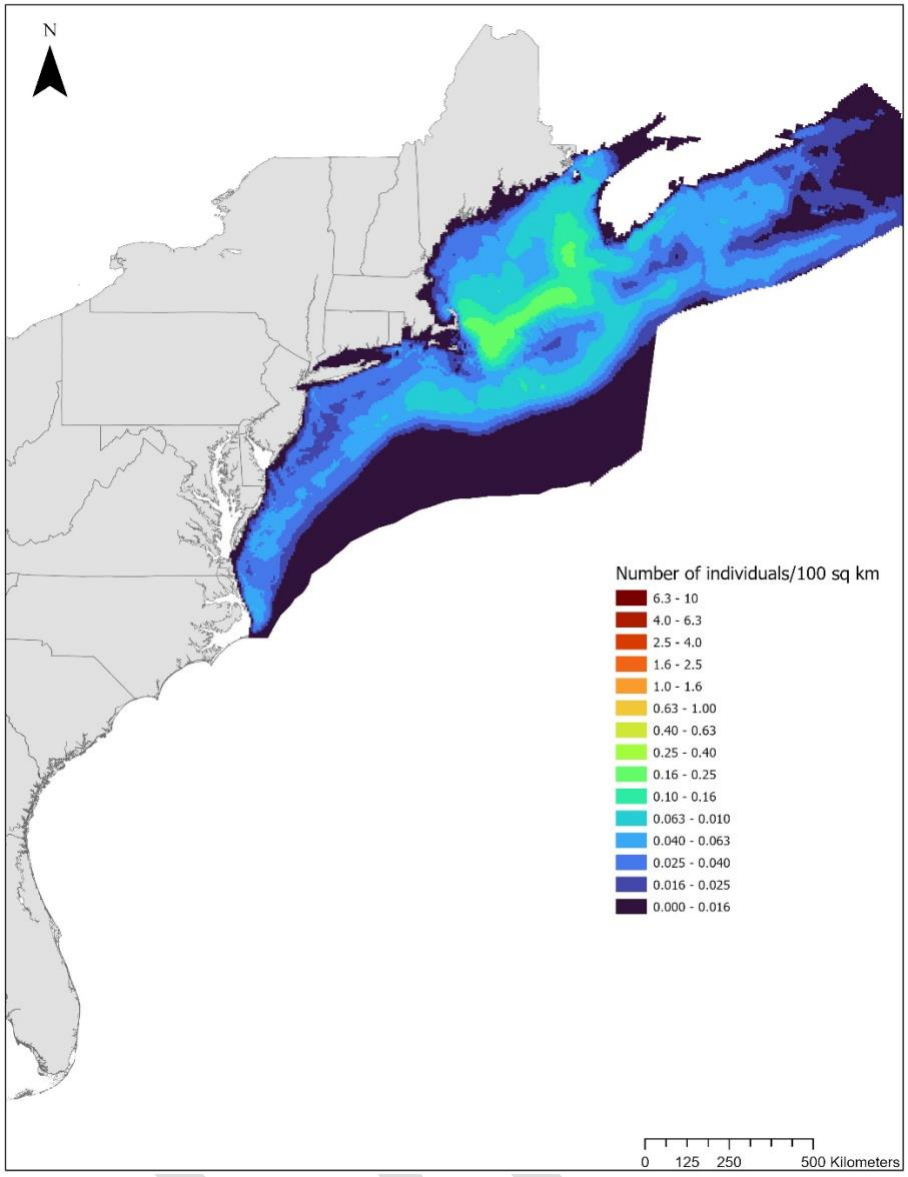

Figure 36. Modeled annual mean sei whale density along the US Atlantic coast (Roberts *et al.* 2023).

In the mid-Atlantic region, sei whale vocalizations were detected year-round across the continental shelf but detections were greater in the winter at the shelf break (Davis *et al.* 2020). One sighting of two sei whales in pelagic waters occurred during a boat-based survey in January 2017 (Engelhaupt *et al.* 2018). In addition, four sei whales were spotted in deep continental shelf and pelagic waters during an aerial survey conducted in April 2018 (Cotter 2019). Although feeding was not observed, the sightings coincided with a time of high copepod density, possibly indicating that sei whales were drawn to the area by prey.

Strandings

There have been four sei whale strandings in Virginia waters between 1988 and 2022. Three of the strandings occurred within Chesapeake Bay, while the fourth occurred on the Virginia Beach oceanfront. One stranding occurred in each of the following months: February, March, May and

August. There were three sei whale strandings with evidence of HI, all of which were vessel collisions.

Diet and Foraging in Virginia Waters

Sei whales in the North Atlantic primarily eat euphausiids and copepods (Flinn *et al.* 2002). Due to the low number of observations in Virginia, it is unknown if sei whales feed in the region.

Reproductive Activity in Virginia Waters

There are no reports of reproductive activity in Virginia waters.

Pinnipeds (True seals)

Harbor Seal (*Phoca vitulina*)

Description

Harbor seals (*Phoca vitulina*) are relatively small seals that have a gray to brown coat on the back with pale rings and oval spots (Jefferson *et al.* 2007).

Status

Harbor seals are considered a species of Least Concern on the IUCN Red List (Lowry 2016) and are not listed as state or federally threatened or endangered (DWR 2025; Hayes *et al.* 2022). They are also not considered an SGCN in Virginia (DWR 2025). Harbor seals in Virginia are considered part of the western North Atlantic population, which, based on mitochondrial DNA analyses, appears to be vastly different from the eastern North Atlantic population (Stanley *et al.* 1996). This stock is currently estimated at 61,336 individuals. This stock is not considered depleted or a strategic stock (Hayes *et al.* 2022).

The Northeast Pinniped UME was declared along the US Northeast coast in July 2019 by NOAA Fisheries and included harbor and gray (*Halichoerus grypus atlantica*) seals. The extent of the UME ranged from Maine to Virginia. The preliminary cause for this UME was phocine distemper virus. Although harbor seals primarily occur in the northeastern US (Maine, New Hampshire, and Massachusetts), 10 out of the 3,152 seals involved in this event stranded in Virginia with evidence of phocine distemper virus. This UME was active until March 2020, but is still pending closure (NOAA Fisheries 2023b).

Occurrence and Distribution in Virginia Waters

Harbor seals are a coastal pinniped species present throughout the northeast and mid-Atlantic regions. They are present year-round on their breeding grounds in Canada and Maine. Harbor seal presence in Virginia waters is seasonal, with observations of seals at known haul-out sites usually beginning in the fall and extending into the spring (Hayes *et al.* 2022; Ampela *et al.* 2023; Guins *et al.* 2023; Jones and Rees 2023).

In the decades since the first records of juveniles in poor condition appeared in the Virginia stranding database, harbor seal presence in Virginia has become a regular occurrence and seasonal haul-out sites have become firmly established. Survey data from 2015 to 2023 indicate the number of seals present in Virginia during the non-breeding season is relatively stable, with some annual fluctuations. A mean abundance estimate of 198 individuals was calculated for Virginia using boat-based survey data collected from 2015 to 2023 (Jones and Rees 2023). Survey and tagging data from 2018 to 2021 show certain locations that have consistent seasonal usage as haul-out sites, such as the CBBT Islands, Smith Island, and, most recently, Fisherman Island. Individuals have been re-sighted on the same haul-out locations across successive years, suggesting a certain degree of site-fidelity (Ampela *et al.* 2023; Jones and Rees 2023). While it was previously thought only juveniles and subadults moved south of the New York/New Jersey Bight, all age classes of harbor seals have been documented in Virginia waters (Ampela *et al.* 2023).

Boat-based surveys, camera traps, and location data obtained from tagged individuals have led to a better understanding of harbor seal habitat utilization in Virginia. Harbor seals are consistently present from November to April, with the highest abundances documented between January and March. They have been seen as early as October and seem to leave the area between March and May (Ampela *et al.* 2023; Guins *et al.* 2023; Jones and Rees 2023). Tagging data identified core habitat near the tagging location behind Smith Island, and farther north on the Eastern Shore near Hog and Parramore Islands. The oceanfront areas of Virginia Beach were rarely utilized by seals tagged off the Virginia Eastern Shore (Ampela *et al.* 2023). These same surveys and location data have also revealed habitat preferences. Certain seals exclusively used haul-out sites at the CBBT Islands or known sites on the Eastern Shore, while others utilized both areas (Jones and Rees 2023). Additionally, some tagged seals exclusively used Chesapeake Bay or inshore waters when not hauled-out (Ampela *et al.* 2023).

Strandings

A total of 106 harbor seal strandings were reported in Virginia between 1988 and 2022. These strandings comprised 51% of all pinniped strandings (n = 206) in in the Commonwealth. Harbor seals have consistently stranded in Virginia since 1991 for an average of 3.0 strandings per year, but as larger, healthier individuals have established haul-outs in the region, the number of strandings has declined (Figure 37). Strandings were concentrated near the southern end of Assateague Island, around Fisherman Island, and along the oceanfront beaches of Virginia Beach (Figure 38). Strandings of known size were primarily juveniles (Reeves *et al.* 1992; Geraci and Lounsbury 2005).

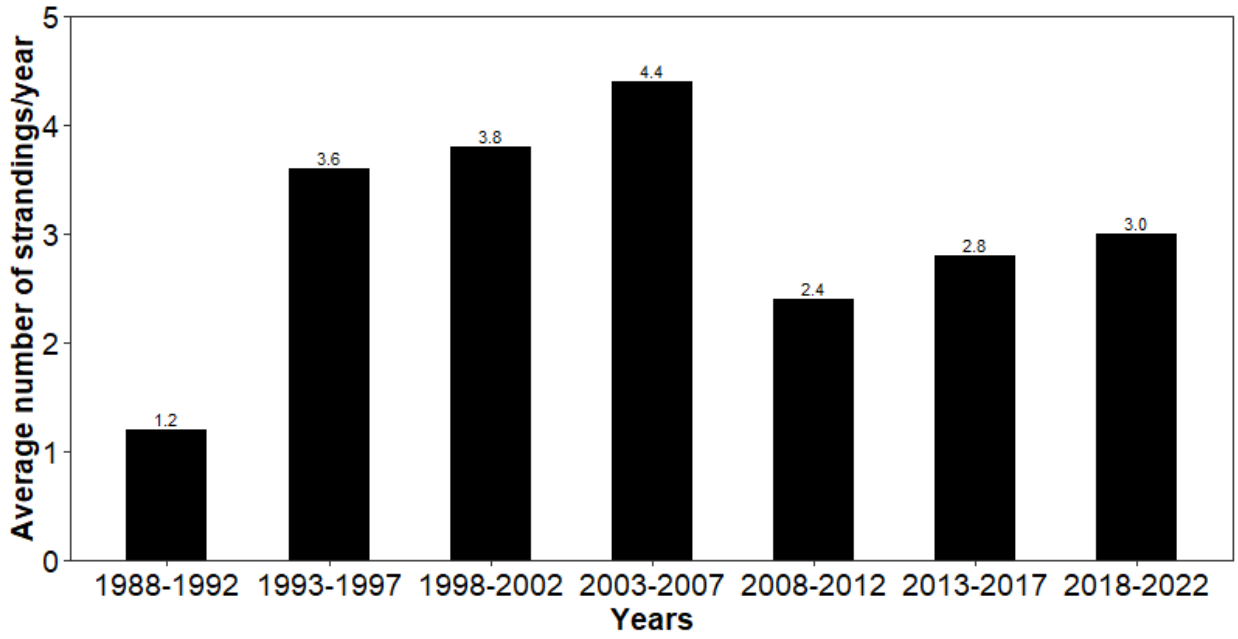

Figure 37. Average number of harbor seal strandings in Virginia from 1988 to 2022, summarized in five-year increments.

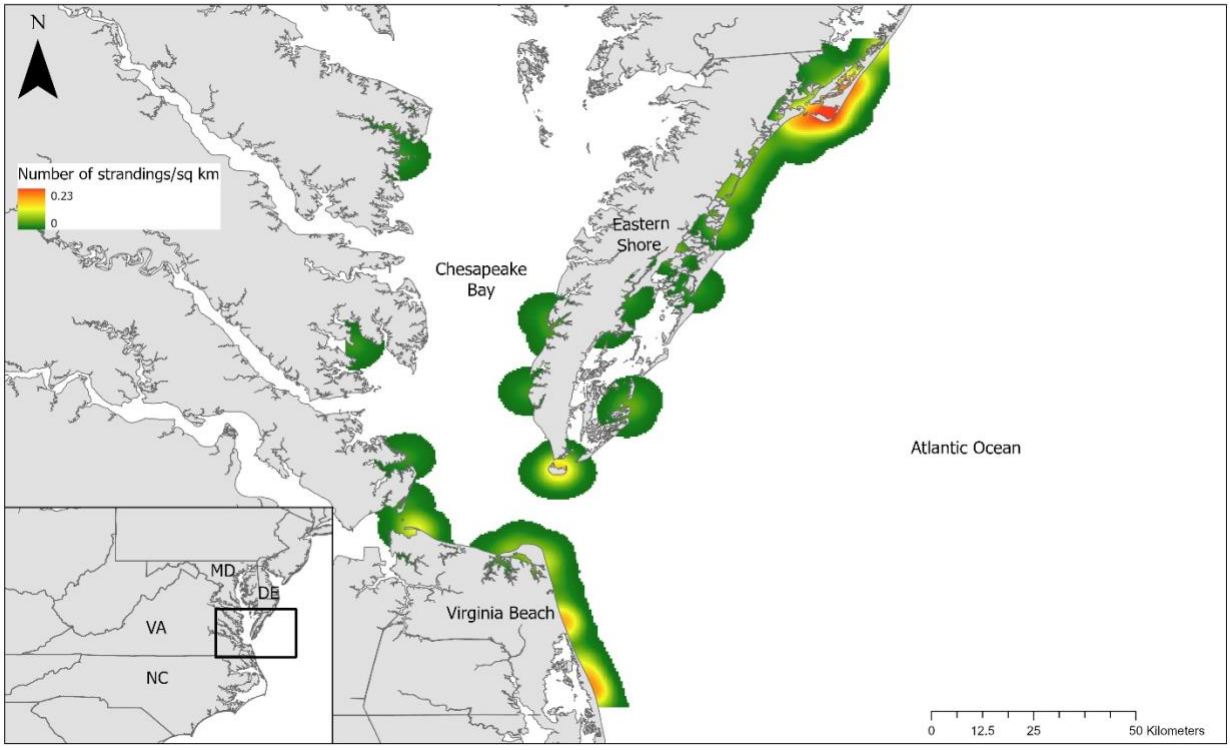

Figure 38. Density map of harbor seal strandings per square kilometer in Virginia from 1988 to 2022.

Similar to sightings, stranding records show distinct seasonal patterns with winter (53%, n=56) and spring (38%, n=40) having the highest number of strandings (Figure 39). While there were only a few strandings in the summer and fall, these primarily occurred on ocean-facing beaches,

compared to strandings in the winter and spring which occurred along nearshore and ocean-facing shorelines (Figure 40). The months of April (25%, n=26) and January (22%, n=23) had the highest number of strandings (Figure 41). No strandings were reported between August and October. Thirteen harbor seals have stranded with evidence of HI, many with evidence of fishery interactions, including multiple cases of recreational hook and line gear and shotgun pellets, neither of which have been commonly seen in other marine mammals that stranded in Virginia.

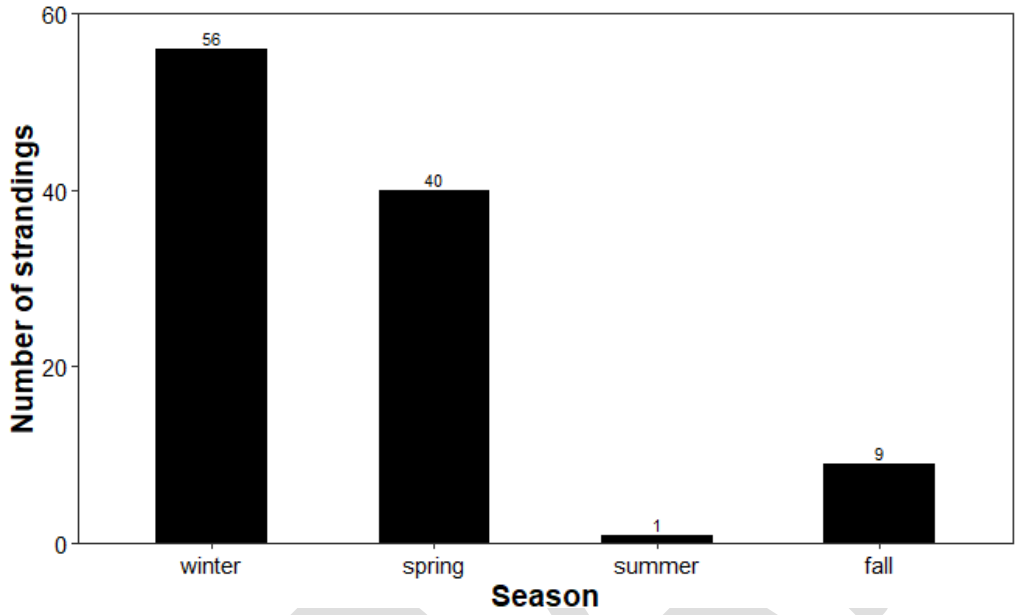

Figure 39. Number of harbor seal strandings per season in Virginia from 1988 to 2022.

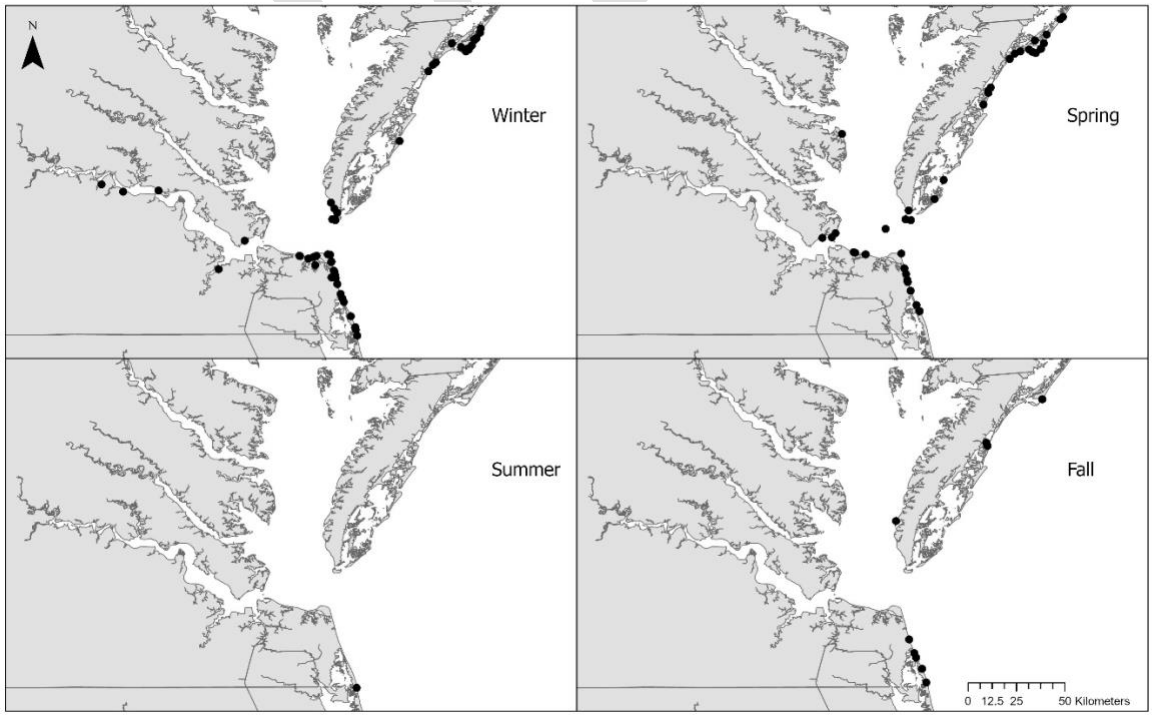

Figure 40. Map of seasonal harbor seal stranding locations in Virginia from 1988 to 2022.

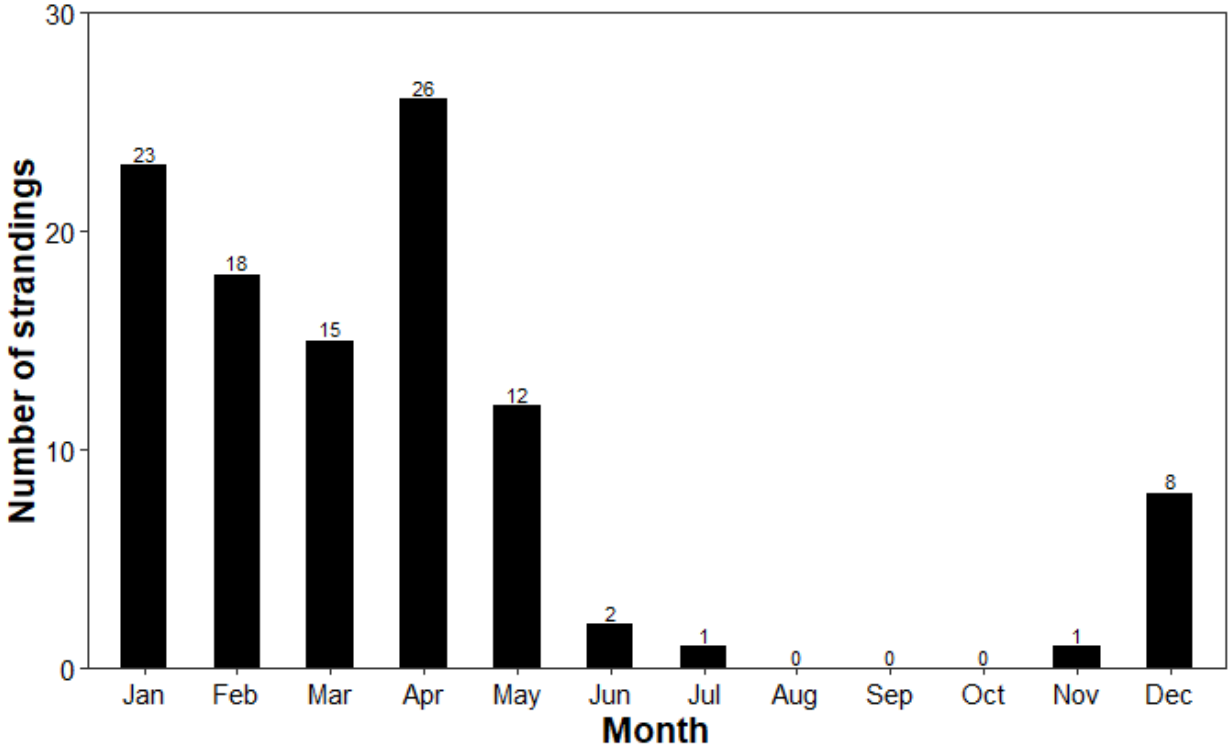

Figure 41. Number of harbor seal strandings per month in Virginia from 1988 to 2022.

Diet and Foraging in Virginia Waters

Harbor seal diet in Virginia waters is known only from stomach contents of stranded individuals. Ingested prey species included hake, Atlantic herring, Atlantic cod (*Gadus morhua*), pollock (*Pollachius virens*), short-finned squid (*Illex illecebrosus*), sand lance, and winter (*Pseudopleuronectes americanus*) and windowpane (*Scophthalmus aquosus*) flounder (Bowen and Harrison 1995; Toth *et al.* 2018).

Reproductive Activity in Virginia Waters

Reproductive activity has not been observed in Virginia waters.

Other Phocids

Based on stranding records, other phocids that are present in Virginia waters include gray seals, harp seals (*Pagophilus groenlandica*), and hooded seals (*Cystophora cristata*). The IUCN Red List categorizes gray and harp seals as Least Concern, while hooded seals are considered Vulnerable (Kovacs 2015; Bowen 2016; Kovacs 2016). None of these seal species are state or federally listed, a strategic stock, or an SGCN (DWR 2025; Hayes *et al.* 2020; Hayes *et al.* 2021; Hayes *et al.* 2022). Harp and hooded seals are ice seal species, and the only records of these seals in Virginia are of stranded individuals that are sick or injured and well outside of their normal range. Gray seal presence in Virginia waters is sporadic and occurs in the winter and early

spring. Though their presence in Virginia waters may be becoming more regular, gray seal sightings from boat-based surveys and camera traps are typically of only a few individuals found at harbor seal haul-out sites (Guins *et al.* 2023; Jones and Rees 2023). These animals are considered to be outside of their normal range and likely to be weanlings or marginalized seals. Strandings range from being rare for hooded seals to occurring almost annually for gray and harp seals.

Sirenians (Manatees)

Florida Manatee (*Trichechus manatus latirostris*)

Description

Florida manatees (*Trichechus manatus latirostris*), a subspecies of the West Indian manatee (*Trichechus manatus*), are large herbivorous marine mammals with a spoon-shaped tail that occupy marine, brackish, and freshwater systems.

Status

Unlike other marine mammals in Virginia waters, Florida manatees are federally managed by USFWS. The West Indian manatee is considered vulnerable by the IUCN because of the low number of mature individuals and expected rate of decline from habitat loss and anthropogenic factors (Deutsch *et al.* 2008). Florida manatees were considered endangered under the state and federal ESA until 2017 when they were reclassified as threatened (USFWS 2023). They are also an SGCN in Virginia (DWR 2025). Although managed together as one stock, four management units are currently recognized: the Atlantic Coast and the upper St. Johns River units, both of which are on the Atlantic Coast side; and the Northwest Florida and Southwest Florida units, which are both on the Gulf Coast. Florida Manatees were estimated at 8,810 individuals based on aerial surveys from 2015 to 2016 (Hostetler *et al.* 2018). Because of their threatened status, Florida Manatees are considered depleted and a strategic stock (USFWS 2023).

The Atlantic Florida Manatee UME was declared along the east coast of Florida in March 2021 by the Florida Fish and Wildlife Conservation Commission and the USFWS. The event began in December 2020 and is ongoing. The UME is associated with phytoplankton blooms and seagrass loss in the Indian River Lagoon as evidenced by the high number of malnourished manatees. This UME is primarily impacting the Atlantic Coast management unit, which has the slowest population growth rate of the four management units. This unit was considered stable or growing prior to the UME, but the recent high mortality will likely impact overall population trends (Hostetler *et al.* 2018; USFWS 2023).

Occurrence, Distribution, and Abundance in Virginia Waters

Florida manatee presence in Virginia waters is seasonal. Manatees are thermally intolerant of water temperatures below 16 °C, and their movements are generally driven by water

temperatures. In the winter, Florida manatees are restricted to the inland and coastal waters of peninsular Florida, where they utilize warm water sites such as natural springs and power plant discharges. During other seasons, manatees disperse and have been seen as far north as Massachusetts. Individuals within each management unit return to the same warm-winter sites annually. Movements occur between units that are on the same Florida coast, but movements between the Atlantic Coast and Gulf Coast management units are rare. Manatees that venture into Virginia waters are likely from the management units on the Atlantic Coast of Florida (USFWS 2023).

Information on Florida manatee occurrences in Virginia waters come primarily from sighting data from 1991 to 2012. Manatees have been sighted in Virginia waters since 1991, and sightings were highest during the four-year period from 2009 to 2012. Sightings were most common during the months of June to October when water temperatures were above 20°C. Sightings have occurred as early as May and as late as November. Sightings were concentrated around Virginia Beach, primarily in rivers and creeks, but manatees have been reported in the James River near Richmond and in the Maryland portion of Chesapeake Bay (VAQS *unpublished data*, October 2023; Cummings *et al.* 2014). These data suggest Florida manatees are annual visitors to Virginia waters, and their presence may be increasing (Cummings *et al.* 2014).

Strandings

Seven Florida manatee strandings have been documented in Virginia waters from 1998 to 2022. Five of the seven strandings were live animals considered to be well outside of their range and but appeared to leave the state based on the fact that sightings ceased and that no carcasses were ever recovered. The other two strandings were carcasses and the only documented HI cases, one had healed vessel strike scars and the other had blunt trauma consistent with being trapped in a lock structure near where the carcass was recovered. Strandings primarily occurred in rivers and creeks within the city limits of Virginia Beach and Norfolk. With the exception of one stranding in January, strandings have exclusively occurred from June to November.

Diet and Foraging in Virginia Waters

Florida manatees are herbivorous and feed on a variety of vegetation. While their diet is unknown when in Virginia waters, dominant subaquatic vegetation species in the area include eelgrass (*Zostera marina*) and widgeon grass (*Ruppia maritima;* Orth *et al.* 2015), which manatees consume in other locations (Allen *et al.* 2022). Manatees have also been observed foraging on terrestrial vegetation accessible from the banks of waterways, which has been observed in other habitats devoid of subaquatic vegetation (S. Barco, *personal communication*, October 3, 2023).

Reproductive Activity in Virginia Waters

Reproductive activity has not been observed in Virginia waters.

Limiting Factors, Causes of Mortality, and Other Threats to Marine Mammals in Virginia

A host of factors both related to human activities and of natural origin affect marine mammal populations and their habitats. Any federal action that is proposed which may affect protected marine species results in a consultation and review process between the agency proposing the action and agency overseeing federal protections. For marine mammals, NOAA Fisheries or USFWS is consulted through either the ESA section 7 or MMPA incidental take consultation process. Incidental takes for commercial fisheries are consulted separately under the Marine Mammal Authorization Program (MMAP). Additionally, a review process is required for any federal funding, permit, or work by a federal agency through the National Environmental Policy Act (NEPA) under the Environmental Protection Agency (EPA). The extent to which private entities must comply with these policies depends on the location, action, and funding source (*i.e.* a private dredge company funded by the US Army Corps of Engineers [USACOE] must comply, commercial fishers using gear that may take marine mammals as bycatch must comply; commercial fishers in state waters using gear not deemed to take sea turtles or marine mammals do not need to comply). Therefore, many actions that may harm or 'take' marine mammals undergo a review process to assess the magnitude of the impact and how it should be mitigated and monitored.

Limiting Factors

While offshore species may be present year-round, occurrence of marine mammals in Virginia coastal waters is typically limited by either season (*e.g.* temperatures) or prey availability. For instance, North Atlantic right whales are considered transient visitors that inhabit Virginia waters during their latitudinal migrations between the summer feeding grounds and winter calving grounds. Their migration is seasonal, and occurrence in nearshore waters is strongly correlated with sea surface temperatures. In the northern feeding grounds, right whale occurrence is linked to dense patches of zooplankton, especially late stage calanoid copepods (Baumgartner *et al.* 2007). Similarly, winter presence of humpback whales in Virginia waters appears to be linked to ambient temperature and prey density (*e.g.* menhaden).

Causes of Mortality and Serious Injury

Mortality and serious injury in marine mammals are due to a wide variety of causes. With the exception of discrete, large scale mortality events due to disease (*e.g.* morbillivirus UME), biotoxin exposure (*e.g.* brevetoxicosis and domoic acidosis) or mass stranding events involving two or more animals stranding at the same time and place, excluding mother-calf pairs, there is a general paucity of information regarding natural causes of mortality and their effects on marine mammal stocks. For many marine mammal populations, a significant source of known mortality and serious injury is related to human activity; however, the level of such mortality has been challenging to document. Additionally, compounding sublethal effects of human activity (e.g. vessel noise, low level contaminants, harassment, climactic temperature rise) are difficult to

assess and often do not receive the attention they deserve but are prevalent and exigent nonetheless.

Anthropogenic Mortality and Morbidity

Mortalities and impairment leading to mortalities are frequently the result of human activities, whether incidental or intentional. Such interactions, whether lethal or sublethal, are termed "Human Interactions". Intentional marine mammal takes, such as cetacean drive fisheries and seal hunts for human consumption, are only legal in the US where indigenous people are permitted a certain number of subsistence takes (*e.g.* Alaska). In Virginia waters, there are no permitted subsistence hunts at the time of this writing (2025). Incidental takes resulting from activities not specifically targeting marine mammals (*e.g.* bycatch) are assumed to represent a greater threat to marine mammals in Virginia waters than intentional takes. Incidental takes typically fall into one of three categories, namely those caused by interaction with a fishery (*e.g.* entanglement in nets or pot gear, hooking in longline fishery, etc.), interaction with a vessel (*e.g.* vessel collision, propeller wounding, dredge interaction, etc.) and pollution (*e.g.* ingestion of marine debris, entanglement in ghost fishing gear, noise and contaminants, etc.).

Disturbance and Harassment

Disturbance and harassment are common and persistent interactions between marine mammals and humans. While the impacts of disturbance and harassment are usually temporary and sublethal, impacts can compound with other sublethal impacts. Disturbance can be caused by a number of anthropogenic activities (*e.g.* noise pollution, fisheries activities, wildlife viewing, etc.). Vessel traffic, including vessel noise, and other anthropogenic noise (*e.g.* geophysical surveys, sonar, pile driving, etc.) can cause significant disturbance through various animal reactions, including avoidance of or displacement from an area, cessation of vocalization and other social behaviors, and alterations in foraging behavior (Nowacek *et al.* 2001; Papale *et al.* 2011; Sciacca *et al*. 2017). Such disturbance can ultimately impact an animal energetically, such as increased energetic costs avoiding an area or decreased energetic costs as food consumption decreases (Noren *et al.* 2017). Seals at haul-out sites on the CBBT and ESVA increased their time returning to the haul-out sites after flushing due to vessel presence over the 3-year study period from an average of 9 hours during the first study year to 14 hours during the last study at the CBBT haul-out site and from 4 to 13 hours at the ESVA haul-out site (Guins *et al.* 2023). Frequent disturbance can interfere with seal resting behavior, which can reduce overall fitness in a manner similar to vessel and noise disturbance discussed above.

Under the MMPA, harassment includes feeding, attempting to feed, approaching, interacting, touching/petting, and swimming with marine mammals. These actions may cause marine mammals to change their natural behaviors, such as seeking out humans for food, become less cautious around humans and/or boats or result in individuals getting separated from each other, especially mother/calf and mother/pup pairs. Examples of harassment in Virginia waters include approaching or interacting with seals that are hauled out on land, feeding or watering manatees in marinas, and chasing dolphins or whales with vessels. Bottlenose dolphins conditioned to humans (*i.e.* begging, depredating, etc.) in Sarasota Bay, Florida, passed down this learned behavior to other dolphins and were more likely to become injured (*e.g.* vessel strike,

entanglement, hook ingestion; Christiansen *et al.* 2016). Impacts of disturbance and harassment may also occur simultaneously, as observed in spinner dolphins (*Stenella longirostris*) off the coast of Egypt where their resting behavior was disrupted by the presence of swimmers and vessels (Fumagalli *et al.* 2018). In response, dolphins may have to alter their natural resting behavior, such as choosing a less optimal resting location or adopting irregular sleeping patterns, ultimately impacting other activities necessary for survival.

Other activities, such as dredging, marine construction, scientific research, and fishing, are regulated and require permits when activities may include harassment. In Virginia, harassment of dolphins, whales, manatees and seals has been observed and reported to the stranding network (VAQS *unpublished data*, October 2023). Professional ecotourism operations usually voluntarily follow marine mammal wildlife watching guidelines, but anecdotal observation from whale watch and research vessels suggest that the general public does not regularly follow these guidelines when near marine mammals onshore or from vessels. Many members of the general public are unaware that marine mammal federal protections include disturbance and harassment. In cases where an animal or small group of animals remains in an area for an extended time period, outreach to local residents or casual observers usually mitigates the harassment, but the public does not always respond positively to guidance offered by stranding responders as they have no law enforcement authority.

Fishery Interactions

Fishery interactions with marine mammals are relatively common in numerous species. The scope of mortality and serious injury due to fisheries interactions are not known, due in part to the lack of adequate fisheries observer coverage and the challenging nature of forensic evaluation of stranded animals. In acute mortality cases, the cause of death in fisheries interactions is often related to underwater entrapment (*e.g.* suffocation/drowning; Moore *et al.* 2013). If initially survived, fishery interactions can lead to chronic conditions with increased morbidity, such as infection, physical (*e.g.* skeletal) deformation, energetic impairment due to impaired foraging, and a general failure to thrive (Moore *et al.* 2013). Commercial fisheries are classified into one of three categories based on the level of incidental mortality and serious injury observed: Category 1 (frequent interactions), Category 2 (occasional interactions), and Category 3 (remote likelihood of/no known interactions; NOAA Fisheries 2023d).

From stranding data, fishery interactions are the most common type of human interaction (HI) observed in Virginia waters. The mid-Atlantic gillnet fishery is the Commonwealth's only Category 1 fishery, while the Chesapeake Bay inshore gillnet, Atlantic blue crab trap/pot, mid-Atlantic menhaden purse seine, mid-Atlantic haul/beach seine, and the Virginia pound net fishery are all Category 2 fisheries (NOAA Fisheries 2023d). Virginia stranding and entanglement data include fishery interactions with pound nets, gillnets, crab trap/pot lines, and various unidentified rope/line gear, the latter being consistent with, but not indicative of, a fishery interaction. Numerous mortalities of cetaceans in pound nets and gillnets have been documented through stranding response (VAQS *unpublished data*, October 2023). Additionally, reports and sightings of live and dead bottlenose dolphins entangled in crab pot gear are not uncommon (VAQS *unpublished data*, October 2023). Other times, gear may no longer be attached; however, animals

have ligature marks and abrasions consistent with different gear types, such as twisted twine (*e.g.* pound net), monofilament net (*e.g.* gill net), or braided pot warp (*e.g.* pot buoy line). Deceased bottlenose dolphins with ligature marks and abrasions are recovered by VAQS annually. Marine mammal species such as bottlenose dolphins, humpback whales, and seals may also interact with or ingest recreational or commercial hook and/or line gear (VAQS *unpublished data*, October 2023). Hooks can become embedded externally and line can become wrapped around the body, appendages, mouth, teeth or baleen. While fishery interactions with bottlenose dolphins are the most common, they have also been documented with harbor porpoises, short-beaked common dolphins, humpback whales, minke whales, fin whales, North Atlantic right whales, harbor seals, and gray seals in Virginia waters (VAQS *unpublished data*, October 2023).

Marine mammals in federal waters may interact with the Atlantic Ocean large pelagics longline fishery, a Category 1 fishery, or the mid-Atlantic mid-water trawl and mid-Atlantic bottom trawl fisheries, both of which are Category 2 fisheries. Stranded species in Virginia with evidence of fisheries interactions include Atlantic white-sided dolphins, dwarf sperm whales, long-finned pilot whales, and Risso's dolphins (VAQS *unpublished data*, October 2023). Since these interactions occur in offshore waters with species that infrequently strand, it is difficult to assess the frequency of these interactions from stranding data alone. One method to assess offshore fishery interactions is through federal fisheries observer programs. Data from federal observers are used to estimate bycatch rates and serious injury and mortality for marine mammal stocks by fishery management area (*e.g.* not on a state-by-state basis). For example, 77 serious injuries and one mortality were observed in the western North Atlantic stock of short-finned pilot whales from 2015 to 2019 in waters from Maine to Florida for an estimate of 136 serious injuries and mortalities annually (Hayes *et al.* 2022).

Fishery interactions with marine mammals in Virginia waters are currently documented through the Northeast Fisheries Observer Program (NEFOP) and managed through TRTs. NOAA Fisheries is authorized to place trained observers on Category 1 or 2 fishing vessels and on certain Category 3 vessels. The mid-Atlantic gillnet, Atlantic Ocean large pelagics longline, mid-Atlantic mid-water trawl, and mid-Atlantic bottom water trawl all have annual federal observer coverage, although the percentage of coverage varies. For state-managed fisheries, limited federal observer coverage has occurred in mid-Atlantic menhaden purse seine, while no federal observer coverage has occurred in the Chesapeake Bay inshore gillnet, mid-Atlantic haul/beach seine, Virginia pound net, and Atlantic blue crab trap/pot. TRTs for large whales (*i.e.* humpback, fin, and North Atlantic right whales), bottlenose dolphins, and harbor porpoises manage gear requirements for gillnets, pound nets, and trap/pots through gear markings, weak links or rope (*i.e.* an attachment or portion of the rope that breaks at a lower strength than the rest of the rope), mesh size regulations, and seasonal closures among other factors (72 FR 57104; 71 FR 24776; 63 FR 66464). In offshore waters, a TRT for the Atlantic Ocean pelagics longline fishery mandates mainline lengths and careful handling and release of bycaught cetaceans, mainly short- and long-finned pilot whales and Risso's dolphins (74 FR 23349).

Fishery interactions with marine mammals in state-managed fisheries from the state-run observer program differ from interactions observed in stranding data. The MRC observer program was

developed in 2016 primarily to monitor Atlantic sturgeon (*Acipenser oxyrinchus oxyrinchus*) bycatch. During the 632 observed trips conducted by the MRC Protected Species Observer Program from 2016 to August 2024, the program recorded zero marine mammal takes. The state-managed fisheries that were observed included: anchored gillnet (501 trips), drift gillnet (52 trips), staked gillnet (20 trips), beam trawl (47 trips), haul seine (3 trips), pound net (2 trips), and electrofishing (7 trips; MRC *unpublished data*, November 2024). Of these, the MRC estimates that 253 trips were conducted in typical marine mammal habitat on gillnet gear that may interact with marine mammals, including gillnet, pound net and haul seine. Gillnet trips targeted striped bass, Spanish mackerel (*Scomberomorus maculatus*) and spiny dogfish (*Squalus acanthias*). Haul seine and pound net gear are non-specific gear types that target all species moving close to shore.

Vessel Strikes

The commonality of vessel interactions varies considerably by species. Odontocete species sustain watercraft injuries far less frequently than mysticetes. Conversely, vessel interactions are regularly documented in large whale species that inhabit coastal waters, such as North Atlantic right whales, fin whales, and humpback whales (Jensen and Silber 2003; Douglas *et al.* 2008), with up to one third of strandings of these species in some regions involving vessel interactions (Laist *et al.* 2001). Vessel interactions can range from sublethal injuries with little effect, to chronic, insidious injuries, to catastrophic interactions with immediate fatality (Moore *et al.* 2013). Vessel collisions can result in blunt force trauma (*e.g.* hematomas, contusions, bone fractures) with or without forced submergence; sharp force trauma (*e.g.* incising propeller or skeg/rudder wounds) and, occasionally, exsanguination, depending on the wound depth and location; or chop wounds involving both incising and crushing injuries (Rommel *et al*. 2007; Moore *et al*. 2013). In North Atlantic right whales, severity of propeller injury appears to be correlated with injury location (Sharp *et al.* 2019), and this is likely true for all species. A wide range of vessel/propellor sizes have been implicated in serious injury and mortality of baleen whales.

The coastal waters of Virginia have high levels of vessel traffic since being home to the Norfolk Naval Station, the largest naval installation in the world, and the Port of Virginia in Portsmouth, Virginia, the sixth busiest port in the US (USACE 2017). In addition, Virginia also hosts a healthy commercial fishing industry with over 700 commercial fishing vessels documented in Virginia in the US Coast Guard Merchant vessel registry as of November 2024. Of these, the majority (n = 611, 83%), were less than 50 feet in length, 103 fishing vessels (14%) were listed as 50-99 feet, and 23 fishing vessels were 100 feet or greater. The number of registered commercial fishing vessels in coastal and bayfront Virginia counties was relatively stable from 2016 to 2024 (DWR *unpublished data*, November 2024). In addition to commercial vessels, Virginia has high numbers of recreational vessel registrations in coastal and bayfront counties, with more than 33,000 vessels greater than 20 feet in length registered in 2024 as of November (DWR *unpublished data*, November 2024). The number of recreational vessels in these counties show an increasing trend since 2016, in all length categories, with 99% of vessels (32,973) between 20 and 49 feet in length. Vessel traffic ranges from personal watercraft to commercial container ships and military aircraft carriers. Vessels using Automated Identification System

(AIS, required for commercial vessels 65 feet or greater in length) utilize much of the Chesapeake Bay and surrounding coastal waterways (Figure 42).

In species that inhabit inshore and nearshore waters, injuries consistent with vessel strikes have been documented in stranded bottlenose dolphins, fin whales, minke whales, humpback whales, sei whales, North Atlantic right whales, and Florida manatees (VAQS *unpublished data*, October 2023). North Atlantic right whales appear to be more susceptible to vessel strikes than other marine mammals, with 43% of North Atlantic right whale strandings in Virginia having evidence of vessel strikes (VAQS *unpublished data*, October 2023). Further, vessel strikes were responsible for 42% of North Atlantic right whale deaths reported along the US Atlantic coast from 2003 to 2018 (Sharp *et al.* 2019). Although vessel strikes have been documented less frequently in other large whale species in Virginia waters from stranding records, these species still are at risk. Tagging data from humpback whales in Virginia found spatial overlap between whale movements and shipping channels leading to and within the Chesapeake Bay. Fin and minke whales were also observed in the shipping channels, though less frequently (Aschettino *et al.* 2020a).

Although there is less spatial overlap between marine mammals and vessels in offshore and pelagic waters, marine mammals are still at risk of vessel interactions. Deeper waters of the continental shelf to waters past the shelf break are US Navy operating and training areas. A study conducted on the detectability of various cetaceans by US Navy lookout teams found all analyzed groups had a high probability of remaining undetected (≥80%). Baleen whales were the easiest to detect followed by sperm whales and small cetaceans, which were the most difficult to detect (Oedekoven and Thomas 2022). Naval ships are just one example of the type of vessel utilizing offshore waters. Other vessel types include commercial ships and fishing vessels of all sizes. The exact impact of vessel strikes in offshore waters is difficult to assess due to the low likelihood of such an event being witnessed and subsequently reported. While stranding records can document the occurrences of vessel interactions, it cannot discern where the strike occurred.

Existing federal actions to mitigate vessel strikes in Virginia waters include the North Atlantic right whale SMA. The SMA encompasses waters within a 20 nm radius half circle from the mouth of the Chesapeake Bay where vessels 65 ft or greater in length cannot exceed 10 knots from November 1 to April 30 (73 FR 60173). Although the SMA targets the protection of right whales, other large whales utilize this area as well and benefit from the SMA.

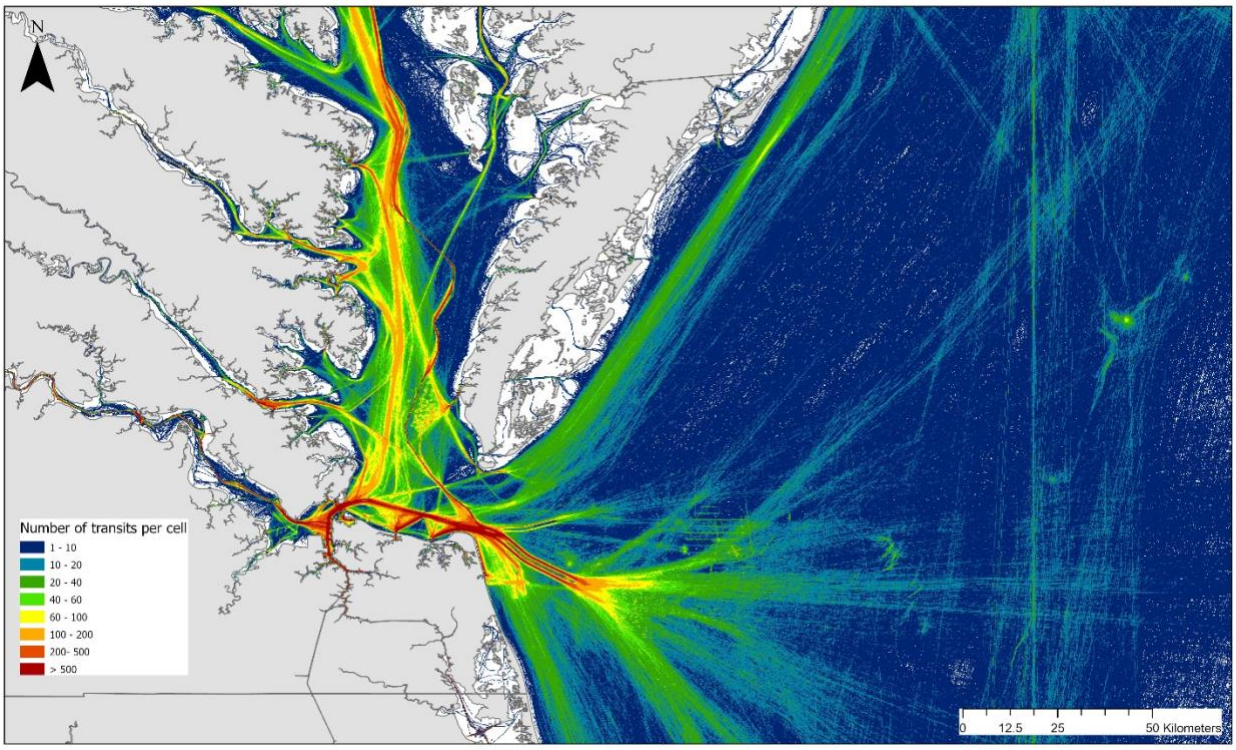

Figure 42. Density map of vessel traffic using AIS for 2022 along the Virginia coastline (Fontenault 2023).

Pollution

Marine mammals are affected by pollution in many overt and subtle ways. Pollution comes in many obvious forms, such as trash or marine debris (*e.g.* Great Pacific trash gyre), and "ghost" fishing gear, or more insidious forms including noise (*e.g.* noise generated by mid-frequency active sonar, seismic surveys and motorized vessels). The direct effects of debris and noise pollution are documented in individual animals; however, the population level effects are difficult to estimate. In addition to trash and ghost gear, microplastic debris is becoming a concern for its impact on many species.

Debris

Debris impacts marine mammals in Virginia waters in the form of micro- and macro-plastics and other debris of various sizes and composition. Microplastics are small plastic particles that are < 5 mm, such as microbeads, pellets, or fragments from larger plastic pieces, while macro-plastics includes all plastic particles > 5 mm (NOAA Marine Debris Program 2021). Debris in the marine environment primarily comes from land-based sources, such as litter transported by way of storm drains or runoff, but also comes from water-based sources, such as derelict fishing gear and trash intentionally or unintentionally discarded from vessels (Register *et al.* 2021). The Virginia stranding record has documented the ingestion of and entanglement in marine debris among bottlenose dolphins, minke whales, sei whales, harbor seals, and harp seals and included items such as plastic bags, a partial DVD case and fishing line and hooks (VAQS *unpublished data*, October 2023). Effects of debris ingestion can range from mild to severe, sometimes resulting in death. Additionally, microplastics which are present in the Chesapeake Bay (Yonkos *et al.* 2014;

Murphy *et al.* 2019) can impact marine mammals both chemically and physically when ingested. Although the long-term impacts are unknown, microplastic ingestion has also been documented in many species across the Atlantic Ocean, including bottlenose dolphins (Lusher *et al.* 2018; Battaglia *et al.* 2020), harbor porpoises (Lusher *et al.* 2018), fin whales (Garcia-Garin *et al.* 2021), and harbor and gray seals (Hudak and Sette 2019). Entanglement in debris can occur in larger, discarded items, such as a parachute which entangled a bottlenose dolphin, or discarded or derelict fishing line and/or hooks that have been found wrapped around bottlenose dolphins and harbor seals (VAQS *unpublished data*, October 2023). Larger pieces of fishing gear, such as pots and nets, also pose a risk of entanglement and entrapment. Sometimes, it is unclear whether the gear was derelict at the time of interaction or became so because of the marine mammal. Derelict fishing gear surveys in the Chesapeake Bay found blue crab pots were the most common type of gear, comprising 94% of recovered gear, and 40% of the pots appeared to be functional and abandoned as opposed to being lost or unretrievable (Bilkovic *et al.* 2014).

Debris also poses a threat to marine mammals in pelagic Virginia waters. Although it is more difficult to assess the impacts in pelagic waters, both micro and macro-plastics have been documented in the Norfolk Canyon (Jones *et al.* 2022). A pygmy sperm whale and Risso's dolphin have stranded in Virginia with macro-plastics in their stomachs, though when and where the debris were ingested is unknown (VAQS *unpublished data*, October 2023). Microplastic ingestion has also occurred in offshore species, such as True's beaked whales, short-beaked common dolphins, and striped dolphins (Lusher *et al.* 2015; Lusher *et al.* 2018).

Marine debris in Virginia waters is increasing, with plastics comprising 83% of all items collected from 2014 to 2018 (Register *et al.* 2019); however, this threat is not exclusive to Virginia waters and will require considerable collaboration to address. The Virginia Marine Debris Reduction Plan and the Mid-Atlantic Marine Debris Action Plan contain many viable actions that can be taken to address marine debris. Both plans share the same goals: to understand, prevent, and mitigate consumer debris and single-use plastics, derelict fishing gear, microplastics and microfibers, and abandoned vessels through efforts such as clean-ups, outreach, and monitoring (NOAA Marine Debris Program 2021; Register *et al.* 2021). From these efforts, the MRC established the Abandoned or Derelict Vessel Program to provide grant funding for the removal of abandoned or derelict vessels (MRC 2025).

Noise

Noise pollution has received increasing attention since the 1990s. Sources and types of noise pollution can vary considerably from commercial (*e.g.* shipping noise, energy exploration/operations, etc.) to construction and military (*e.g.* pile-driving, dredging, mid-frequency active sonar, demolitions/explosions, etc.). Effects of noise pollution are highly variable, ranging from temporary harassment level impacts to acoustic injury to mortality (Fernández *et al.* 2005; Weilgart 2007). Harassment level impacts include avoiding critical feeding or breeding areas, and obscuring or masking vocalizations and sounds, which ultimately reduces the signal range and quality of information. Acoustic injury includes hearing loss or shifts in hearing thresholds that can either be temporary or permanent, depending on whether noise exposure is repeated, prolonged or especially loud (Weilgart 2007). Mortality can result from decompression-like syndrome (*e.g.* the bends), as tissues become super-saturated with

nitrogen gas from surfacing too quickly, observed more frequently in deep-diving species such as beaked whales (Fernández *et al.* 2005; Weilgart 2007).

Anthropogenic noise from various sources is omnipresent in all Virginia waters. One of the most significant emerging sources of noise is the development of wind energy areas (WEA). In fact, the Regional Wildlife Science Collaborative (RWSC) has identified noise as the industry's greatest impact to marine mammals in its Integrated Science Plan for Offshore Wind, Wildlife and Habitat in US Atlantic waters (RWSC 2024). Noise associated with offshore wind comes from vessels used to construct and service wind farms; construction activities, especially pile driving; and from functioning turbines (Kraus *et al*. 2019). Development of the first offshore wind facility in Virginia, the Coastal Virginia Offshore Wind development (CVOW) by Dominion Energy, began in May 2024 and is expected to continue through 2026, with pile driving expected to end sometime in the summer or fall of 2026 (Figure 43). Dominion Energy also purchased a lease in Northeastern North Carolina (formerly Kitty Hawk Wind) and leased an area to the east of the current CVOW site (CVOW East). Mitigation measures addressing noise production from pile driving include restrictions on timing of activities to avoid right whales, use of bubble curtains to acoustically dampen sound and independent observer surveys before and during piledriving activities are required by federal permitting agencies and are described in the CVOW Construction Mitigation and Monitoring Plan (Tetra Tech 2024).

To analyze baleen whale use of the Virginia WEA, moored PAM units were deployed approximately 30 km to 120 km offshore. Fin, humpback, minke, and North Atlantic right whales were all detected within the WEA. While fin whale calls were detected in relatively high numbers year-round, other large whale presence was seasonal based on their migratory movement. Odontocete calls were also detected and mostly occurred closer to shore and in the summer months. These results suggest numerous cetacean species utilize the waters surrounding the WEA at different times of the year (Klinck *et al.* 2018). Other sources of noise include dredging operations, most recently navigational channel expansion that began in December 2019 in the Port of Virginia shipping channels to both deepen and widen the channels and is expected to take ten or more years to complete (USACOE 2018).

Vessel and construction noise also pose a threat in offshore waters by way of high-traffic shipping activity and offshore wind energy development (Figure 43). Military noise from mid-frequency active sonar is also of concern, specifically with deep-diving species. In areas with mid-frequency active sonar, fewer beaked whales were present during periods of sonar activity. Their response was also impacted by the loudness of the sonar, with less whales present at louder sounds (Van Parijs *et al.* 2023). Short-finned pilot whales have also been documented moving away from sources of sonar (Southall *et al.* 2018).

Noise is difficult to manage due to both the complicated and difficult-to-predict nature of its propagation through the water column and the unpredictable animal behavioral responses to noise levels not considered physically injurious. Two current studies to understand the impacts of noise on marine life and provide possible mitigation measures are NOAA's Ocean Noise Strategy Roadmap and the RWSC Science Plan. NOAA's Ocean Noise Strategy Roadmap includes monitoring and better understanding the physical impacts of ocean noise on various marine

species and future actions, such as protected areas and "green ships" that are quieter (Gedamke *et al.* 2016). The RWSC Science Plan focuses on understanding the impacts of offshore wind development off the US Atlantic and provides recommendations to understand habitat-use of various marine species for successful ocean planning and minimization of environmental disturbance (RWSC 2024).

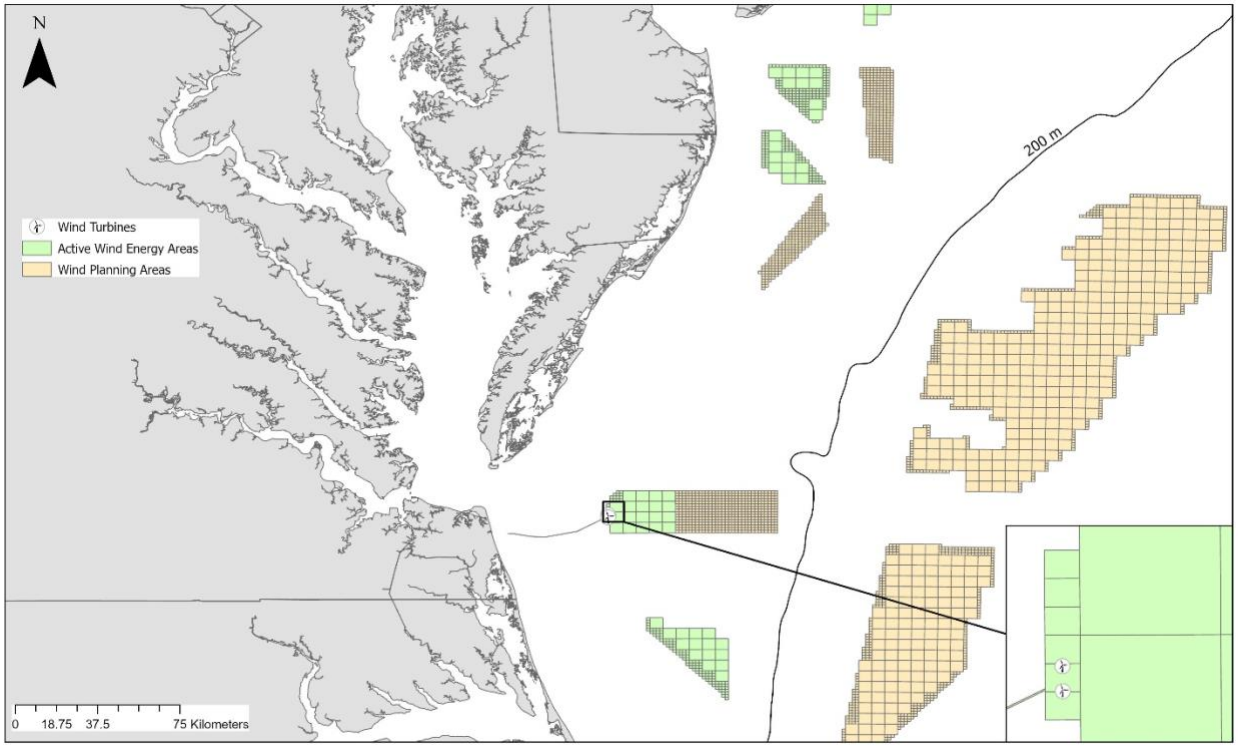

Figure 43. Map of active wind energy areas and future wind planning areas, with cable and turbine (inset) locations, along the mid-Atlantic Bight, with the 200-m isobath (BOEM 2023). Dominion Energy has acquired leases for the two areas on the Virginia continental shelf and recently acquired the lease for the northern North Carolina area. Offshore areas (tan) are considered planning areas and, as of early 2025, lease areas and timelines were not finalized.

Contaminants

Contamination occurs when a substance is present where it normally does not occur or at a concentration above background levels (Chapman 2007). Further, contamination can be classified as point, originating from a single source, or non-point, originating from multiple sources. Point source contamination is discussed in this section, while non-point source contamination is discussed in the habitat degradation section.

Point source contamination is especially problematic for marine mammals when it is an acute or short-term event that directly impacts animals and can potentially be lethal. Examples of these types of events include spills of fossil fuels or sewage. Although no large-scale spills have occurred in coastal or offshore Virginia waters, exposure to fossil fuels can impact marine mammals by irritating skin, fur, eyes and mucus membranes, damaging internal tissues, and

causing die-offs (Geraci and Lounsbury 2005). Although fossil fuels are not currently extracted from the marine environment in or offshore of Virginia, fuel associated with military and shipping vessels creates a risk of moderate-sized spills that could impact marine mammals. Response to these types of events requires coordinated planning and training that specifically addresses how marine mammals will be monitored, assessed, and who will capture and care for them should intervention be required.

Natural

Threats to marine mammals can also stem from natural sources. Infectious diseases (*e.g.* morbillivirus), harmful algal blooms (*e.g.* domoic acid, saxitoxins, brevetoxins), resource/prey shifts, and other variables can lead to nutritional stress, immunosuppression, reduced fecundity, and/or direct mortality. Additionally, it is believed that some natural phenomena, such as domoic acid toxicity caused by a neurotoxin found in plankton diatoms, can lead to chronic impairment that may affect brain development and make marine mammals more susceptible to other threats, both natural and manmade (Ramsdell and Zabka 2008; Pulido 2008; Montie *et al.* 2012; Buckmaster *et al.* 2014; Ramsdell and Gulland 2014). Although epigenetic effects of natural biotoxin and infectious agent exposure in marine mammals are not understood, it is assumed that such mechanisms bear some similarities to other mammals by potentially compromising long-term survival and fitness.

Disease

Infectious diseases are poorly understood in most marine mammal species but can be categorized by the type of infectious agent involved (*e.g.* fungal, viral, bacterial, protozoal, etc.). The manifestation of such diseases can be either acute or chronic, resulting in one of three subsequent outcomes: survival, morbidity, or mortality. Little is known about infectious diseases in marine mammals inhabiting inshore and offshore waters of Virginia. What is known primarily involves emerging or resurging diseases, such as morbillivirus, brucellosis, and influenza. Morbillivirus, a relative of canine distemper virus, can affect cetaceans and phocids and has been implicated as the cause of large-scale mortalities of bottlenose dolphins in Virginia. Morbillivirus was diagnosed as the causative agent of a massive cetacean mortality event affecting much of the US Atlantic coast (New York to Florida) and spanning from July 1, 2013, to March 1, 2015. The morbillivirus UME resulted in 1,614 documented bottlenose dolphin mortalities, of which Virginia experienced the highest number (416; NOAA Fisheries 2023a). Prior to this mortality event, an extensive morbillivirus associated event occurred in 1987 to 1988, resulting in 740 coastwide bottlenose dolphin mortalities, prompting the speculation that morbillivirus has a cyclical resurgence based on herd immunity patterns. Phocine distemper virus was most recently implicated as the causative agent of a large-scale die-off of harbor and gray seals from July 1, 2018, to March 13, 2020, from Maine to Virginia (NOAA Fisheries 2023b).

Brucellosis, a bacterial infection caused by *Brucella* spp., has been detected in 53 species of marine mammals worldwide. Two strains primarily infect marine mammals: *Brucella ceti* and *Brucella pinnipedialis*. Both can cause inflammation of the brain, meningitis, pneumonia, arthritis, and abortions (Hernández-Mora *et al.* 2013). The epidemiology of brucellosis is poorly

understood, but in South Carolina, there were more cases among bottlenose dolphins during the spring calving season, suggesting there may be a temporal pattern in bottlenose dolphins (McFee *et al.* 2020). Influenza A and B viruses have been detected in various marine mammal species, primarily phocids. It is thought to be spread to marine mammals via contact with birds and can result in pneumonia or some other respiratory condition (Fereidouni *et al.* 2016). Influenza has been responsible for multiple large-scale die-offs of seals. The most recent example occurred in June 2022 which effected harbor and gray seals in northern US Atlantic waters (NOAA Fisheries 2023c).

Injury (Infanticide, Predation, Incidental Foraging)

Non-anthropogenic sources of lethal and non-lethal injuries among marine mammals include conspecifics, other marine mammal species, predators, and the incidental ingestion of large prey items or harmful prey parts such as stingray and fish spines. Several cases of infanticide, presumably caused by adult bottlenose dolphin males, has been documented in Virginia waters (Dunn *et al.* 2002), and cases of interspecific aggression have been suspected among bottlenose dolphins attacking juvenile harbor porpoises (VAQS *unpublished data*, October 2023). Predation also occurs occasionally, primarily by sharks targeting smaller or compromised marine mammals. There are also incidents of external and/or internal injury or infection caused by stingray spines, injury or suffocation from ingested fish spines in the esophagus, and epiglottal blockage or dislocation from large prey or awkward ingestion (Walsh *et al.* 1988; McFee and Lipscomb 2009; Stolen *et al.* 2013). Epiglottal blockage or dislocation ultimately resulting in asphyxiation has been suspected as the cause of death in stranded bottlenose dolphins and harbor porpoises in Virginia ingesting summer flounder (*Paralichthys dentatus*), striped bass (*Morone saxatilis*), hogchoker (*Trinectes maculatus*), and blackcheek tonguefish (*Symphurus plagiusa*) (VAQS *unpublished data*, October 2023).

Harmful Algal Blooms (HABs)

Harmful algal blooms (HABs) occur when alga bloom in large numbers, producing biotoxins and depleting the water of oxygen as the alga decompose. HABs are driven by excess nutrients, primarily nitrogen and phosphorus, entering the water. The diatom *Pseudo-nitzschia* spp. and various bloom-forming dinoflagellates that produce biotoxins such as karlotoxins, saxotoxins, hepatotoxins, and domoic acid are found in the Chesapeake Bay (Rattner *et al.* 2022). Biotoxins pose a serious threat to marine mammals because they can be inhaled at the surface when they aerosolize (Mase *et al.* 2000) or can be ingested through prey items (*e.g.* fish or seagrass; Flewelling *et al.* 2005). Exposure to biotoxins can cause neurological dysfunction, locomotor impairment, ataxia, seizures, and even death (Goldstein *et al.* 2008; Fire *et al.* 2021). Large-scale mortality events off the Gulf Coast of Florida have been attributed to red tide blooms which produces brevetoxin (Mase *et al.* 2000; Flewelling *et al.* 2005) and exposure to domoic acid has resulted in mass die-offs off the California coast (Goldstein *et al.* 2008). Biotoxins have been detected in a variety of species, including brevetoxin in Florida manatees and bottlenose dolphins (Mase *et al.* 2000; Flewelling *et al.* 2005), and saxitoxin and domoic acid in short-beaked

common dolphins, humpback whales, and harbor seals (Fire *et al.* 2021). Offshore species, such as Risso's dolphins and dwarf and pygmy sperm whales (*Kogia* sp.), have also tested positive for biotoxins even though most blooms occur in inshore waters (Fire *et al.* 2021). HABs in the Chesapeake Bay are increasing over time due to increasing water temperatures and eutrophication (Li *et al.* 2015), prompting intensive water quality surveillance and research on how HABs are affecting marine organisms, not just marine mammals, in Virginia waters.

Cetacean Mass Stranding(s)

A mass stranding is defined as an event where two or more cetacean strandings occur at the same time and place, excluding mother-calf pairs. Some species are known to mass strand, including pilot whales, sperm whales, and several pelagic dolphin species. The causes of mass strandings are difficult to discern, but some include disease, social cohesion, complex bottom topography, weather, oceanographic conditions, and anthropogenic causes (*e.g.* sonar; Geraci and Lounsbury 2005). Mass stranding events in Virginia waters have included common dolphins, dwarf sperm whales, Risso's dolphins, short-finned pilot whales, pygmy killer whales, striped dolphins, and rough-toothed dolphins (VAQS *unpublished data*, October 2023). Some, but not all, of these events were correlated with strong weather events (VAQS *unpublished data*, October 2023).

Other Threats

Changing Environmental Conditions

The study of changing environmental conditions effects on marine mammals is in its infancy. Marine mammal populations are being affected by changing environmental conditions as evidenced by shifts in distribution, spatial and temporal changes in migration, and habitat loss. Although not conclusively linked to climate change, recent years have shown significant changes in the distribution of several marine mammal species. North Atlantic right whales have shifted their distribution northward with increased sightings in the Gulf of St. Lawrence, possibly due to shifting prey distribution (Pettis and Hamilton 2016; Davis *et al.* 2017). Additionally, calving grounds saw record low numbers of mother-calf pairs in 2016 and 2017. At the same time, body condition scores and indices of health among adult right whales have been worsening, leading scientists to speculate about prey shifts, disease, and the loss of population-level knowledge of alternate feeding grounds as the possible causes. Similarly, states such as Virginia and North Carolina have progressively experienced increased phocid (true seal) sightings in winter and early spring months. Individual seals have been observed returning to some locations, indicating a degree of seasonal residency and site fidelity not historically seen in those latitudes (Ampela *et al.* 2023; Jones and Rees 2023). In addition to redistributions, other species have shifted the timing and duration of their migrations. Both fin whales and humpback whales arrived at and departed from their summer feeding grounds in the Gulf of St. Lawrence earlier than previously recorded, most likely driven by the earlier timing of the phytoplankton bloom (Ramp et al. 2015). Other indirect effects could come in the form of sea level rise, increased water

temperatures, Gulf stream current changes, and rainfall changes that can drastically affect coastal watersheds and promote algal growth. Increasing nutrient runoff and freshwater effluent, decreases in salinity, and increasing water temperatures and carbon dioxide can be major contributors to the onset and persistence of harmful algal blooms.

Water temperatures in the Chesapeake Bay watershed are increasing over time (Rice and Jastram 2015). For species already changing their distribution and timing of migration (*e.g.* humpback and fin whales), this may impact when and where these species are seen in Virginia waters. Cold-water species, such as harbor porpoises and short-beaked common dolphins, are predicted to move northward to remain in cooler waters (van Weelden *et al.* 2021). Subsequently, these species may occur less frequently in Virginia waters, which may already be reflected in the reduced stranding rates of Atlantic white-sided dolphins, harbor porpoises, and hooded seals (Thorne *et al.* 2022; VAQS *unpublished data*, October 2023). Conversely, bottlenose dolphin strandings have been increasing over time in the mid-Atlantic Bight (Thorne *et al.* 2022), coinciding with increased bottlenose dolphin strandings over time in Virginia (VAQS *unpublished data*, October 2023).

The effects of changing environmental conditions will take extensive collaboration to address since it is not exclusive to this region and many marine mammal species occur only seasonally in Virginia waters. Lettrich *et al.* (2023) analyzed the exposure and sensitivity of each marine mammal stock to determine which stocks are most vulnerable to outcomes resulting from changing climate conditions. Most stocks in the western North Atlantic Ocean ranked high to very high for exposure to environmental change and are considered to have low to moderate sensitivity to tolerate environmental change. Further, phocids ranked lower for exposure in comparison to other taxonomic groups and endangered species had higher exposure and lower sensitivity. While these findings highlight stocks of concern, each stock will respond differently in terms of its abundance, distribution, and phenology (Lettrich *et al.* 2023), making this threat extremely challenging to address. In 2023, the federal Ocean Policy Committee enacted the Ocean Climate Action Plan to address ocean climate change. The Ocean Climate Action Plan has three key goals: create a carbon-neutral future, accelerate nature-based solutions to protect and support natural coastal and ocean systems, and enhance community resilience to ocean change (Ocean Policy Committee 2023). It identifies a number of cross-sector action items needed to achieve these goals, predicated on collaboration between governmental and non-governmental entities, communities, and commercial and industrial entities.

As marine mammal distribution changes spatially and temporally in response to climate change, the possibility of greater exposure to other identified threats in Virginia waters may become more likely. For example, shifts in the distribution of some animals may cause greater overlap with fishing gear, marine construction activities, military training exercises and other human activities, or result in increased exposure to pathogens and parasites. Documenting shifts in marine mammal distribution and abundance and tracking stranding trends and causes of mortality will be key to understanding the implications of climate change in Virginia.

Habitat Degradation

Habitat degradation occurs from non-point source contamination and encroachment, among other factors. Non-point source contamination includes background levels of chemicals, heavy metals, and other substances in the marine environment that can ultimately harm marine mammals as they bioaccumulate, causing immune, reproductive, and hormone dysfunction (Krahn *et al.* 2009; Hunter-Foster *et al.* 2022). Some populations (*e.g.* Southern Resident killer whales of Pacific Northwest US) have demonstrated record levels of persistent organic pollutants among mammals (Krahn *et al.* 2009). Cook Inlet beluga whales have copper levels in their livers that are higher than levels reported to cause kidney damage in bottlenose dolphins (URS Corporation 2010; Norman 2012).

In Chesapeake Bay, contaminants such as polychlorinated biphenyls (PCBs), pesticides (*e.g.* chlordane, dichlorodiphenyltrichloroethane [DDT]), and metals (*e.g*. mercury, lead), have been detected (VDEQ 2022). In 2010, 72% of the Chesapeake Bay was impaired by toxic contaminants. This percentage has increased over time and was estimated at 78% in 2020 (Chesapeake Progress 2023). Of growing concern, per- and polyfluoroalkyl substances (PFAs) have also been detected in Chesapeake Bay, with the highest concentration of three Virginia test sites in the James River (Hunter-Foster *et al.* 2022). Although contaminant testing has not been regularly conducted on Virginia marine mammals, contaminants, including PCBs and DDT, were detected in a bottlenose dolphin that stranded in Virginia (Yordy *et al.* 2010). Contaminants are also capable of being transported to offshore oceanic waters, as demonstrated in the northeast Atlantic (Lara-Martín *et al.* 2020).

While contaminants can be difficult to mitigate due to their ability to disperse large distances, accumulate in all levels of the food chain, and become sequestered in benthic substrate, there are some existing efforts to mitigate contaminant levels. The Chesapeake Bay Watershed Agreement was created for all states within the watershed to conduct water quality monitoring and improvement, gaining a better understanding of sources and mitigation strategies for toxic contaminants (*i.e.* PCBs and mercury), and reducing contaminant levels below thresholds that harm humans and the aquatic system (Chesapeake Executive Council 2022).

Habitat encroachment occurs when infrastructure and development extend into natural habitats. As a result, natural habitat is lost and/or altered and water quality worsens, allowing nutrients and sediment to increase in the marine environment (Virginia Coastal Program 2018). Examples of encroachment include offshore wind facilities within marine mammal migration corridors, coastal development on or near seal haul-out sites, marine construction projects in important foraging areas, and navigational channel dredging that can temporarily displace marine mammals. Reduced water quality can lead to a loss of vegetation, which serves as food and cover for lower trophic level prey species and manatees. Encroachment ultimately leads to increased overlap between humans and marine mammals and may even cause marine mammals to occupy smaller areas, which may increase the potential for disease transmission and intra- and inter-specific aggression. It is also possible that aquaculture could encroach on marine mammal habitat. Currently, marine aquaculture occurs in Virginia's coastal bays and in the Chesapeake Bay estuary and is largely confined to shellfish production. Impacts from inshore shellfish

aquaculture seem to be relatively benign. Greater concerns may arise from large scale finfish or other oceanic aquaculture development should this become a reality in Virginia's nearshore waters.

Marine Mammal Conservation Strategy

Numerous marine mammal species are present in the mid-Atlantic waters of the United States (US) at some point during the year. As such, policies and protections provided by any one state in the region could be part of larger, regional collaborative conservation efforts. The Virginia Department of Wildlife Resources (DWR) Board periodically adopts federal Endangered Species Act (ESA) status and population unit designations for all federally listed species, including listed marine mammals, via regulatory action. The Virginia Coastal Zone Management Program (CZM) provides annual funds to the Virginia Aquarium Stranding Response Program (VAQS), which runs the scientifically based Virginia Marine Mammal Stranding Network (VMMSN or "Network"). The VAQS has also periodically received funds from the competitive Prescott Marine Mammal Grant Program, which is administered by the National Oceanic and Atmospheric Administration National Marine Fisheries Service (NOAA Fisheries, also known as NMFS) specifically for the purpose of supporting marine mammal stranding response and research efforts. The Virginia Marine Resources Commission (MRC) has a Joint Enforcement Agreement (JEA) with NOAA Fisheries for Marine Mammal Protection Act (MMPA) enforcement, which includes assisting VAQS with stranding events. In addition, Virginia's on-going ocean planning efforts and the regional partnership with the Mid-Atlantic Regional Council on the Ocean (MARCO) provide a foundation for addressing many of the risks facing marine mammals in the state, such as fishery interactions, vessel strikes, noise pollution, habitat degradation, energy development, marine debris, and other sources of pollution.

In order to begin development of this Plan, a two-day workshop was held that included a variety of stakeholders. The purpose of the workshop was to discuss conservation efforts, challenges, and topics associated with marine mammals and to formulate suggestions for actions to be considered for inclusion in the Plan. The group received background information and discussed challenges faced by marine mammals in Virginia. Topics discussed included harassment, vessel strikes, commercial and recreational fishery interactions, marine debris, noise, climate change, and other forms of pollution. Stakeholders represented state and federal entities, environmental non-governmental organizations, ecotourism operators, and representatives from maritime industries in the region. While the planning team reached out to several tribal partners and commercial fishers, those stakeholder groups were not represented at the workshop. Stakeholders who were invited to the workshop were also invited to review the final draft Conservation Strategy of this Plan.

This Conservation Outline lists goals and strategies, followed by a narrative (which adds detail to the listed strategies), a list of actions that address the strategies, the designated lead entity for each action (in bold lettering) and supporting organizations, and timelines, where appropriate. Timelines were classified into three categories: near-term (to be implemented within three years

of Plan publication), longer-term (to be implemented between three and eight years of Plan publication), and on-going (regardless of implementation timeline). Finally, the Conservation Outline includes references to similar federal conservation and recovery recommendations from US marine mammal recovery plans, where appropriate.

Conservation Outline

The overarching goal of this plan is to enhance the survival of marine mammals and conserve their habitats in Virginia.

Conservation Goal 1: Maintain a permanent and effective Marine Mammal Stranding Network in Virginia.

Strategy 1.1. – Establish one or more consistent funding sources to sustain a permanent and effective Marine Mammal Stranding Network in Virginia.

Strategy 1.2. – Establish an Interagency Stranding Event Network (ISEN).

Actions listed in the North Atlantic right whale recovery plan that align with the Virginia plan (NOAA Fisheries 2005):

4. Monitor the status and trends of abundance and distribution of the western North Atlantic right whale.
    4.6 Respond to Strandings

Actions listed in the fin whale (NOAA Fisheries 2010), sei whale (NOAA Fisheries 2011), and sperm whale (NOAA Fisheries 2010) recovery plans that align with the Virginia plan (NOAA Fisheries 2010):

1.0 Maximize Efforts to Acquire Scientific Information from Dead, Stranded, and Entangled or Entrapped Whales.
    1.1 Respond effectively to strandings in U.S. waters.
    1.2 Establish reliable sources of funding for rescue, necropsy, and tissue collection and analysis efforts.

Actions in the Florida manatee recovery plan that align with the Virginia plan (USFWS 2001):

Objective 1: Minimize causes of manatee disturbance, harassment, injury, and mortality
    1.10 Rescue and rehabilitate distressed manatees and release back into the wild
Objective 2: Determine and monitor the status of manatee populations
    2.4 Evaluate and monitor causes of mortality and injury

Conservation Goal 2: Identify, assess, and mitigate risks to marine mammal populations and habitats in Virginia through cost-effective monitoring, research, and best practices.

Strategy 2.1. – Collect, analyze, and compare commercial fishery effort, observed marine mammal takes, and stranding data for state managed fisheries known to or likely to interact with marine mammals.

Strategy 2.2. – Continue to assess trends in key marine mammal population demographics in Virginia over time and compare them to trends observed throughout the mid-Atlantic region.

Strategy 2.3. – Continue to monitor key marine mammal demographics, distribution, diet, and health status (*e.g.* contaminant levels, nutritional status, parasite loads) in Virginia.

Strategy 2.4. – Assess, protect, and/or enhance marine mammal in-water and haul-out habitats through engagement with state and regional initiatives and partnerships.

Strategy 2.5. – Incorporate the foraging and habitat needs of marine mammals in the development of or revisions to relevant fishery management plans, fishery and aquaculture regulations, and best practices as a move toward ecosystem-based management of marine resources.

Strategy 2.6. – Develop standardized reporting and response procedures for marine mammal harassment cases and marine debris and recreational gear interactions in Virginia waters.

Strategy 2.7. – Develop working groups with representatives from the commercial fishing, shipping, and other maritime industries to identify, assess, and mitigate relevant marine mammal conflicts.

Actions listed in the North Atlantic right whale recovery plan that align with the Virginia plan (NOAA Fisheries 2005):

1. Significantly reduce sources of human-caused death, injury and disturbance.
   - 1.1 Reduce ship collisions with right whales.
   - 1.2 Reduce injury and mortality caused by fisheries and fishing equipment.
   - 1.4 Enforcement of fishing and shipping regulations.

3. Identify, characterize, protect and monitor important right whale habitats.
   - 3.1 Characterize and Monitor Right Whale Habitat
   - 3.3 Reduce Human Impact to Habitat

4. Monitor the status and trends of abundance and distribution of the western North Atlantic right whale.
   - 4.4 Monitor right whale occurrence and habitat use pattern in known high-use areas.

5. Coordinate Federal, State, international and private efforts to implement the Recovery Plan.
   - 5.2 Enforce right whale protection laws

5.4 Coordinate with States involved in right whale activities to maximize protection measures.

Actions in the sei whale recovery plan that align with the Virginia plan (NOAA Fisheries 2011):

4.0 Continue to Collect Data on "Unknown" Threats to Sei Whales.

- 4.1 Opportunistically collect data on the impacts of climate change on sei whales.
- 4.2 Opportunistically collect data on injury and mortality caused by fisheries and fishing equipment.
- 4.3 Opportunistically collect data on mortality and serious injury from vessel collisions.
- 4.4 Opportunistically collect data on the effects of anthropogenic noise on the distribution, behavior, and productivity of sei whales.

Actions listed in the fin whale (NOAA Fisheries 2010), sei whale (NOAA Fisheries 2011), and sperm whale (NOAA Fisheries 2010) recovery plans that align with the Virginia plan (NOAA Fisheries 2010):

1.0 Coordinate State, Federal, and International Actions to Implement Recovery Actions and Maintain International Regulation of Whaling for Fin Whales.

2.0 Identify, Characterize, Protect, and Monitor Habitat Important to Whale Populations in U.S. Waters and Elsewhere.

- 2.1 Characterize whale habitat
- 2.2 Monitor important habitat features and sei whale use patterns to assess potentially detrimental shifts in these features that might reflect disturbance or degradation of habitat.
- 2.3 Promote actions to protect important habitat in U.S. waters.
- 2.4 Conduct research and perform analyses to understand the impacts of climate change on fin whales and seek strategies to reduce these impacts. (Fin and sperm whale plans only)

3.0 Develop and Apply Methods to Estimate Population Size and Monitor Trends in Abundance.

- 3.2 Conduct surveys to estimate abundance and monitor trends in whale populations worldwide.

4.0 Investigate Causes of and Reduce the Frequency and Severity of Human-caused Injury and Mortality.

- 4.1 Investigate and reduce injury and mortality caused by fisheries and fishing equipment and reduce depredation.
- 4.2 Investigate and reduce mortality and serious injury from vessel collisions.
- 4.3 Investigate and, if medium or high ranked threat, reduce injury and mortality caused by anthropogenic noises. (Sei whale plan only)
- 4.4 Investigate the impacts of climate change on sei whales and seek strategies to reduce any impacts found to be detrimental to sei whales and their habitat. (Sei whale plan only)
- 4.5 Conduct studies of environmental pollution that may affect sperm whale populations and their prey. (Sperm whale plan only)
- 4.6 Identify areas where concentrations of fin whales coincide with significant levels of maritime traffic, fishing, or pollution (including marine debris). (Fin whale plan only)

5.0 Determine and Minimize Any Detrimental Effects of Anthropogenic Noise in the Oceans. (Fin and sperm whale plans only)

5.2 Take steps to minimize anthropogenic noises that are found to be potentially detrimental to whales. (Fin and sperm whale plans only)

Actions in the Florida manatee recovery plan that align with the Virginia plan (USFWS 2001):
Objective 1: Minimize causes of manatee disturbance, harassment, injury, and mortality

1.3 Minimize collisions between manatees and watercraft

1.7 Minimize manatee injuries and deaths caused by fisheries and entanglement

1.11 Implement strategies to eliminate or minimize harassment due to other human activities

Objective 2: Determine and monitor the status of manatee populations

2.3 Determine life history parameters, population structure, distribution patterns, and population trends

Conservation Goal 3: Promote marine mammal conservation in Virginia through social marketing and information dissemination.

Strategy 3.1. – Promote marine mammal conservation in Virginia through effective social marketing techniques.

Strategy 3.2. – Develop marine mammal educational materials for a variety of audiences and messages.

Strategy 3.3. – Prepare and regularly update permitting guidance documents to assist with the review of proposed human activities that may negatively affect marine mammals in Virginia.

Actions listed in the North Atlantic right whale recovery plan that align with the Virginia plan (NOAA Fisheries 2005):
1.0 Significantly reduce sources of human-caused death, injury and disturbance.

1.3 Continue and Improve Education and Outreach Programs

Actions in the Florida manatee recovery plan that align with the Virginia plan (USFWS 2001):
Objective 1: Minimize causes of manatee disturbance, harassment, injury, and mortality

1.2 Continue state and federal review of permitted activities to minimize impacts to manatees and their habitat

Objective 4. Facilitate manatee recovery through public awareness and education

4.1 Identify target audiences and key locations for outreach

4.2 Develop, evaluate, and update public education and outreach programs and materials

4.3 Coordinate development of manatee awareness programs and materials in order to support recovery

4.5 Develop and implement a coordinated media outreach program

Conservation Narrative

The Conservation Narrative provides an implementation roadmap for the goals and strategies presented in the Conservation Outline (see previous section). More precisely, the Narrative identifies each strategy's need; specific actions and corresponding Entities; ideal timeline for completion; and additional resource requirements (*e.g.* funding, extra staff, federal coordination), as needed. Many of the strategies in this Plan rely on the willingness of agencies, academia, and affected stakeholders to balance actions that affect humans, wildlife, and ecosystems. This approach will require a shift in management that acknowledges the connection between human and marine ecosystem concerns and emphasizes the need to facilitate marine mammal conservation and habitat protection, while sustaining homeland security and human economic interests, safety, and recreation.

Conservation Goal 1: Maintain a permanent and effective Marine Mammal Stranding Network in Virginia.

The Virginia Marine Mammal Stranding Network (VMMSN) was founded in 1987 and from 1993 through 2024 was coordinated by VAQS to monitor trends in marine mammal mortality and health. Stranding Network management includes managing stranding reports throughout the state and associated data when a response is conducted. Marine mammal stranding and incidental take data from permitted activities such as marine construction, fishing activities, and military exercises provide the only available index of marine mammal mortality and morbidity available to resource management agencies. Data collected by the VMMSN are entered into a national marine mammal stranding database maintained by NOAA Fisheries. That agency has assisted state and federal conservation agencies with the implementation and evaluation of regulations and management strategies for marine mammals along the eastern seaboard.

Maintaining an effective Marine Mammal Stranding Network in Virginia allows for the collection of many types of information, ranging from basic demographic information (*i.e.* species, sex, age class) to the evaluation of human interaction (HI), which are critical to the management and conservation of marine mammals. For example, the consistent reporting and examination of bottlenose dolphin pound net interactions in southeastern Virginia led to the establishment of regulations requiring gear modifications to reduce entanglement in 2009. Fishery interactions observed by the stranding network continue to be evaluated by protected species managers responsible for the Bottlenose Dolphin Take Reduction Plan. Other deep-diving, cryptic species, such as *Kogia* sp. and beaked whales, are mostly encountered through stranding events, which are often the only opportunity to study these species.

Stranding data also provide an opportunity to monitor changes in marine mammal occurrences, distribution and population demographics in state waters. Evaluation of Virginia data have revealed phenological shifts in occurrence and allowed researchers to compare demographic characteristics (*e.g.* size/age class proportions, gender ratios) with cause of stranding, particularly for HI cases and during unusual mortality events (Lynott 2012; Mallette *et al.* 2016; Leslie 2022;

Volker 2020). Likewise, changes in distribution and population size may first be detected as trends observed in stranding data.

Lastly, the effectiveness of a single state stranding network is greatly enhanced when contact with other state stranding networks and the national marine mammal stranding network is maintained over the long term. This contact involves attending relevant meetings, workshops and conferences for the purpose of remaining current with stranding data collection techniques, data reporting and management protocols, and collaborative research and monitoring opportunities.

Strategy 1.1. – Establish one or more consistent funding sources to sustain a permanent and effective Marine Mammal Stranding Network in Virginia.

Despite its importance to marine mammal management in the Commonwealth, there has never been sustained, sufficient support for the VMMSN. Funding sources include grants from the John H. Prescott Marine Mammal Rescue Assistance Grant Program and the Coastal Zone Management (CZM), non-profit fundraising through the Virginia Aquarium & Marine Science Center Foundation (VAQF), and in-kind support from the City of Virginia Beach. Collectively, these funds support stranding data management, volunteer training, carcass recovery, large whale field response, live stranding response, and several short-term forensic, health, diet, and mortality studies. This approach, however, is untenable over the long term, especially as administrative, operating, staff costs, and other resource needs continue to increase. The VMMSN funding needs extend beyond basic administrative and operational costs and include expenditures associated with conducting detailed necropsies on fresh carcasses and collecting biological samples from live and fresh dead animals to determine cause of death or morbidity.

The VAQS, the current administrator of the VMMSN, is part of the Virginia Aquarium & Marine Science Center's (VAMSC) Veterinary Science and Research Division. The VAMSC is a collaboration between the City of Virginia Beach and the VAQF, a non-profit 501(c)(3) organization. The VAQF is responsible for maintaining the VAQS, along with other VAMSC-sponsored conservation and scientific research efforts. Because the VMMSN is led and managed by a non-profit organization and is almost entirely reliant on grants and donations, it is vulnerable to economic vagaries that may result in inconsistent stranding response or, at worst, the termination of the Network.

Action 1.1.1. – Identify all existing and potential revenue streams to permanently fund the operation of the VMMSN (Entities: **DWR**, CZM, MRC, VAQS, United State Fish and Wildlife Service [USFWS], NOAA Fisheries).

Action 1.1.2. – Develop the justification for and explore the feasibility of establishing a state supported position within the VMMSN to ensure the permanency and viability of the Network long-term (Entities: **DWR**, VAQS, CZM).

Action 1.1.3. – Assemble a temporary working group tasked with recommending and/or establishing one or more revenue streams that will permanently sustain operational funding and establishment of a permanent state position to sustain the VMMSN, and/or

provide emergency funding in years when no Prescott Grant is awarded to the VAQS. Membership should include representatives from government agencies, non-profit organizations, and other partners with a vested interest in marine mammal conservation and/or stranding response (Entities: **DWR**, CZM, VAQS, MRC, NOAA Fisheries).

Action 1.1.4. – Seek the necessary support from the Governor and the Secretary of Natural and Historic Resources to safeguard the permanency of the VMMSN (Entities: **DWR**, MRC, CZM).

Action 1.1.5. – Develop a Cooperative Agreement among the DWR and the City of Virginia Beach, the VAMSC, and/or the VAQF which clearly defines VMMSN-related roles and responsibilities of the state-supported position and includes a contingency plan should the VAQS lose its capacity to manage the day-to-day operations of the VMMSN (Entities: **DWR**, City of Virginia Beach, VAQS, VAMSC, VAQF).

Action 1.1.6. – Maintain contact with other state marine mammal stranding networks and the national MMSN by attending relevant meetings and conferences for the purpose of remaining current with stranding data collection techniques, reporting and management protocols, and collaborative research and monitoring opportunities (Entities: **DWR**, VAQS).

Strategy Timeline: Actions 1.1.1 through 1.1.5 will be near-term and Action 1.1.6 will be ongoing.

Strategy 1.2. – Establish an Interagency Stranding Event Network (ISEN).

Live and dead marine mammal stranding response, rescue, and disentanglement requires a significant amount of coordination with stranding response personnel and volunteers and other agencies and organizations. Strandings can occur in locations that are remote and difficult to reach, have restricted access, or are densely populated with high potential for public interference, all of which raise unique logistical difficulties. Live animal response requires trained personnel to safely handle the animals, provide crowd control, and maintain access to the scene, whether it's on land or via boat. Dead animal response also requires trained personnel, access to or retrieval of carcasses by land or boat, and in some instances carcass burial. Large whale strandings require significantly more resources and logistical planning due to the size of the animals and the need for experienced personnel to handle these cases. Although the VAQS has several informal agreements with agencies and organizations to assist with strandings, assistance is generally provided on a case-by-case basis. The overall effectiveness of the VMMSN can be improved by developing formal partnerships with all appropriate agencies and organizations across the state.

A pre-established institutional framework is especially needed for detecting and responding to unusual marine mammal stranding events that require resources and staff beyond capacity of the VAQS or any single state agency. These events may involve large numbers of sick, out-of-habitat (situations where marine mammals are found outside of their range or in unsuitable habitats, most common among manatees and seals), injured or

dead marine mammals washing ashore on publicly- and privately-owned shorelines, in marinas, waterfront communities, military installations, or other heavily populated areas over a short or extended periods of time. Unusual stranding events also may involve only one or several marine mammals that become entrained or trapped within the footprint of a marine construction project, a power plant, or some other infrastructure or human-induced circumstance that necessitates monitoring, capture, or removal. Large whale stranding events and/or the disentanglement of large and small cetaceans, manatees, and seals are often logistically difficult as well. Unusual marine mammal stranding events can span several days, weeks or even months and quite often require multiple authorizations and special use permits. These kinds of events demand the cooperation, coordination and sharing of resources among federal, state, and local agencies, as well as nongovernmental stakeholders that are impacted by these occurrences.

For live animal scenarios, the VAQS responds to live entangled or stranded pinnipeds and small cetaceans, while the NOAA Fisheries' Large Whale Disentanglement Team responds to live entangled large whales (baleen whales and sperm whales). Response to live entangled or stranded manatees is overseen by USFWS, including transportation to a rehabilitation facility in Florida since Virginia currently does not have the capacity or authority to rehabilitate manatees.

Action 1.2.1. – Identify and contact stakeholders that may be willing and have the capacity to participate in an ISEN, and determine the extent to which each stakeholder can: (1) contribute funds, staff, equipment, or other resources; (2) assist with stranded, entangled or out-of-habitat marine mammal searches, transport or disposal during unusual stranding events; (3) provide expertise to help identify cause of stranding events or help direct response efforts (*e.g.* pathologists, veterinarians, fishery gear experts, marine construction companies); (4) identify and acquire the necessary authorizations and permits to access sensitive areas and dispose of carcasses; and (5) help develop stranding response training materials and workshops (Entities: **DWR**, CZM, VAQS, MRC, NOAA Fisheries, USFWS).

Action 1.2.2. – Convene regular meetings with stakeholders who have committed to being part of the ISEN to (1) develop and regularly update response plans, communication plans, and task and resource assignments; (2) establish and regularly update a post-event evaluation process; and (3) incorporate (and regularly update) marine mammal response protocols into existing contingency plans such as those developed for hazardous fuel/chemical spills (Entities: **DWR**, MRC, VAQS).

Action 1.2.3. – Develop a marine mammal stranding response Memorandum of Understanding between DWR and MRC to outline expectations for state assistance with unusual marine mammal stranding events (Entities: **DWR,** MRC).

Action 1.2.4. – Convene annual ISEN meetings to update plans, identify training and resource needs and assignment tasks for improved response (Entities: **DWR**, MRC, VAQS).

Action 1.2.5. – Continue to provide pinniped and live cetacean disentanglement training workshops for currently authorized individuals and recruit and train new staff that have access to and experience with operating boats in Virginia's coastal waters (Entities: **TBA**, VAQS, DWR, MRC, US Coast Guard).

Strategy Timeline: Actions 1.2.1 - 1.2.3 will be longer-term. Actions 1.2.4 and 1.2.5 will be ongoing.

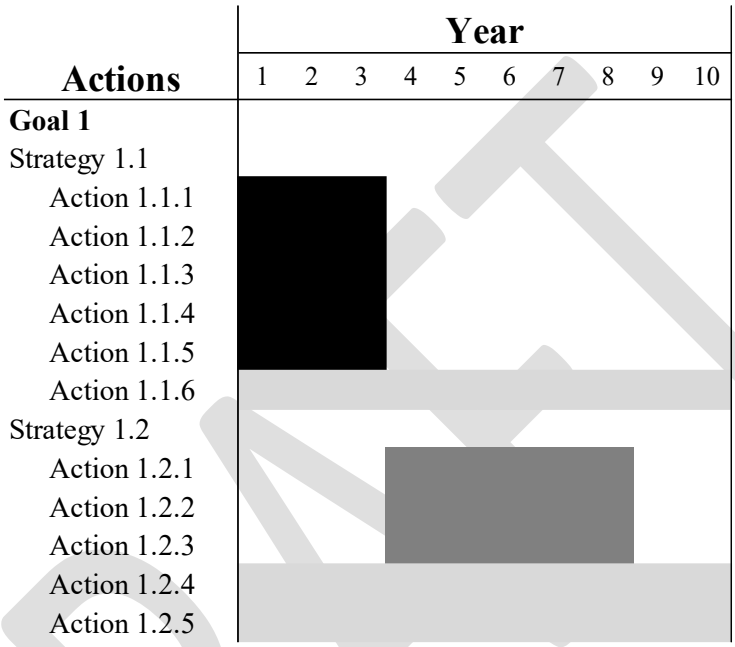

Figure 44. Implementation timelines of actions under Goal 1 pursuant to the publication of the Plan. Black represents near-term (within three years), medium gray represents longer-term (between three and eight years), and light gray represents ongoing.

Conservation Goal 2: Identify, assess, and mitigate risks to marine mammal populations and habitats in Virginia through cost-effective monitoring, research, and best practices.

A variety of marine mammal species utilize inshore and offshore Virginia waters. Although species vary in their seasonal occurrences, marine mammals are present year-round in the Commonwealth. Each species has different habitat needs and prey preferences while inhabiting state waters. Increased ocean temperatures due to climate change may be altering some species' distribution and/or abundance in Virginia. In addition, the potential for fishery interactions and vessel collisions, the presence of large-scale offshore wind energy development, emerging climate change impacts, and possible exposure to various types of pollution makes the identification, assessment, and mitigation of these and other risks a real need in Virginia.

Identification of risks to marine mammal populations in Virginia primarily occurs through stranding response but also includes fishery observer data and the collection of tracking and survey data, especially in offshore ocean waters. The most effective approaches for addressing

this goal are to: (1) support existing marine mammal research and monitoring efforts; (2) collaborate with experts specializing in commercial and recreational fisheries, vessel interactions, climate change, harmful algal blooms, marine contaminants, and other risk categories to ensure marine mammal concerns and research needs are addressed in each of these disciplines; and (3) support the development and implementation of science-based best management practices for human activities taking place in marine mammal habitat.

Strategy 2.1. – Collect, analyze, and compare commercial fishery effort, observed marine mammal takes, and stranding data for state managed fisheries known to or likely to interact with marine mammals.

One of the most scientifically rigorous and effective ways to quantitatively understand fishery interactions with protected species is through a fishery observer program. Federally managed fisheries in Virginia that are likely to interact with protected species receive limited observer coverage by the Northeast Fisheries Observer Program (NEFOP) which is administered by NOAA Fisheries for the purpose of quantifying bycatch rates. Fisheries operating in state waters and/or managed solely by state agencies are usually not covered by the NEFOP. Developing and maintaining a state fishery observer program that collects rigorous data on harvested target species, non-target bycatch and fishing effort will inform fishery management decisions and help with the development of gear modifications and other best practices designed to avoid or minimize fishery interactions with protected species.

Action 2.1.1 – Maintain the proper federal agreements and permits to operate a state observer program for protected species, including marine mammals (Entity: **MRC**).

Action 2.1.2 – Provide guidance and training for observers to handle, release, and collect data and samples from marine mammal takes (Entities: **MRC**, DWR, VAQS).

Action 2.1.3 – Provide semi-annual (mid-year and end of calendar year) calculation of bycatch rates by fishery and compare with similar gear in federal waters or in other states. Share marine mammal take details, effort data, and bycatch rates with other agencies in the Commonwealth and other stakeholders (Entity: **MRC**).

Action 2.1.4 – Create a semi-annual review process of marine mammal takes reported by state observers to assess trends and needs for management actions. (Entities: **MRC**, DWR).

Strategy Timeline: Actions 2.1.1 and 2.1.2 are near-term. Actions 2.1.3 and 2.1.4 will be ongoing and implemented after Actions 2.1.1 and 2.1.2 are completed. Completion of Action 2.1.1 is dependent on staff availability, and, more importantly, NOAA Fisheries' Protected Resources review and approval. Action 2.1.2 should be completed before the next NOAA Fisheries approved training course becomes available.

Additional Resource Requirements: Actions 2.1.2 and 2.1.3 will require additional staff time for data analysis.

Strategy 2.2. – Continue to assess trends in key marine mammal population demographics in Virginia over time and compare them to trends observed throughout the mid-Atlantic region.

Stranding and survey data allow for the opportunity to monitor changes in marine mammal species occurrences and demographics in Virginia waters and make comparisons with regional data. Historic and current data from Virginia show changes in species abundance and stranding rates (*e.g.* increased harbor seal abundance, decreased harbor porpoise strandings) and seasonal occurrences over time (*e.g.* North Atlantic right whale presence year-round; Salisbury *et al.* 2015; Jones and Rees 2023; VAQS *unpublished data*, October 2023). Demographic trend analyses will provide important baseline levels to which future data can be compared to detect short-term and long-term changes. Lastly, incorporating relevant environmental co-variates and predictive modeling in the recurring marine mammal population trend analyses of existing data is a cost-effective way to detect and interpret state and regional demographic shifts over time and inform future management decisions. Stranding data is available from VAQS, while sighting data is primarily available from the US Navy Marine Species Monitoring Program, North Atlantic Right Whale Consortium, NOAA Fisheries, and other sources.

Action 2.2.1. – Identify key species of interest and appropriate partners, then secure funding for recurring marine mammal population trend analyses described in Actions 2.2.2 and 2.2.3 (Entities: **DWR**, VAQS, CZM, US Navy, NOAA Fisheries, USFWS).

Action 2.2.2. – Conduct a comprehensive marine mammal population trend analysis every 10 years using Virginia and mid-Atlantic stranding and sighting data and incorporating environmental co-variates and predictive modeling in the recurring analyses (Entities: **DWR**, VAQS, US Navy, VIMS, CZM, NOAA Fisheries, USFWS).

Action 2.2.3. – Foster collaborations with academic institutions and other entities with expertise in time series and/or climactic trend analysis/modeling to assist with Action 2.2.2 (Entities: **DWR**, VAQS, US Navy, VIMS, NOAA Fisheries, USFWS).

Strategy Timeline: Action 2.2.1 will be near-term. Actions 2.2.2 and 2.2.3 will be longer-term but should be implemented as soon as feasible after the completion of Action 2.2.1.

Strategy 2.3. – Continue to monitor key marine mammal species demographics, distribution, diet, and health status (*e.g.* contaminant levels, nutritional status, parasite loads) in Virginia.

Ongoing live animal research efforts in Virginia contribute to demographic and distribution information on species in Virginia and the larger mid-Atlantic region. Current efforts are primarily led by the US Navy Marine Species Monitoring Program, with partners such as Henningson, Durham and Richardson, Inc. (aka HDR), The Nature Conservancy (TNC), and Duke University. Other efforts include surveys conducted by

NOAA Fisheries, North Atlantic right whale management and data summarization and compilation by Regional Wildlife Science Collaborative (RWSC), and MARCO. The US Navy Marine Species Monitoring Program efforts have been expanded for large whales to include stable isotope analysis, which provides information on diet, and body condition assessment and behavioral data collection via drone, which contributes to health status and understanding the use of Virginia waters by baleen whale species.

Stranding investigations conducted by VAQS contribute to demographic and distribution data through the collection of Level A data that includes the species, sex, and animal length from stranding events. Health status is assessed via various body condition measurements during necropsy, such as blubber thickness and girth. Diet studies have been performed from individuals stranded in Virginia for two species, bottlenose dolphins and harbor porpoises, with the most recent analyses being conducted in 2020 and 2013 respectively (Schoettle 2013; Volker 2020).

These ongoing efforts are important for establishing baselines and provide invaluable data for future species management. Combined with new techniques, such as the use of eDNA for diet and disease investigations and Unmanned Aerial Systems for distribution and body condition, these efforts can help detect shifts in health status, diet, and food availability over time.

Action 2.3.1. – Convene a temporary working group with subject matter experts to (1) determine the most appropriate methodologies for diet analyses and establishing accurate health status indices and identify species of interest; (2) determine sampling protocols and develop sample size requirements needed to generate diet data and health status indices for trend analyses, and (3) identify the lead entity for this project (Entity: **DWR**, VAQS).

Action 2.3.2. – Identify and secure funding for (1) hiring a project lead; (2) establishing accurate diet analyses and health status indices; (3) subsequent collection and monitoring of key diet and health status parameters; and (4) and conducting diet and health status trend analyses every five years (Entity: **DWR**).

Action 2.3.3. – Determine appropriate entities to develop accurate diet analyses and health status indices and initiate the collection and analysis of diet and health status data (including ingestion of plastics and microplastics) following the methodologies developed under Action 2.3.1 (Entity: **DWR**)

Action 2.3.4. – Conduct a diet and health status trend analysis every 10 years so that results are available for plan revisions (Entities: **TBD**, DWR, VAQS).

> *Strategy Timeline:* Actions 2.3.1 through 2.3.4 will be longer-term with the goal that the results of analyses be available two years prior to Plan revision deadline (*e.g.* eight years from completion of this Plan).

Strategy 2.4. – Assess, protect, and/or enhance marine mammal in-water and haul-out habitats through engagement with state and regional initiatives and partnerships.

There are numerous state and regional initiatives and partnerships that conduct and coordinate relevant monitoring and research of marine wildlife and ecosystems. Some focus on mitigating specific activities, such as offshore wind energy development (*e.g.* RWSC) and marine debris (*e.g.* Virginia Institute of Marine Science [VIMS] Trap, Removal, Assessment, and Prevention Program, or TRAP), while others consolidate available data to help inform conservation planning and management decisions (*e.g.* MARCO and RWSC). These types of initiatives often stem from or can result in the formation of effective partnerships that can yield cost-effective, broad scale conservation benefits that cannot be achieved by a single state, federal agency, or organization.

One unique aspect of seal behavior is hauling-out onto land, requiring additional assessment and protection of these specific habitats. Current identification and monitoring of haul-out sites is being performed by the US Navy Marine Species Monitoring Program and partners. As seal populations in Virginia are increasing, there is the potential for new haul-out sites or changes in high-use areas. There is also the potential for overlap between seals and humans at haul-out sites. Information sharing with state and regional initiatives will be key, as will recognizing and addressing potential human-wildlife conflict.,

Action 2.4.1. – Identify, participate in, and contribute data to state and regional initiatives and partnerships that promote the assessment, protection, and/or enhancement of marine mammal in-water and haul-out habitats (Entities: **DWR**, VAQS, CZM, MRC).

Action 2.4.2. – Support and promote strategies and actions in the Virginia Marine Debris Reduction Plan overseen by Clean Virginia Waterways (CVW; Register *et al.* 2021) and the regional 2021 Mid-Atlantic Marine Debris Action plan (NOAA Marine Debris Program 2021) that will help reduce marine mammal marine debris entanglement and ingestion and reduce marine debris in in-water and haul-out habitats (Entities: **CVW**, CZM, DWR).

Action 2.4.3. – Review and evaluate seal haul-out habitat protection and management strategies established by other states or federal agencies within the region for possible adoption in Virginia (Entities: **DWR**, VAQS, MRC, NOAA Fisheries).

Strategy Timeline: All actions will be ongoing.

Strategy 2.5. – Incorporate the foraging and habitat needs of marine mammals in the development of or revisions to relevant fishery management plans, fishery and aquaculture regulations, and best practices as a move toward ecosystem-based management of marine resources.

Marine mammals consume a variety of forage fish within the mid-Atlantic region. Diet in Virginia waters has been studied in more abundant species by examining stomach contents of stranded animals. This work revealed that bottlenose dolphins primarily consume Atlantic croaker, spot, and Atlantic menhaden (Volker 2020) whereas harbor porpoises tend to target anchovy and hake (Schoettle 2013). For other species, diet is

inferred based on regional studies. For example, North Atlantic right whales feed on copepods and, because they have been observed feeding during aerial surveys in Virginia (Mallette *et al.* 2017; Cotter 2019), it is assumed that these whales are consuming copepods in state waters.

Since many of these identified prey species are commercially important (*i.e.* sciaenid fishes and Atlantic menhaden), they are managed intensively for the purpose of maintaining commercially sustainable populations. Equally important, however, is the need to ensure that these harvested populations are viable enough to support marine mammals and other marine wildlife that prey on these species. Although current shellfish aquaculture in Chesapeake Bay and its tributaries pose a low risk to marine mammals, large-scale, ocean-based aquaculture (*e.g*. sea pens for finfish), should they be approved off the coast of Virginia, may pose a much greater risk. Additional research will be needed as new aquaculture enterprises move into the region.

Action 2.5.1. – Assess and incorporate the foraging and habitat needs of marine mammals in commercially important marine mammal prey species' management plans, harvest limits, regulations, and by-catch reduction measures (Entities: **MRC,** DWR).

Action 2.5.2. – Assess potential effects of emerging aquaculture and commercial fisheries on marine mammal habitats and/or prey abundance and availability and develop science-based best practices designed to avoid or reduce identified risk factors (Entities: **MRC**, DWR, VIMS).

Strategy Timeline: Action 2.5.1 will be near-term. Action 2.5.2 will be developed in the near-term and implemented whenever changes in aquaculture and fisheries are being proposed.

Additional Resource Requirements: The impact assessments and/or development of best practices described in each of the actions will require additional funding from sources such as Virginia Sea Grant, NOAA Fisheries and the National Fish and Wildlife Foundation (Entities: **DWR**, VIMS, MRC, CZM).

Strategy 2.6. – Develop standardized reporting and response procedures for marine mammal harassment cases and marine debris and recreational gear interactions in Virginia waters.

Marine mammal harassment cases and marine debris and recreational gear interactions present unique scenarios that may not necessarily require a response or an intervention but are important to understand for management. Marine mammal harassment has been well documented in Virginia. Examples include people approaching hauled-out seals, "watering" manatees with hoses, and operators of small vessels deliberately herding free swimming cetaceans. The stranding record has documented marine debris entanglement and ingestion that included recreational gear such as fishing line and plastic bags (Barco *et al.* 2010; VAQS *unpublished data*, October 2023). The VAQS is currently authorized to respond to live entangled pinnipeds and small cetaceans, although these entanglement

scenarios occur relatively infrequently and require many resources and partners for successful monitoring, documentation, and, if warranted, intervention.

Multiple agencies in the state (*e.g*. MRC, Department of Environmental Quality [DEQ], VIMS, DWR) receive reports of these scenarios. For harassment cases specifically, not every agency that receives reports has the authority to enforce violations of the MMPA and those agencies who do have authority may be reluctant to do so due to a lack of capacity or for other reasons. Further, many people are unsure whether these scenarios require reporting and to whom they should be reported. It is for these reasons that a centralized reporting mechanism should be developed and disseminated to the public along with a streamlined response protocol that is designed to capture these data.

Action 2.6.1. – Develop a centralized reporting mechanism for the Commonwealth of Virginia for the public, researchers, ecotour operators, fishermen, and others to report marine mammal harassment and interactions with marine debris and recreational gear. This mechanism should also be advertised at beach accesses, boat ramps, marinas, fishing piers, and other similar locations to encourage reporting (Entities: **DWR**, MRC, VAQS).

Action 2.6.2. – Establish an interagency Standard Operating Procedure (SOP) for response to reported harassment events/scenarios (Entities: **MRC**, VAQS, DWR, NOAA Fisheries, USFWS).

Action 2.6.3. – Establish an interagency SOP for response to reported marine mammal marine debris interactions (Entities: **DWR**, MRC, CZM, VAQS, Clean Virginia Waterways, NOAA Fisheries, USFWS).

Action 2.6.4. – Establish an interagency SOP for response to reported marine mammal marine recreational gear interactions (Entities: **MRC**, DWR, CZM, VAQS, Clean Virginia Waterways, NOAA Fisheries, USFWS).

Strategy Timeline: All actions will be longer-term.

Additional Resource Requirements: Action 2.6.1 will require training, if existing hotlines are used, and/or additional funding to develop if web or phone app-based reporting is implemented (Entities: **DWR**, VIMS, MRC, CZM).

Strategy 2.7. – Develop working groups with representatives from the commercial fishing, shipping, and other maritime industries to identify, assess, and mitigate relevant marine mammal conflicts.

While there are many identified risks to marine mammals in Virginia waters, some risks have limited conservation options or the understanding of emerging risks is incomplete,. Near-term actions can include establishing working groups with stakeholders and representatives of various industries to identify potential areas of conflict, assess the level of risk to marine mammals and industry, and develop best management practices, monitoring programs, and other mitigatory measures that reduce risks. Working groups

will improve communication among respective industries and agencies, assess risks from all perspectives, and facilitate successful conflict resolution.

Action 2.7.1. – Identify areas of potential or existing conflict where working groups may be an effective solution to understanding and mitigating a concern. Identify stakeholders and representatives from relevant state agencies, industry, Tribal nations, and non-governmental organizations to form working groups and provide neutral party facilitation to develop goals and identify and achieve tasks (Entities: **DWR**, MRC, CZM, VIMS).

Action 2.7.2. – Develop a sustainable meeting schedule, convene meetings, and develop working group reports for participating entities (Entities: **DWR**, MRC, CZM, VIMS).

Action 2.7.3 – Summarize and distribute working group recommendations to appropriate entities and incorporate recommendations into future planning efforts (Entities: **DWR**, MRC, CZM, VIMS).

> *Strategy Timeline:* Action 2.7.1 will be longer-term. Actions 2.7.2 and 2.7.3 will be ongoing following the completion of Action 2.7.1 and vary by working group.
>
> *Additional Resources:* Meeting space, travel, and professional facilitation may require additional resources, which will need to be identified and appropriated before work can be conducted.

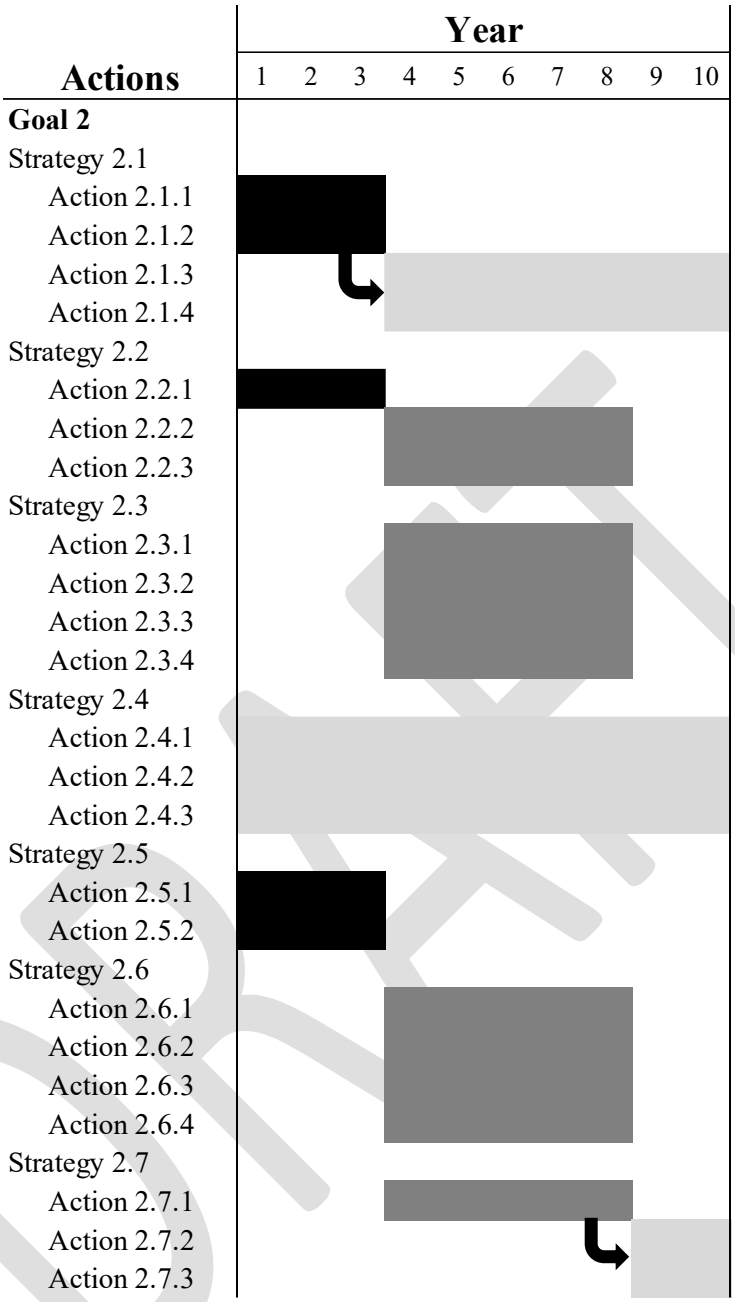

Figure 45. Implementation timelines of actions under Goal 2 pursuant to the publication of the Plan. Black represents near-term (within three years), medium gray represents longer-term (between three and eight years), and light gray represents ongoing.

Conservation Goal 3: Promote marine mammal conservation in Virginia through social marketing and information dissemination.

Marine mammal conservation fundamentally includes human beings, and the most successful conservation actions are those aligned with the values, well-being, and perspectives of people. When conservationists work to address the needs of protected marine species, they are often trying to change or reinforce human behavior that will benefit the targeted species or species groups.

Because of their empathy and curiosity, children are often the most effective promoters of behavioral change, making them excellent endangered species ambassadors, especially for highly charismatic species such as marine mammals (Young *et al*. 2018). Getting children engaged in marine mammal conservation at an early age can result in lasting and cascading conservation behaviors that often touch and influence parents, siblings, and other family members.

Another important component of effective marine mammal conservation and management is to ensure that regulatory agencies receive accurate up-to-date information on the biology, distribution, behavior, and habitat use of marine mammals in Virginia to inform project reviews, Environmental Assessments, Environmental Impact Statements, Biological Opinions, and other related documents, as changes may occur (*i.e.* changing distribution and abundance of species) and/or risks increase and diversify.

Strategy 3.1. – Promote marine mammal conservation in Virginia through effective social marketing techniques.

Strategic use of social marketing can increase the adoption of evidence-based conservation practices and behaviors through effective messaging targeting the appropriate audience, such as beachgoers or vessel operators. One imminent need for social marketing techniques is to encourage the proper and safe viewing of marine mammals, such as hauled-out seals or mother-calf pairs of dolphins.

Similar social marketing techniques can also be used to change the behavior of recreational boaters, anglers, and other water enthusiasts in ways that reduce human-marine mammal interactions on the water. Creative and targeted messaging can persuade and educate the public how to properly report marine mammal strandings, entanglements, and other situations that require response by the VMMSN, law enforcement, or some other entity. Messaging can also encourage safe boating practices for vessels of all sizes to avoid collisions with large whales, especially because more whales are utilizing the unprotected lower Chesapeake Bay and vessels of many size ranges can seriously injure and/or kill whales.

Action 3.1.1. – Convene a temporary working group made up of marine mammal biologists, education/outreach staff, and social marketing experts to: (1) review existing materials and identify those that warrant updating and public dissemination; (2) update existing education/outreach materials and tools where needed; (3) identify specific audiences, messages, and information dissemination pathways and platforms (*e.g.* public service announcements, websites, social media, signage, blogs, fishing club newsletters

and other outlets); and (4) develop new messaging materials, tools and outlets (Entities: **DWR**, CZM, MRC, VIMS, Back Bay National Wildlife Refuge, Chincoteague National Wildlife Refuge, Eastern Shore National Wildlife Refuge, TNC, VAQS).

Action 3.1.2. – Contract with a marketing organization to develop, test, and implement a social marketing campaign to promote human behaviors such as safe boating practices that minimize disturbance and injury/mortality to marine mammals in the water or on land (Entity: **DWR**).

Action 3.1.3. – Launch and periodically update state social marketing campaigns (Entities: **DWR**, CZM, MRC, VAQS).

Strategy Timeline: Actions 3.1.1 and 3.1.2 will be near-term; Action 3.1.3 will be ongoing and implemented as soon as feasible following completion of previous actions .

Additional Resource Requirements: Additional funding will be needed to engage a social marketing company and to develop, disseminate and evaluate all forms of outreach materials (Entities: **DWR**, CZM).

Strategy 3.2. – Develop marine mammal educational materials for a variety of audiences and messages.

Marine mammals are highly charismatic and well loved by people of all ages. The most effective means of ensuring the adoption of relevant conservation practices and behaviors is through the early exposure to a well-developed educational curriculum about marine mammal conservation, demography, and ecological roles.

Action 3.2.1. – Identify and review existing marine mammal curricula for K-12 schools and update as needed or develop a new one(s) that includes information on the important roles marine mammals play in marine ecosystems, such as controlling prey species or serving as an indicator of ocean health, and the possible effects of climate change and the disappearance of marine mammals from the marine environment (Entity: **DWR**).

Action 3.2.2. – Identify and review other existing marine mammal educational materials and curricula that target adults, children, and underserved populations in a variety of settings and update or develop new materials, as needed (Entity: **DWR**).

Action 3.2.3. – Develop a public relations packet for marine mammal harassment events and nuisance animal scenarios regarding messaging for the public, including the MMPA and what to do in these scenarios (Entities: Entities: **DWR**, VAQS, MRC).

Strategy Timeline: Actions 3.2.1 - 3.2.3 will be longer-term.

Additional Resource Requirements: Additional funding will be needed to contract with educational resource specialists to help develop educational curricula, *etc.* (Entity: **DWR**).

Strategy 3.3. – Prepare and regularly update guidance documents to assist with the review of proposed human activities that may negatively affect marine mammals in Virginia.

The accurate review of human activities and projects that may impact marine mammals or their in-water and haul-out habitats requires accurate, up-to-date information on marine mammal demographics, distribution, and ecology that is specific to Virginia. One such example is the construction of the Coastal Virginia Offshore Wind Project, which involved multiple review agencies, required close monitoring of marine mammal presence and behavior, and strict adherence to numerous environmental provisions. Similar marine mammal biological and ecological information is required for the development of NEPA documents, biological opinions, and project best practices. Providing regulatory agencies, developers, and action agencies with the necessary information upfront will help streamline and provide transparency in the permitting process and promote consistency among regulatory agencies, as there is currently a federal review process for any federal action, funding, permit, or work.

Action 3.3.1. – Schedule an information session with MRC Fisheries and Habitat divisions, alongside DWR and CZM, to re-establish baseline knowledge of each agency's roles and responsibilities concerning marine mammals (Entities: **MRC**, DWR, CZM).

Action 3.3.2. – Develop a general adaptive document that includes information on marine mammal biology and ecology, known seasonal occurrences in state coastal waters, documented seal haul-out sites, in-water habitat preferences, and other key pieces of information needed to develop environmental documents and inform project reviews for use by a variety of state agencies (Entity: **DWR**).

Action 3.3.3. – Upload and maintain marine mammal-related documents that assist with environmental permitting processes compiled under Action 3.3.2 in a public portal that is accessible to all state and federal regulatory agencies and permit applicants (Entity: **DWR**).

Strategy Timeline: Action 3.3.1 will be near-term. Action 3.3.2 will be ongoing as documents are completed. Action 3.3.3 will be longer-term, occurring as soon as feasible after completion of Action 3.3.2.

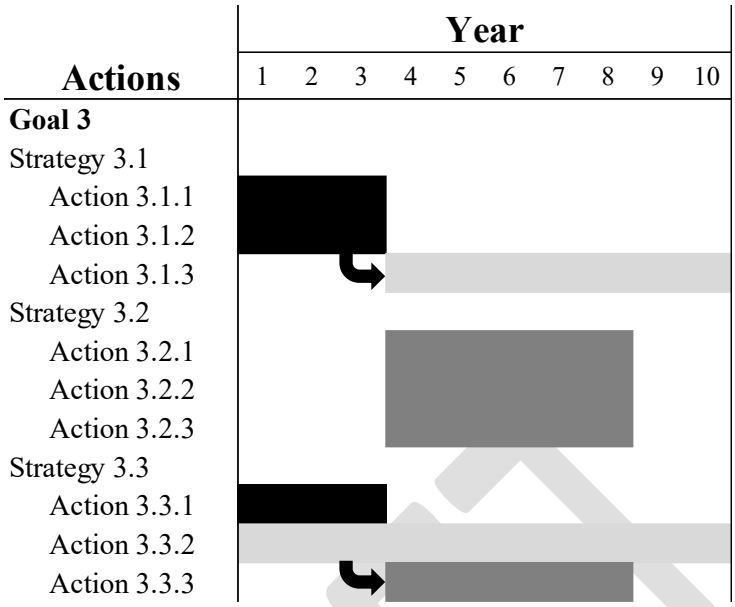

Figure 46. Implementation timelines of actions under Goal 3 pursuant to the publication of the Plan. Black represents near-term (within three years), medium gray represents longer-term (between three and eight years), and light gray represents ongoing.

Summary

Marine mammals are a natural resource shared across national and international borders. Their conservation requires coordinated efforts among many entities. Chesapeake Bay and Virginia ocean waters are home to a variety of marine mammal species, including many threatened and endangered species, with differing spatial and temporal distribution, habitat requirements, and life-histories.

Oversight and implementation of this Plan will be conducted by the DWR, with assistance from other key partners. The DWR will also be managing the Virginia Sea Turtle Conservation Plan, which includes many strategies and actions similar to this Plan. Much of the work described in these Plans require new or redirected resources, which will be critical in accomplishing the Actions listed in each Plan. Conservation plan updates are recommended every ten years, and interim assessment of progress toward achieving conservation goals and associated strategies and actions will be ongoing. Adoption and implementation of the Virginia Marine Mammal Conservation Plan will encourage inner-departmental coordination, align Virginia's conservation planning with regional and federal efforts, and promote efficient use of resources to provide marine mammals in Virginia with a sustainable future.

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Appendices

Appendix I: 2022 – 2025 VAQS Federal Marine Mammal Stranding Response Agreement

Marine Mammal Stranding Response Agreement
Between

Greater Atlantic Regional Fisheries Office
National Marine Fisheries Service
National Oceanic and Atmospheric Administration
Department of Commerce

AND

Virginia Aquarium & Marine Science Center Foundation

Effective through October 15, 2025

Table of Contents

Articles III, IV, V, and VI are reserved and issued at the discretion of the NMFS Regional Administrator.

Article I: General Provisions

A. Authority

1. This Marine Mammal Stranding Agreement (hereinafter Agreement) is entered into between the Department of Commerce, National Oceanic and Atmospheric Administration (NOAA), National Marine Fisheries Service (NMFS) Greater Atlantic Region, and the Stranding Network Participant, Virginia Aquarium & Marine Science Center Foundation (VAQS; Participant), under the authority of section 112(c) and section 403 of the Marine Mammal Protection Act of 1972 (MMPA), as amended. **This Agreement supersedes all pre-existing Stranding Agreements between these parties. An organizational representative with signatory authority (e.g. Executive Director, President, CEO) must sign this Agreement on behalf of the Stranding Network Organization.**

2. NMFS has been delegated authority by the Department of Commerce to administer the MMPA. To assist in the implementation and administration of the MMPA, the Stranding Network has been established to respond to stranded marine mammals within NMFS' Greater Atlantic Region of the United States. For the purposes of this Agreement, the Greater Atlantic Region consists of the following coastal states: Maine, New Hampshire, Massachusetts, Rhode Island, Connecticut, New York, Pennsylvania, New Jersey, Delaware, Maryland and Virginia.

B. Scope

1. Under the MMPA, NMFS is responsible for mammals of the **Order Cetacea** and the **Order Pinnipedia** other than walruses (hereinafter marine mammals).

2. The geographic response area assigned to Participant consists of the following: rescue and rehabilitation of marine mammals within the state of Virginia, and from other areas within the Greater Atlantic Region as needed. The Participant may assist in stranding response within the Region outside of their assigned response area, if requested by NMFS or by another Participant. Outside the Greater Atlantic Region, the Participant may assist with stranding response upon request from the appropriate regional NMFS Regional Stranding Coordinator(s).

C. Limitations

1. This Agreement creates an authorization for the Participant to take marine mammals, which would be otherwise prohibited by the MMPA. This taking authorization only applies to the Participant and its authorized personnel (see Article VI) for activities that are consistent with this Agreement.

2. In particular, this Agreement does <u>not</u> authorize:

a. The taking of any marine mammal species listed as endangered or threatened under the Endangered Species Act of 1973 (ESA), as amended. Authorization to take ESA listed species is provided under MMPA/ESA Permit No. 18786, issued to the NMFS National Marine Mammal Health and Stranding Response Program Coordinator and **requires authorization and direction from the NMFS Regional Stranding Coordinator in the event of a stranding involving a threatened or endangered marine mammal.**

b. The sale or offer of sale of any marine mammal or marine mammal parts including cells, gametes, or cell cultures.

D. Definitions

All terms used in the Agreement must be interpreted to have the meaning specified in the MMPA section 3 and section 409 and NMFS implementing regulations 50 CFR 216.3 unless the context or specific language requires otherwise. Additional terms and definitions for this Agreement are provided in Attachment A.

Article II: Purpose and General Responsibilities

A. Purpose of Agreement. NMFS and the Participant enter into this Agreement for the following purposes:

1. To provide for rapid response and investigation of stranded marine mammals (pinniped and cetacea) within the Greater Atlantic Region in accordance with the purposes and policies of the MMPA.

2. To implement Title IV (Marine Mammal Health and Stranding Response Program) of the MMPA:

    a. To facilitate the collection and dissemination of reference data on the health of marine mammals and health trends of marine mammal populations in the wild;

    b. To correlate the health of marine mammals and marine mammal populations the wild with available data on physical, chemical, and biological environmental parameters; and

    c. To detect and coordinate effective responses to Marine Mammal Unusual Mortality Events (UMEs).

3. To specify the activities during which the Participant may take stranded marine mammals (pinniped and cetacea) or marine mammal parts for the primary purpose of ensuring the appropriate response, disposition, and utilization of stranded marine mammals or marine mammal parts under MMPA sections 109(h), 112(c), and 403 and the Agreement.

4. To define the nature and extent of services that the Participant will provide NMFS under this Agreement and NMFS' responsibilities to the Participant.

5. To specify the requirements for the preparation and maintenance and reporting of records containing scientific data obtained from dead and live stranded marine mammals or parts from dead stranded marine mammals.

6. To provide for the timely exchange of information for use by both parties and other network members in furthering the objectives of the MMPA under this Agreement.

B. Joint Responsibilities

NMFS and the Participant will work cooperatively to:

1. Implement Title IV of the MMPA.

2. Effectively respond to and investigate the causes and impacts of UMEs.

3. Collect the appropriate data for determination of serious injuries and mortalities due to human interactions.

4. Collect reference data on marine mammal health and diseases.

5. Collect data on the frequency and causes of strandings.

6. Interpret findings and identify health trends and diseases of concern to include emerging, reportable, and zoonotic diseases.

C. NMFS Responsibilities

NMFS must:

1. Provide the Participant with notice of any changes to laws, regulations, policies and/or guidelines applicable to or promulgated by NMFS that may apply to the Participant's activities. This includes criteria for issuance, renewal and termination of stranding agreements. Notwithstanding this provision, it is the responsibility of the Participant to comply with all laws, regulations, policies and/or guidelines that apply to the Participant's activities.

2. Conduct periodic compliance reviews of Stranding Agreements as stated in Article IX.

3. Provide guidance and assistance regarding investigation of marine mammal unusual mortality events including financial and physical resources (example: NOAA laboratory assistance) and financial resources when available and authorized (in accordance with section 405 of the MMPA – UME National Contingency Fund) and in coordination with the Working Group on Marine Mammal Unusual Mortality Events.

4. Alert the Participant when NMFS has been notified that there are diseases of concern that are emerging, reportable, and/or zoonotic within the Greater Atlantic Region.

5. Pursuant to criteria established under the MMPA section 407, provide access to the National Marine Mammal Health and Stranding Response Program Database, as developed, and access to marine mammal tissues in the National Marine Mammal Tissue Bank following NMFS data and tissue access procedures and policies.

6. As needed and as resources are available, provide specialized marine mammal stranding response and investigation training on a local, regional or national basis. Pursuant to MMPA section 402, collect and update periodically and make available to stranding network participants and other qualified scientists, existing information on:

    a. Procedures and practices for rescuing and rehabilitating stranded marine mammals;

b. Species by species criteria used by the stranding network participants, for determining at what point a marine mammal undergoing rescue and rehabilitation is returnable to the wild based on its ability to survive in the wild and risk to the wild population of marine mammals;

c. Procedures and practices for collecting, preserving, labeling, and transporting marine mammal tissues for physical, chemical, and biological analyses;

d. Relevant scientific literature on marine mammal health, disease, and rehabilitation;

e. Compilation and analyses of strandings by region to monitor species, numbers, conditions, and causes of illness and death in stranded marine mammals; and

f. Other life history and reference level data, including marine mammal tissue analyses that would allow comparison of the causes of illness and death in stranded marine mammals with physical, chemical, and biological environmental parameters.

8. Identify a Greater Atlantic Region Marine Mammal Stranding Program Coordinator who will serve as the Participant's primary point of contact for notification, coordination, reporting, and response activities as specified throughout this Agreement. The NMFS Regional Administrator will serve as the Participant's primary point of contact for administration of the Agreement, as well as dispositions and other management activities as specified throughout the Agreement. **The NMFS Regional Administrator's designated point of contact for this Agreement is the NMFS Greater Atlantic Region Marine Mammal Stranding Response Coordinator, Greater Atlantic Regional Fisheries Office, Protected Resources Division** (please see Attachment B for contact information).

9. In certain circumstances such as large scale events (e.g. mass stranding, unusual mortality events, live right whale stranding), NMFS may establish a formal Incident Command System (ICS) for response, including the identification of an Incident Commander. For events such as oil spills, NMFS will follow direction from United States Coast Guard (USCG). Opportunities for ICS training can be accessed through the Federal Emergency Management Agency (see http://www.training.fema.gov/EMIWeb/IS/is100.asp), USCG, or NMFS. If necessary, guidance will be provided by NMFS on a case-by-case basis.

10. Relay reports of stranded marine mammals (live or dead) within the Participant's geographic range to the Participant and inquire whether the Participant has the capability to respond. If the Participant cannot respond, the Stranding Coordinator may make requests to other regional Stranding Participants to respond.

11. Coordinate regional activities to maximize geographic coverage while facilitating appropriate division of responsibilities among regional Participants according to

institutional abilities and authorities.

12. Respond to the Participant's completed requests for authorizations such as requests for parts authorizations, parts transfers, and release determinations.

13. Provide information regarding availability of Prescott Grants and any other relevant NMFS funding opportunities.

14. For emergency stranding events (live or dead), provide and maintain a 24-hour stranding hotline number: 1-866-755-NOAA (6622).

D. Participant Responsibilities

The Participant must:

1. Comply with laws, regulations, policies and/or guidelines applicable to or promulgated by NMFS that apply to activities under this Agreement; or any Federal, state or municipal laws that pertain to stranding network operations (e.g., municipal water management laws).

2. Cooperate with other members of the Greater Atlantic Region Stranding Network and the National Marine Mammal Stranding Program as well as Federal, state, and local officials and employees in matters supporting the purposes of this Agreement.

3. Be subject to the direction of a designated employee (e.g., NMFS Marine Mammal Stranding Coordinator or NMFS Special Agent) representing the NMFS Greater Atlantic Region Regional Administrator or Office of Law Enforcement with respect to the taking of a stranded marine mammal.

4. Manage any and all expenses that the Participant incurs associated with the activities authorized by this Agreement. NMFS does not have funds to reimburse volunteers for expenses incurred in responding to stranding events. However, under the marine mammal UME process, funding may be available for costs associated with specific analyses and additional requests in accordance with section 405 of the MMPA UME National Contingency Fund and in coordination with the Working Group on Marine Mammal Unusual Mortality Events. Additionally, competitive funding opportunities for Stranding Network Participants may be available through the Prescott Stranding Assistance Grant Program (see http://www.nmfs.noaa.gov/pr/health/prescott/).

5. Promote human and public safety by taking precautions against injury or disease to any network personnel, volunteers, and the general public when working with live or dead marine mammals.

6. Notify immediately the NMFS Stranding Coordinator upon learning of any diseases of concern (e.g., emerging, reportable, and/or zoonotic diseases) that are detected and/or

confirmed that could be a potential hazard for public health or animal health (NMFS will provide guidance on reportable diseases as it becomes available).

7. Follow requirements for the transfer of marine mammal parts (50 CFR 216.37):

   a. Non-diagnostic parts, tissues, cells, gametes, or cell cultures to be used for scientific research, species enhancement, or education must be transferred only to persons or labs that have received prior written authorization from the NMFS MMPA/ESA scientific research permit or a Regional Parts Authorization Letter. A unique field number assigned by NMFS (e.g., NMFS Registration Number) or the Participant must be marked on or affixed to the marine mammal part or container.
   b. Diagnostic parts, tissue samples, fluid specimens, parts, or cells may be transferred to labs within the United States for diagnostic use without any additional authorizations.

8. Work cooperatively with the NMFS and the USCG in a hazardous waste spill (i.e., oil spills) ICS if implemented.

9. Notify the NMFS Regional Administrator in writing within 30 days of any changes in its Designee organizations, key personnel (see Attachment A), capabilities, and/or ability to respond within its geographic coverage area.

10. If requested, coordinate with NMFS to develop and implement a media plan relating to stranding events.

11. Photo documenting (still or video) for other than diagnostic or identification purposes (such as dorsal fin identification, documentation of lesions, scars, etc.) that does not interfere with or influence the conduct of the stranding responders and response in any way or cause additional harassment to marine mammals.

12. If requested by the NMFS Regional Stranding Coordinator, the Participant will provide copies of any photographs, films, and/or videotapes documenting any stranding, particularly for those strandings when human interactions are reported or suspected. Reimbursement for this request is subject to negotiation between NMFS and the Participant. Any photography, film and/or videotape of the stranding response used for educational or commercial purposes of stranding response should by the Participant should include a credit, acknowledgment, or caption indicating that the stranding response was conducted under a Stranding Agreement between NMFS and the Participant under the authority of the MMPA. NMFS will not reproduce, modify, distribute, or publicly display the photograph, film, and/or videotape without consent of the owner, unless required to release a copy under Federal law or order (such as the Freedom of Information Act).

13. By its nature, the handling of stranded marine mammals (dead or alive) is potentially a dangerous activity. The Participant must indemnify and hold harmless the United States

Government from any and all losses, damages, or liability -or claims therefore -on account of personal injury, death, or property damage of any nature whatsoever, arising out of the activities of the Participant, his/her/its employees, his/her/its qualified representatives, designees, subcontractors, volunteers, or agents. Liability for person(s) acting under this agreement is addressed in sections 406(a) and (b) of the MMPA [16 U.S.C. 1421(e)].

14. Provide accurate and honest information in all reports to NMFS.

15. Except where a longer period is specified (e.g., 15 years for rehabilitation cases, see Attachment D *NMFS Best Practices for Marine Mammal Stranding Response, Rehabilitation, and Release – Standard for Rehabilitation Facilities*), maintain records upon which required reports are based for at least 3 years on-site.

16. Upon request by the NMFS Regional Administrator, allow the Regional Stranding Coordinator, other appropriate NMFS employees, or any other appropriate person duly designated by the Regional Administrator, to inspect the facilities and inspect and/or request records that pertain to stranding network activities.

17. Verbally report any right whale sightings that occur or are reported as part of their normal activities. See Attachment B for contact information.

Article III: Dead Animal Response

A. The Participant may take species of marine mammals under the MMPA for the purpose of dead animal investigation and response.

Subject to the conditions contained in this Agreement, the MMPA, and the implementing regulations, the Participant may take dead stranded marine mammals or parts therefrom for the collection of data on the health and health trends of wild populations, for the detection of marine mammal UMEs, for the detection of signs of human interaction, for research or education on marine mammal biology and life history, for the determination of cause of death, for the detection of human caused and natural mortality, or for other research as deemed appropriate by the NMFS. These activities specifically include: obtaining measurements and biological samples from dead stranded marine mammals; disposing, or assisting in the disposal, of dead stranded marine mammals at an appropriate landfill or other suitable location; and taking and transporting dead stranded or floating dead marine mammals, or parts therefrom, to facilities or individuals approved pursuant to 50 CFR. 216.22 for scientific research, maintenance in a properly curated, professionally accredited scientific collection, or for educational purposes.

B. Terms and Conditions for Dead Animal Response

1. Response

a. The Participant must respond as practicable to reports of dead stranded marine mammals within the geographic range or response specified under Article I, Number B.2. If the Participant is the closest and/or first responder, the Participant is considered to be the on-site coordinating organization and is in charge of all on-site activities. In certain circumstances such as a UME, mass stranding, or endangered marine mammal stranding, NMFS may implement the ICS structure and designate an on-site coordinator to be in charge of the event (see Article II C9). In all situations, the Participant will cooperate with Federal, state and local government officials and employees and other stranding network participants when responding to these strandings. If the Participant receives a verified report of a dead stranded marine mammal and does not have the capability to respond appropriately to the report, the Participant must notify the NMFS Regional Stranding Coordinator and/or adjacent stranding network participants within 24 hours if feasible.

b. If the Participant leaves a dead animal at the stranding site or in thecase of a UME or mass stranding response, the Participant must, if feasible, mark each animal with a tag or mark, such as roto-tags or grease stick, to assist with data collection and to prevent multiple reports on the same animal(s).

c. If requested by NMFS Regional Stranding Coordinator and if feasible and practicable, the Participant will assist with stranding response in neighboring areas outside the Participant geographic range (specified in Article I B2).

2. Data Collection and Reporting. The Participant must collect and provide the following information for each stranded marine mammal they respond to:

a. Complete the NOAA Form 89-864, OMB #0648-0178 (the Marine Mammal Stranding Report - "Level A" Form) for each stranded marine mammal. Completed forms must be sent to the NMFS Regional Stranding Coordinator via the NMFS National Marine Mammal Stranding Database or in writing (see Attachment B), no later than 30 days after responding to the stranding event. If requested by the NMFS Regional Stranding Coordinator and if feasible, the Participant must provide preliminary data (verbal or written) from the Level A - Marine Mammal Stranding Report within 24 hours.

b. As resources are available, collect additional Level B and Level C data.

c. Notify the Regional Stranding Coordinator of the following cases within 24 hours or according to the specific reporting guidance provided by the Stranding Coordinator:

1) Possible or confirmed human interactions (including military activity);
2) Suspected UMEs;
3) Extralimital or out-of-habitat situations;
4) Mass stranding events and/or mass mortalities;
5) Large whale strandings; and
6) Any stranding involving endangered or threatened species or identified species of concern.

d. In certain circumstances (e.g., listed or rare species stranding, UME, possible human interaction case, extralimital or out-of-habitat situation), the NMFS Regional Stranding Coordinator may request necropsies be conducted by a Necropsy Team Leader, or that additional and expedited reporting (verbal or written) of Level B and C data such as analytical results and necropsy reports if available. NMFS will not reproduce, modify, distribute, or publish the data without consent of the Participant unless required to release the data under Federal law or order (such as the Freedom of Information Act);

e. Collect and make available any samples, gear, debris, or other objects (e.g., tissues, bullets, arrows, net webbing, etc.) recovered from a stranded marine mammal that may provide evidence of human interaction or may otherwise be necessary for law enforcement or Federal litigation. The Participant must comply with chain of custody procedures or any other instructions as specified and supported by NMFS Greater Atlantic Region and/or NMFS Office of Law Enforcement personnel.

3. Parts Disposition. Diagnostic parts, tissue samples, fluid specimens, parts or cells may be transferred to labs within the United States for diagnostic use without any additional

authorizations. For non-diagnostic parts or samples:

a. Retention: Marine mammal parts may be retained by the Participant for education and/or research purposes, provided they are properly indicated in the "Specimen Disposition" field of NOAA Form 89-864, OMB #0648-0178 (the Marine Mammal Stranding Report - "Level A" Form). Parts and/or containers must be marked with the field identification number assigned by the Participant or by NMFS (i.e., NMFS registration number). Authorization to take parts from ESA listed species in the Greater Atlantic Region is currently provided under MMPA/ESA Permit No. 18786-05, as amended, issued to the NMFS Marine Mammal Health and Stranding Response Program Coordinator, and requires authorization and direction from the NMFS Regional Stranding Coordinator in the event of a stranding involving a threatened or endangered marine mammal, prior to any action by the Participant.

b. Transfer: Report to the NMFS Regional Administrator (See Attachment B) within 30 days of the stranding event, the transfer of any parts salvaged from the stranded marine mammal collected under this Agreement as required by 50 CFR 216.22 or 50 CFR 216.37. The Participant must provide the institution name where specimen materials have been deposited and ensure that the retained or transferred parts are marked with the field identification number or assigned NMFS Registration number in the "Specimen Disposition" field on the NOAA Form 89864, OMB #0648-0178 (the Marine Mammal Stranding Report – Level "A" Form) and ensure that retained or transferred parts are marked with the field identification number or the NMFS Registration Number. If parts are being transferred, the Participant must ensure the receiving institution is authorized by the NMFS Regional Administrator to receive marine mammal parts.

4. **Site cleanup**. The Participant must make every reasonable effort to assist in the clean-up of beach areas where their activities (e.g., necropsy or specimen collection) occur under this Agreement that may contribute to soiling of the site.

Article IV: Live Animal Response - First Response

A. The Participant may take species of marine mammals covered under the MMPA for the purpose of live stranding first response (initial assessment and care at the site of stranding and assist in the appropriate disposition of the animal), beach triage, beach release, temporary holding for assessment and triage, translocation and/or transportation to a NMFS authorized rehabilitation center within the Greater Atlantic Region.

1. The Participant must take live stranded marine mammals in a humane manner (as defined in 50 CFR 216.3, see Attachment A) for the protection or welfare of the marine mammal. If the animal dies during the course of response and/or investigation, then the terms and responsibilities contained in Article III of this Agreement become operative. In addition to the activities authorized in Articles I, II, III), the Participant is authorized to implement the following activities under this article:

    a. Take measurements and collecting blood or other diagnostic samples from live stranded marine mammals for health assessment;

    b. Return live stranded marine mammals, as directed by the NMFS Regional Stranding Coordinator, to their natural habitat and tagging such animals;

    c. Transport live stranded marine mammals for rescue and rehabilitation to a NMFS approved rehabilitation facility or temporary holding facility; and

    d. Perform humane euthanasia. Euthanasia must only be performed by the attending veterinarian or by a person acting under the direction of the attending veterinarian and following approved guidelines such as those referenced in Attachment C (*2007 Report of the American Veterinary Medical Association Panel on Euthanasia, 2nd Edition of the CRC Handbook of Marine Mammal Medicine, 2006 Journal of the American Association for Zoo Veterinarians*). When using controlled drugs, such person(s) must comply with all applicable state and Federal laws and regulations (i.e., registered with the Drug Enforcement Administration). Authorization for euthanasia of ESA-listed species is provided under MMPA/ESA Permit No. 18786-05, as amended, and requires prior approval and direction from the NMFS Regional Stranding Coordinator.

2. This Agreement does not authorize any projects involving "intrusive research" (as defined in 50 CFR 216.3). Measurements or sampling for scientific research purposes (i.e., outside the scope of accepted diagnostic and treatment practices for the care of an animal) must be authorized under a NMFS MMPA/ESA scientific research permit.

B. Terms and Conditions for Live Stranding: First Response

1. **Response for Live Stranding**

   a. The Participant must respond to reports of live stranded marine mammals *(pinniped and cetacea)*. If the Participant is the closest and/or first responder, the VAQS is considered to be the on-site coordinator and is in charge of all on-site activities. In certain circumstances such as a UME, mass stranding, or endangered marine mammal stranding, NMFS may implement the ICS structure and designate an on-site coordinator to be in charge of the event (see Article II C9). In all situations, the Participant will cooperate with Federal, state and local government officials and employees and other stranding network participants when responding to these strandings. If the Participant receives a verified report of a live stranded marine mammal and does not have the capability to respond appropriately to the report, the Participant must notify the NMFS Regional Stranding Coordinator without delay. Also, if the NMFS Regional Stranding Coordinator receives a report of a live stranded marine mammal, the Regional Stranding Coordinator may contact the Participant to determine whether the Participant has the capability to respond to the stranding. If the Participant cannot respond in a timely manner, the NMFS Regional Stranding Coordinator may request another Stranding Network participant to respond.

   b. The Participant must take all steps reasonably practicable under the circumstances to prevent further injury to any live stranded marine mammal, injury to any network personnel, volunteers, government personnel and the general public.

   c. The Participant must tag or mark any animals that are immediately released to their natural habitat using a NMFS approved tag, such as one-bolt roto tag, cattle ear tags, or freeze branding. Application of other tagging methods must first be approved by the NMFS Regional Stranding Coordinator. Tagging and post-tagging activities are restricted to monitoring the success of marine mammals released to the wild. Any projects outside the scope of monitoring the success of a release must be authorized under a NMFS MMPA/ESA scientific research permit.

   d. If the Participant determines that it is necessary to temporarily hold or triage a stranded marine mammal at a separate site from the NMFS approved rehabilitation facility, the animal(s) cannot be moved until the Participant obtains verbal approval from the NMFS Regional Stranding Coordinator.

Written documentation of the need for an interim location and written concurrence from the NMFS Regional Stranding Coordinator with any associated conditions must be provided at the earliest time practicable within 24 hours.

e. If the Participant considers responding to an "out-of-habitat" or free-swimming marine mammal in distress (e.g., entanglement), the Participant must first contact the NMFS Regional Stranding Coordinator for approval and discuss plans for live capture, any required authorizations, and/or needs for assistance. The NMFS Regional Stranding Coordinator may require a NMFS employee to be present at the time of capture.

f. The Participant must follow the guidance provided by the Greater Atlantic Region in Attachment E, Disposition of Live Stranded Marine Mammals, and must consult with the NMFS Stranding Coordinator and the attending veterinarian to make a determination regarding immediate release, rehabilitation, or euthanasia of live stranded marine mammals or cetaceans.

2. **Data Collection and Reporting.** The Participant must collect and provide the following information for each stranded marine mammal they respond to:

a. Complete the NOAA Form 89-864, OMB #0648-0178 (the Marine Mammal Stranding Report - "Level A" Form) for each stranded marine mammal. Completed forms must be sent to the NMFS Regional Stranding Coordinator via the NMFS National Marine Mammal Stranding Database or in writing (see Attachment B), no later than 30 days after responding to the stranding event. If requested by the NMFS Regional Stranding Coordinator and if feasible, the Participant must provide preliminary data (verbal or written) from the Level A - Marine Mammal Stranding Report within 24 hours.

b. If temporarily holding a stranded animal prior to transferring to a NMFS approved rehabilitation facility acting in accordance with this Article, the Participant must complete the NOAA Form 89878, OMB # 0648-0178 (the Marine Mammal Rehabilitation Disposition Report). This report must be sent to the NMFS Regional Stranding Coordinator via the NMFS National Marine Mammal Stranding Database or in writing (see Attachment B), no later than 30 days after responding to the stranding event. If requested by the NMFS Regional Stranding Coordinator and if feasible, the Participant must provide preliminary data (verbal or written) from the Marine Mammal Rehabilitation Disposition Form within 24 hours.

c. As resources are available, collect additional Level B and Level C data.

d. Notify the NMFS Regional Stranding Coordinator of the following cases within 24 hours or according to the specific reporting guidance provided by the Stranding Coordinator:

1) Possible or confirmed human interactions (including military activity);
2) Suspected UMEs;
3) Extralimital or out-of-habitat situations (see B.1.e. of this Article);
4) Mass stranding events and/or mass mortalities;
5) Large whale strandings; and
6) Any stranding involving endangered or threatened species or identified species of concern.

e. In certain circumstances (e.g., UME, possible human interaction case, extralimital or out-of-habitat situation), the NMFS Regional Stranding Coordinator may request additional and expedited reporting (verbal or written) of Level B and C data such as analytical results and necropsy reports if available. NMFS will not reproduce, modify, distribute, or publish the data without consent of the Participant unless required to release the data under Federal law or order (such as the Freedom of Information Act).

f. Collect and make available any gear, debris, or other objects (e.g., bullets, arrows, net webbing, etc.) recovered from a stranded marine mammal that may be evidence of human interaction. The Participant must comply with chain of custody procedures or any other instructions as specified and supported by NMFS Greater Atlantic Region and/or NMFS Office of Law Enforcement personnel.

3. Parts Disposition. Diagnostic parts, tissue samples, fluid specimens, parts or cells may be transferred to labs within the United States for diagnostic use without any additional authorizations. For non-diagnostic parts or samples:

a. Retention: Marine mammal parts may be retained by the Participant for education and/or research purposes, provided they are properly indicated in the "Specimen Disposition" field of NOAA Form 89-864, OMB #0648-0178 (the Marine Mammal Stranding Report - "Level A" Form). Parts and/or containers must be marked with the field identification number assigned by the Participant or by NMFS (i.e., NMFS registration number). Authorization to take parts from ESA listed species in the Greater Atlantic Region is currently provided under MMPA/ESA Permit No. 932-1489-09, as amended, issued to the NMFS Marine Mammal Health and Stranding Response Program Coordinator, and requires authorization and direction from the NMFS Regional Stranding Coordinator in the event of a stranding involving a threatened or endangered marine mammal, prior to any action by the Participant.

b. Transfer: Report to the NMFS Regional Administrator (See Attachment B) within 30 day of the stranding event, the transfer of any parts salvaged from the stranded marine mammal collected under this Agreement as required by or 50 CFR 216.37. The Participant must provide the institution name where specimen materials have been deposited and ensure that the retained or transferred parts are marked with the field identification number or assigned NMFS Registration

number in the "Specimen Disposition" field on the NOAA Form 89864, OMB #0648-0178 (the Marine Mammal Stranding Report – Level "A" Form) and ensure that retained or transferred parts are marked with the field identification number or the NMFS Registration Number. If parts are being transferred, the Participant must ensure the receiving institution is authorized by the NMFS Regional Administrator to receive marine mammal parts.

4. **Site Cleanup.** The Participant must make every reasonable effort to assist in the cleanup of beach areas where their activities (e.g., euthanasia, necropsy, or specimen collection) under this Agreement.

ARTICLE V: Live Animal Response - Rehabilitation and Final Disposition

A. The Participant may take live stranded marine mammals in a humane manner with the goal of rehabilitation and release. If the animal dies during the course of rehabilitation, then the terms and responsibilities contained in Article III of this Agreement become operative. In addition to the activities authorized in Articles I, II, III, and IV of this Agreement and subject to the conditions contained in this Agreement, the MMPA, and the implementing regulations, the Participant is authorized to implement the following activities under this article:

1. In accordance with applicable regulations and NMFS guidelines and best practices, transfer marine mammals to another NMFS approved rehabilitation facility within the Greater Atlantic Region for:

   a. Release back to the wild;

   b. Temporary placement in a scientific research facility holding a current NMFS scientific research permit and a United States Department of Agriculture Animal and Plant Health Inspection Service (APHIS) Research License; or

   c. Permanent disposition at an authorized facility (i.e. holds an APHIS exhibitors license {7 U.S.C. 2131 *et seq.*}) after consultation with, and authorization by, the NMFS Office of Protected Resources Permits, Conservation and Education Division.

2. Conduct scientific research on stranded animals in a rehabilitation facility, only if the responsible individual has a NMFS scientific research permit and the facility holds an APHIS research license in accordance with the Animal Welfare Act (see 50 CFR 216.27 (c)(6)).

3. Return rehabilitated stranded marine mammals to their natural habitat. A decision regarding whether or not a marine mammal has the potential to be released must be made as early as possible during the rehabilitation period. Any marine mammal eligible for release must be released as early as possible and no later than six months after being taken for rehabilitation unless the attending veterinarian determines that: the marine mammal might adversely affect marine mammals in the wild; release is unlikely to be successful due to the physical condition and behavior of the marine mammal; or more time is needed to make a determination. Release plans must be submitted to the NMFS Regional Administrator at least 15 days prior to the release, unless advanced notice is waived by the NMFS Regional Administrator. The NMFS Regional Administrator may require the participant to provide additional information, modify the release plan, or dispose of the marine mammal in another manner (see 50 CFR 216.27(a) and the *NMFS/FWS Best Practices for Marine Mammal Stranding Response, Rehabilitation, and Release – Standards for Release.*)

4. Tag rehabilitated stranded marine mammals, strictly for purposes of monitoring success

of release to the wild using a NMFS approved tag, such as one-bolt roto-tag, cattle ear tags, or freeze branding. Application of other tagging methods must first be approved by the NMFS Regional Stranding Coordinator. Tagging and post-tagging activities are restricted to monitoring the success of marine mammals released to the wild. Any projects outside the scope of monitoring the success of a release must be authorized under a NMFS MMPA/ESA scientific research permit.

5. Perform humane euthanasia. Euthanasia shall only be performed by the attending veterinarian or by a person acting under the direction of the attending veterinarian and following approved guidelines such as those referenced in Attachment C (*2007 Report of the American Veterinary Medical Association Panel on Euthanasia, 2nd Edition of the CRC Handbook of Marine Mammal Medicine, 2006 Journal of the American Association for Zoo Veterinarians*). When using controlled drugs, such person(s) shall comply with all applicable state and Federal laws and regulations (i.e., registered with the Drug Enforcement Administration). Authorization for the euthanasia of ESA-listed species provided under MMPA/ESA Permit No. 932-1489-09, as amended, and requires prior approval and direction from the NMFS Regional Stranding Coordinator.

B. Terms and Conditions for Live Animal Response: Rehabilitation, Release, or Final Disposition Determination

1. Rehabilitation

a. The Participant shall comply with laws, regulations, policies, and/or guidelines applicable to or promulgated by NMFS that apply to activities under this Agreement. The Participant must also have all applicable Federal, state, and local permits for rehabilitation facilities, and must comply with all Federal, state, and municipal laws related to operations of the facility.

b. The Participant shall be responsible for the custody of any living marine mammal taken pursuant to this Article using standards for humane care and for practicing accepted medical evaluation and treatment as described in the *NMFS Best Practices for Marine Mammal Stranding Response, Rehabilitation, and Release – Standard for Rehabilitation Facilities* (Attachment D).

c. The Participant shall not exceed their maximum holding capacity for cetaceans and pinnipeds based on the minimum standard space requirements, the number of animals housed in each holding area, and the availability of qualified personnel as described in the *NMFS Best Practices for Marine Mammal Stranding Response, Rehabilitation, and Release – Standard for Rehabilitation Facilities* (Attachment D) unless a written waiver is first received from the NMFS Regional Administrator. The NMFS Regional Stranding Coordinator may offer assistance for relocating animals to another rehabilitation facility and in supporting decisions to euthanize when necessary. Other considerations for determining maximum holding capacity include:

(1) On-site veterinary care, volunteer support, and experienced staff;
(2) Adequate food and medical supplies and medical test capabilities;
(3) Isolation for marine mammals;
(4) Adequate water quality;
(5) Limited public access; and
(6) Ability to maintain current, accurate and thorough records

d. The Participant shall follow contingency plans approved by NMFS for the care of marine mammals in rehabilitation during planned events (e.g., construction) or unexpected events such as mass strandings, UMEs, natural disasters (e.g., hurricanes, harmful algal blooms, El Niño), and/or hazardous waste spills.

e. The Participant shall isolate rehabilitating marine mammals from other wild or domestic animals and from any animal in permanent captivity.

f. The Participant shall prohibit the public display and training for performance of stranded rehabilitating marine mammals as required by 50 CFR 216.27(c)(5). This includes any aspect of a program involving interaction with the public.

g. The Participant shall follow any additional requirements for rehabilitation (e.g., isolation) and release prescribed by NMFS in consultation with the Working Group for Marine Mammal Unusual Mortality Events during a marine mammal UME, as recommended in the *National Contingency Plan for Response to Unusual Marine Mammal Mortality Events;* D.W. Wilkinson, NOAA Technical Memorandum NMFS-OPR-9, September 1996.

h. The Participant must temporarily refuse admittance of new cases of stranded marine mammals due to the severity of a disease outbreak when instructed by the NMFS Regional Stranding Coordinator, in consultation with the UME Working Group or other experts, if diseases of concern have been reported (e.g. diseases associated with a UME, or any emerging or zoonotic diseases).

i. The Participant shall not transfer a marine mammal being rehabilitated under this Agreement to another facility without prior approval form the NMFS Regional Stranding Coordinator.

j. If a marine mammal dies while in rehabilitation, Article III applies.

2. Release

a. Release Recommendation. The Participant shall make a final written recommendation for each animal in rehabilitation as early as possible, and no more than six months after its date of rescue, for release or non-release determination to the NMFS Regional Administrator according to any

applicable NMFS release guidelines and regulations including 50 CFR 216.27 (release, non-releasable, and disposition under special exception permits for rehabilitated marine mammals). This final recommendation shall include a release recommendation signed by the Participant's attending veterinarian, attesting that the marine mammal is medically and behaviorally suitable for release in accordance with the NMFS Standards for Release, and a concurrence signature from the Participant's Authorized Representative or Signatory of the Stranding Agreement (see Attachment D, *NMFS /FWS Best Practices for Marine Mammal Stranding Response, Rehabilitation, and Release – Standards for Release*).

b. Release Plan. If the Participant recommends release, a release plan must also be included with the final recommendation letter. This information must be submitted to and approved by the NMFS Regional Administrator at least 15 days prior to the release, unless advanced notice is waived by the NMFS Regional Administrator, as required by 50 CFR 216.27(a).

3. Data Collection and Reporting

a. Diseases of Concern Reporting. The Participant shall notify immediately the NMFS Regional Stranding Coordinator upon learning of any diseases of concern (e.g., emerging, reportable, and/or zoonotic diseases) that are detected and/or confirmed that could be a potential hazard for public health or animal health (NMFS will provide guidance on Reportable Diseases);

b. Disposition Reports. Upon release or other disposition of any marine mammal under this Article, the Participant shall complete the NOAA Form 89878, OMB # 0648-0178 (the Marine Mammal Rehabilitation Disposition Report Form). Completed forms shall be sent to the NMFS Regional Stranding Coordinator via the NMFS National Marine Mammal Stranding Database or in writing (see Attachment B), no later than 30 days after final disposition of the marine mammal. If requested by the NMFS Regional Stranding Coordinator and if feasible, the Participant shall provide preliminary data (verbal or written) from the Marine Mammal Rehabilitation Disposition Report within 24 hours.

c. Annual Summary Reports. The Participant shall submit an annual report (due January 31 each year) summarizing the Participant's rehabilitation activities for the past calendar year. NMFS will not reproduce, modify, distribute, or publish the data without consent of the Participant unless required to release the data under Federal law or order (such as the Freedom of Information Act).

The reports shall include the following for each animal in rehabilitation:

i. Species and field number
ii. If the animal was released:
    (a) Date, location of release (latitude and longitude).

(b) Type and specifics of post-release monitoring (roto-tag, satellite, etc.) and any roto-tag or freeze brand numbers used.
(c) Photos if possible.
(d) Duration of post-release monitoring.
(e) Status of post-release monitoring.
(f) Indications from monitoring relative to the success of the rehabilitation effort.
(g) Disposition of tracking data if applicable.

iii. If the animal was transferred to permanent care:
(a) Date of physical transport (if applicable).
(b) Location of permanent care.

iv. If the animal was euthanized, provide the date of euthanasia.

v. If the animal died, provide the date of death.

Article VI: Good Standing Agreement

Greater Atlantic Region Marine Mammal Stranding Network
Good Standing Agreement

To be considered in "good standing" the Greater Atlantic Region Marine Mammal Stranding Network Member (Network Member) must meet all of the following criteria:

General Criteria

1. If the Network Member is a designated Principal Investigator of an MMPA or Endangered Species Act (ESA) scientific research or enhancement permit holder, the applicant must have fulfilled all permit requirements, including but not limited to submission of all reports, and must have no pending or outstanding enforcement actions under the MMPA or ESA.

2. The Network Member must comply with the terms and responsibilities of its Stranding Agreement (SA), MMPA Section 109(h) authorization, or researcher authorization letter. This includes, but is not limited to, the following response and reporting requirements:
   a. Timely (within 24 hours) response to all stranding reports in Network Member's area of responsibility in accordance with SA;
   b. Respond to stranding in an effective manner that protects both the health and safety of the responders and the stranded animals;
   c. Timely (immediate) notification to NMFS regarding any unusual stranding circumstances (UME, out of habitat, large cetacean stranding, etc.) according to the timelines as specified in the SA;
   d. Adhere to the *Policies and Best Practices for Marine Mammal Stranding Response, Rehabilitation and Release;*
   e. Reporting of stranding events to NMFS as specified in SA;
   f. Submission of complete reports on basic or Level A data to the Regional Coordinator (includes investigator's name, species, stranding location, number of animals, date and time of stranding and recovery, length and condition, and sex; marine mammal parts retention or transfer; annual reports) as specified in SA;
   g. Collecting information or samples as necessary and as requested; and
   h. Prompt notification to NMFS for any article of SA (or points above) with which the Network member cannot comply.

3. The Network Member must cooperate with NMFS in collecting and submitting Level B (supplementary information regarding sample collection related to life history and to the stranding event) and Level C (necropsy results) data and samples, when requested and within the requested timeframe.

4. The Network Member must have no current enforcement investigation for the 'take' of marine mammals in violation of the Marine Mammal Protection Act and Endangered

Species Act.

5. The Network Member must have no record of a pending NMFS notice of violation(s) regarding the policies governing the goals and operations of the Stranding Network and Stranding Agreement, if applicable (e.g., probation, suspension, or termination).

Coordination and Cooperation Criteria

The following coordination/cooperation requirements must be satisfied:
1. Cooperation with state, local, and Federal officials;
2. Cooperation with state and local officials in the disposition of stranded marine mammals; and
3. Cooperation with other stranding network participants.

If the Network Member feels they are in danger of not being in "good standing", please refer to *Communication Agreement.*

If NMFS determines a Network Member is in danger of not being in "good standing":
1. The Network Member will receive a written warning from the Regional Administrator
2. The Network Member must reply to this warning within 30 days
3. The reply must include remediation efforts with a proposed timeline
4. Efforts and timeline must be agreed to by the Regional Administrator

If the Network Member fails to meet the timeline, and no further remediation letter is received from the Network Member, the Network Member will no longer be considered in "good standing".

AGREEMENT

I have read and understand the conditions above for participating as a member of the Greater Atlantic Region Stranding Network. I agree to abide by all applicable provisions of the Good Standing Criteria established by National Marine Fisheries Service Greater Atlantic Region. By signing this agreement I understand and acknowledge the consequences of not complying with The Good Standing Criteria will lead to ineligibility for Prescott Grant funding and suspension or termination of the Stranding Network Member's SA.

ARTICLE VII: Communications Agreement

Greater Atlantic Region Marine Mammal Stranding Program
Communication Agreement

If the Greater Atlantic Region Marine Mammal Stranding Network Member (Network Member) foresees a problem or potential for non-compliance with their Stranding Agreement (SA), the Network Member will notify NOAA's National Marine Fisheries Service (NMFS) regional stranding staff immediately, no matter how small the problem. Should a Network Member foresee a problem or potential for non-compliance with their SA, the Network Member must:

1. Contact Marine Mammal Stranding Coordinator, or if not available;
2. Contact Marine Mammal and Sea Turtle Program Coordinator, or if not available;
3. Contact Assistant Regional Administrator for Protected Resources.

*** If an emergency situation; call the Stranding HOTLINE: 866-755-6622**

If NMFS foresees a problem or potential for non-compliance with a Network Members SA, NMFS will provide a written warning to the Network Member (see Good Standing Criteria) and will work with the Network Member to identify the deficiency as:

1. Minor
2. Intermediate
3. Major

Minor Deficiency: a deficiency that will likely require little or no time to correct. Minor deficiencies have little impact on the operational capability of the Network Member and do not directly affect the rescue or care of live animals or the collection of data from live and dead animals.

Intermediate Deficiency: a deficiency that may require a short period of time to correct (less than 6 months) and require a small amount of resources (expense) to address. Intermediate deficiencies may cause the Network Member to become non-compliant with the NMFS Best Practices for Marine Mammal Stranding Response, Rehabilitation, and Release and may impact the operational capability of the Network Member. These deficiencies may also affect the rescue and care of live animals and data collection capabilities from live and dead stranded animals.

Major Deficiency: a deficiency that will require a prolonged period of time to correct (greater than 6 months) and require significant resources (expense) to address. Major deficiencies will cause the Network Member to become non-compliant with Federal, state and local laws and regulations as well as the NMFS Best Practices for Marine Mammal Stranding Response, Rehabilitation, and Release and will impact the operational capability of the Network Member. These deficiencies will likely be controversial and affect the rescue and care of live animals and data collection capabilities from live and dead stranded animals.
The roles and responsibilities for each level of deficiency is as follows:

Minor Deficiency

Network Member responsibilities

1. Notify NMFS Regional Stranding Staff immediately.
2. Submit remediation efforts within timeframe specified by NMFS.
3. Work with NMFS on correcting the problem.
4. Keep NMFS informed of progress on meeting deadline (if applicable).
5. Notify NMFS immediately if problem progresses or new issues develop.
6. Submit report verifying steps taken to correct deficiency and future steps to prevent deficiency from reoccurring.

NMFS responsibilities

1. NMFS staff will provide consultation to help correct problem if applicable.
2. NMFS staff will develop timeline for corrective measures and consider an extension if requested.

Intermediate Deficiency

Network Member responsibilities

1. Notify NMFS Regional Stranding Staff immediately.
2. Develop an Action Plan to correct the problem, in consultation with NMFS.
3. Keep NMFS informed of progress on meeting deadlines (if applicable).
4. Notify NMFS immediately if problem progresses or new issues develop.
5. Seek guidance from NMFS staff or external experts.
6. Submit report verifying steps taken to correct deficiency and future steps to prevent deficiency from reoccurring.

NMFS responsibilities

1. NMFS staff will provide consultation to help correct problem if applicable.
2. NMFS will develop a timeline for corrective measures and consider an extension if requested.
3. NMFS staff will work with Network Member to identify cause of problem and identify solutions.
4. Seek guidance from additional NMFS staff or external experts.

Major Deficiency

Network Member responsibilities

1. Notify NMFS Regional Stranding Staff immediately.
2. Develop an Action Plan to correct the problem, in consultation with NMFS.
3. Keep NMFS informed of progress on meeting deadlines (if applicable).
4. Notify NMFS immediately if problem progresses or new issues develop.
5. Seek guidance from NMFS staff or external experts.
6. Convene other staff members to meet with NMFS to address problems: such as board members, attending veterinarians and veterinary technicians, upon request.

7. Provide requested data and files to NMFS as requested.
8. Submit report verifying steps taken to correct deficiency and future steps to prevent deficiency from reoccurring.

NMFS responsibilities

1. NMFS staff will provide consultation to help correct problem if applicable.
2. NMFS will develop a timeline for corrective measures and consider an extension if requested.
3. NMFS staff will work with Network Member to identify cause of problem and identify solutions.
4. Outside consultation from experts in the field may be sought to help address solutions to deficiencies.
5. If applicable, NMFS staff will seek consultation of NOAA Office of Law Enforcement and General Council.

If deadlines are disregarded without correction of deficiency, the Network member will be subject to disciplinary action: probation, suspension and/or termination (as outlined in the SA). NMFS will make every effort to notify the Network Member in writing of failure to comply with agreed upon remedies for deficiency. In cases of willfulness, or those in which public health, interest, or safety requires immediate attention, NMFS, Greater Atlantic Regional Administrator reserves the right to immediately suspend or terminate the Network Member's stranding agreement (as outlined in the SA).

AGREEMENT

I have read and understand the conditions above for participating as a member of the Greater Atlantic Region Stranding Network. I agree to abide by all applicable provisions of the Communication Agreement established by National Marine Fisheries Service Greater Atlantic Region.

Article VIII: Participant's Authorized Personnel

A. Personnel and Volunteers

Takings of marine mammals authorized in this Agreement may only be directed by the Participant's personnel and trained volunteers identified by the Participant in writing to the NMFS Regional Administrator. The Participant may use other (i.e., not previously identified to NMFS) volunteers to carry out activities in this Agreement only if they are under the close direction of previously identified trained personnel or volunteers. The Participant may not delegate authority to take marine mammals to another person except as provided in this article.

In the event of changes in key personnel, the prospective Participant must notify the NMFS Regional Administrator in writing (see Attachment B) within 30 days and provide a description of the experience of new key personnel for review and approval by NMFS. New key personnel must be meet the qualification terms identified in the *NMFS Best Practices for Marine Mammal Stranding Response, Rehabilitation, and Release - Evaluation Criteria for a Marine Mammal Stranding Agreement* (Attachment D).

B. Untrained Citizens

If the Participant requests the assistance of untrained citizens (e.g., during a mass stranding), the Participant is responsible for the actions of those citizens during the response; must take precautions against injury or disease to those volunteer citizens; and must ensure that the citizens' actions do not cause unnecessary harassment of marine mammals.

Article IX: Rights of States and Local Governments

Nothing in this Agreement must be construed to affect the rights or responsibilities of other Federal, state, or local government officials or employees acting in the course of their official duties with respect to taking of marine mammals in a humane manner (including euthanasia) for protection or welfare of the marine mammal, protection of public health and welfare or non-lethal removal of nuisance animals (MMPA section 109(h)).

Article X: Effective Dates, Renewal and Application Procedures

A. Effective Dates

The terms of this Agreement must become effective upon the signature by both VAQS and the NMFS Greater Atlantic Regional Administrator.

B. Period of Agreement

1. **Duration:** Unless terminated as provided in this Agreement, this Agreement must expire at the end of the following applicable period, October 15, 2025.

    1 year for new Stranding Network Participants
    1 year for a Stranding Network Participant on probation
    3 years for a live animal responder and rehabilitator (Articles IV and V)
    6 years for a dead animal only responder (Article III only)

2. **Stranding Agreement Renewals**: No later than 90 days prior to the expiration date of this Agreement, NMFS will provide the Participant with a written notice of expiration, and prescribe information needed from the Participant for renewal (see *NMFS Best Practices for Marine Mammal Stranding Response, Rehabilitation, and Release - Evaluation Criteria for a Marine Mammal Stranding Agreement*, Attachment D). No later than 60 days prior to the expiration date, the Participant must indicate in writing to NMFS (see Contacts, Attachment B.) that a renewal of this Agreement is requested and must provide the prescribed information. Following NMFS review of the submitted information to determine if Participant meets applicable requirements, the Agreement may be renewed if agreed to in writing by both parties.

    If no written renewal request is received from the Participant, this Agreement becomes null and void upon the above expiration date.

3. **Provisional Stranding Agreements Renewals**: For new participants, the NMFS Regional Administrator will enter into this Agreement for a provisional period of one year from the effective date. The performance of the Participant will be reviewed to determine if the services provided by the Participant under this agreement have been satisfactory to NMFS. If NMFS determines that the new Participant has satisfied the terms and conditions of this stranding agreement, this Agreement may be extended for a multi-year period. New participants operating without any deficiencies (see Article IX. D), are considered to be in "good standing" under this Agreement.

4. **Denial of Stranding Agreement Renewal**: The decision to renew or deny a Stranding Agreement is solely at the discretion of the NMFS Regional Administrator and is not compelled by the Participant's adherence to the Stranding Agreement criteria. If the NMFS Regional Administrator denies a renewal request, the denial will be issued in writing by certified mail from the NMFS Regional Administrator to the Participant within

30 days of the Participant's submission of a completed application, and will be based upon the Regional Administrator's judgment of:

a. Past performance of the Participant;
b. Existing capabilities of the Participant; and
c. Geographic and programmatic needs of NMFS' stranding program.

A Stranding Agreement for which renewal is denied by the NMFS Regional Administrator becomes null and void upon the expiration date listed above.

ARTICLE XI: Review, Modification and Termination

A. Review

The NMFS Greater Atlantic Region ARA for Protected Resources must review this Agreement from time to time for performance adequacy and effectiveness.

B. Modification

The Participant or the Greater Atlantic Regional Administrator may request a modification to the Stranding Agreement, including, but not limited to, procedural or administrative changes, such as a change in contact information, and a request for expansion or reduction of activities authorized by this Agreement. A request for authority for additional activities may require submission of information identified in Attachment D, *NMFS Best Practices for Marine Mammal Stranding Response, Rehabilitation, and Release - Evaluation Criteria for a Marine Mammal Stranding Agreement*. Modifications and reductions in authority, as well as notice of issuance or denial of a request for increased authorizations, will be given in writing within 30 days of receipt of a completed request. The Participant and the NMFS Regional Administrator may determine that a new Stranding Agreement is warranted.

C. Suspension or Termination request by Participant

The Participant may request suspension of all or part of this Stranding Agreement for a stated period of time, or may terminate this Agreement, upon 30 days written notice to the NMFS Regional Administrator. Suspension of the authorization of activities at the request of the Participant may be given without prejudice to the reinstatement of authorization or renewal of a Stranding Agreement.

D. Non-Compliance with Stranding Agreement or Violations of Law by Participant

Except in cases of willfulness, or those in which public health, interest, or safety requires immediate suspension, or termination of this Agreement, NMFS must provide the Participant with notice and an opportunity to correct any deficiencies within a time period specified by NMFS, in writing, if the Participant fails to satisfy the terms and condition of this Agreement or violates any laws, regulations, or guidelines applicable to this Agreement, or Federal, state or municipal laws related to stranding network operations. The NMFS Region may take the following actions based on the circumstances:

1. **Probation.** The Participant may be put on probation for up to three years if deficiencies are not corrected. The NMFS Regional Stranding Coordinator and the Participant will develop a timetable with reasonable and measurable milestones that must be achieved to correct deficiencies during the probation period. Probation requires annual reviews of the Participant's activities for up to three years. A participant on probation may not be in "good standing" with the Stranding Network.

2. **Suspension.** The NMFS Regional Administrator may suspend the Participant's authority, or any portion of their authority, as appropriate (e.g., suspend rehabilitation authority, but not live or dead animal response), with 30 days written notice, for up to 1 year or until NMFS is satisfied that all deficiencies and violations have been adequately addressed. A notice of suspension listing deficiencies and a timetable with reasonable and measurable milestones required to correct those deficiencies will be issued in writing, delivered in person or by certified mail, from the NMFS Regional Administrator, in the judgment of the Regional Administrator, the Participant has:

   a. Submitted false information or statements in applications or reports;
   b. Not satisfied the terms and conditions of the Stranding Agreement;
   c. Failed to correct deficiencies in a timely manner; or
   d. Violated applicable Federal, state, or municipal laws, regulations, guidelines, or other requirements.

A participant on suspension is <u>not</u> in "good standing" with the Stranding Network.

3. **Immediate suspension.** The NMFS Regional Administrator may require immediate suspension of authorization under a Stranding Agreement, or any part of the Agreement, without prior notice if, in the judgment of the Regional Administrator, suspension is needed to protect marine resources, in cases of willfulness, or as otherwise required to protect public health, welfare, interest, or safety, (which includes interest in the welfare of marine mammals). During the suspension period, the NMFS Regional Stranding Coordinator may ask other Stranding Network participants to respond in the Participant's area of geographic coverage. If the Participant's Stranding Agreement is suspended while animals are in rehabilitation, NMFS reserves the right to either confiscate the animals or to arrange for another participant to take over rehabilitation or take custody of the animals. A written notice of immediate suspension will be issued in person or by certified mail.

   A participant on immediate suspension is <u>not</u> in "good standing" with the Stranding Network.

4. **Termination**. The NMFS Regional Administrator may terminate this Agreement, or any part thereof, upon at least 30 days written notice to the Participant, delivered in person or by certified mail. The Agreement may be terminated for any reason, including the Participant's:

   a. Submission of false information or statements in applications or reports;
   b. Failure to satisfy the terms and conditions of the Stranding Agreement;
   c. Failure to correct deficiencies in a timely manner; or
   d. Violation of applicable Federal, state, or municipal laws, regulations, guidelines, or other requirements.

   The NMFS Regional Stranding Coordinator may ask another Stranding Network

participant to respond in the Participant's area of geographic coverage. If the Participant's Stranding Agreement is terminated while animals are in rehabilitation, NMFS reserves the right to either confiscate the animals or to arrange for another participant to take over rehabilitation of or to take custody of the animals.

Termination of the Agreement for any reason must automatically terminate any designations by the Participant to any designee organizations under this Agreement.

Acceptance of Agreement

Pursuant to the terms and conditions described above in this Stranding Agreement between NMFS Greater Atlantic Region and VAQS, the Participant, is authorized:

- **Under Article III to respond to strandings of dead marine mammals *(cetaceans and pinnipeds); and***
- **Under Article IV to provide first response to live stranded marine mammals (*cetaceans and pinnipeds*).**
- **Under Article V to rehabilitate and release live stranded marine mammals (*pinnipeds*).**

THIS STRANDING AGREEMENT IS ENTERED INTO AND MADE EFFECTIVE THIS

Date October 15, 2022 **Date** 10/17/2022

APPROVED:

NMFS Greater Atlantic Region
55 Great Republic Drive
Gloucester, MA 01930

Virginia Aquarium & Marine Science Foundation
717 General Booth Blvd
Virginia Beach, VA 23451

Signature of Assistant Regional Administrator

Jennifer Anderson

Jennifer Anderson
Assistant Regional Administrator
for Protected Resources

Signature of Authorized Representative

DVM

Dr. Allyson McNaughton
Chief of Veterinary Services

THIS STRANDING AGREEMENT REMAINS IN EFFECT UNTIL: October 15, 2025

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Attachment List

Attachment A: List of Terms and Definitions under 50 CFR 216.3, Glossary of Terms, etc.

Attachment B: Regional contact information, 24 hour numbers, etc.

Attachment C[1]: Euthanasia guidance

Attachment D[1]: NOAA National Marine Fisheries Service *Best Practices* for Marine Mammal Stranding Response, Rehabilitation, and Release Documents:

- Evaluation Criteria for a Marine Mammal Stranding Agreement (New Applicants and Renewals of Existing Participants)
- Standards for Release
- Standards for Rehabilitation Facilities
- Level A Forms (Marine Mammal Stranding Report and Marine Mammal Rehabilitation Disposition Report)

Attachment E[1]: NMFS Greater Atlantic Region Disposition of Live Stranded Marine Mammal Guidance.

[1] Once finalized, this guidance may be replaced by the appendices in the Programmatic Environmental Impact Statement for the Marine Mammal Health and Stranding Response Program.

Appendix II: List of all marine mammal species sighted or stranded in Virginia inshore, nearshore, offshore, and pelagic waters

Common Name	Scientific Name	IUCN	ESA Status	SGCN	Strategic Stock	TRT	Active UME
Bottlenose dolphin	*Tursiops truncatus* (pelagic); *Tursiops errebenus* (nearshore, inshore, offshore)	Least Concern	N/A	Yes	Yes (3 coastal stocks); No (offshore stock)	Yes (3 coastal stocks); No (offshore stock)	No
Harbor porpoise	*Phocoena phocoena*	Least Concern	N/A	No	No	Yes	No
Common dolphin	*Delphinus delphis*	Least Concern	N/A	No	No	No	No
Atlantic spotted dolphin	*Stenella frontalis*	Least Concern	N/A	No	No	No	No
Atlantic white-sided dolphin	*Lagenorhynchus acutus*	Least Concern	N/A	No	No	No	No
Striped dolphin	*Stenella coerubeoalba*	Least Concern	N/A	No	No	No	No
Short-finned pilot whale	*Globicephala macrorhynchus*	Least Concern	N/A	No	No	Yes	No
Long-finned pilot whale	*Globicephala melas*	Least Concern	N/A	No	No	No	No
Rough-toothed dolphin	*Steno bredanensis*	Least Concern	N/A	No	No	No	No
Risso's dolphin	*Grampus griseus*	Least Concern	N/A	No	No	Yes	No
Pygmy killer whale	*Feresa attenuata*	Least Concern	N/A	No	No	No	No
Melon-headed whale	*Peponocephala electra*	Least Concern	N/A	No	No	No	No
Sperm whale	*Physeter macrocephalus*	Vulnerable	Endangered	No	Yes	No	No
Pygmy sperm whale	*Kogia breviceps*	Least Concern	N/A	No	No	No	No
Dwarf sperm whale	*Kogia sima*	Least Concern	N/A	No	No	No	No
Blainville's beaked whale	*Mesoplodon densirostris*	Least Concern	N/A	No	No	No	No
Gervais' beaked whale	*Mesoplodon europaeus*	Least Concern	N/A	No	No	No	No
Sowerby's beaked whale	*Mesoplodon bidens*	Least Concern	N/A	No	No	No	No
True's beaked whale	*Mesoplodon mirus*	Least Concern	N/A	No	No	No	No
Cuvier's beaked whale	*Ziphius cavirostris*	Least Concern	N/A	No	No	No	No
North Atlantic right whale	*Eubalaena glacialis*	Critically Endangered	Endangered	Yes	Yes	Yes	Yes
Humpback whale	*Megaptera novaeangliae*	Least Concern	N/A	Yes	No	Yes	Yes

Minke whale	*Balaenoptera acutorostrata*	Least Concern	N/A	No	No	No	Yes
Fin whale	*Balaenoptera physalus*	Vulnerable	Endangered	Yes	Yes	Yes	No
Sei whale	*Balaenoptera borealis*	Endangered	Endangered	No	Yes	No	No
Blue whale	*Balaenoptera musculus*	Endangered	Endangered	No	Yes	No	No
Harbor seal	*Phoca vitulina*	Least Concern	N/A	No	No	No	Yes
Gray seal	*Halichoerus grypus*	Least Concern	N/A	No	No	No	Yes
Harp seal	*Pagophilus groenlandica*	Least Concern	N/A	No	No	No	No
Hooded seal	*Crystophora cristata*	Vulnerable	N/A	No	No	No	No
West Indian manatee	*Trichechus manatus (latirostris)*	Vulnerable	Threatened	Yes	Yes	No	Yes