National Park Service
U.S. Department of the Interior

Natural Resource Stewardship and Science

Cape Hatteras National Seashore Marine Mammal Strandings and Seal Sightings

2017 Summary

Natural Resource Report NPS/CAHA/NRR—2018/1732

ON THE COVER
Female humpback whale that stranded south of Avon, North Carolina in March 2017 (CAHA 391)
Photography by NPS

Cape Hatteras National Seashore Marine Mammal Strandings and Seal Sightings

2017 Summary

Natural Resource Report NPS/CAHA/NRR—2018/1732

Paul Doshkov

National Park Service
Cape Hatteras National Seashore
1401 National Park Drive
Manteo, NC 27954

Editing and Design by
Tani Hubbard

National Park Service &
Northern Rockies Conservation Cooperative
12661 E. Broadway Blvd.
Tucson, AZ 85748

September 2018

U.S. Department of the Interior
National Park Service
Natural Resource Stewardship and Science
Fort Collins, Colorado

The National Park Service, Natural Resource Stewardship and Science office in Fort Collins, Colorado, publishes a range of reports that address natural resource topics. These reports are of interest and applicability to a broad audience in the National Park Service and others in natural resource management, including scientists, conservation and environmental constituencies, and the public.

The Natural Resource Report Series is used to disseminate comprehensive information and analysis about natural resources and related topics concerning lands managed by the National Park Service. The series supports the advancement of science, informed decision-making, and the achievement of the National Park Service mission. The series also provides a forum for presenting more lengthy results that may not be accepted by publications with page limitations.

All manuscripts in the series receive the appropriate level of peer review to ensure that the information is scientifically credible, technically accurate, appropriately written for the intended audience, and designed and published in a professional manner.

This report received informal peer review by subject-matter experts who were not directly involved in the collection, analysis, or reporting of the data.

Views, statements, findings, conclusions, recommendations, and data in this report do not necessarily reflect views and policies of the National Park Service, U.S. Department of the Interior. Mention of trade names or commercial products does not constitute endorsement or recommendation for use by the U.S. Government.

This report is available from the Natural Resource Publications Management website. If you have difficulty accessing information in this publication, particularly if using assistive technology, please email irma@nps.gov. Please cite this publication as:

Doshkov, P. 2018. Cape Hatteras National Seashore marine mammal strandings and seal sightings: 2017 summary. Natural Resource Report NPS/CAHA/NRR—2018/1732. National Park Service, Fort Collins, Colorado.

NPS 603/148348, September 2018

Contents

Page

Figures . . . iii

Tables . . . iii

Abstract . . . iv

Introduction . . . 1

Methods . . . 3

Results and Discussion . . . 4

Strandings . . . 4

Live Seal Sightings . . . 6

Atlantic Fleet Training and Testing (AFTT) . . . 8

Historical Data . . . 8

Literature Cited . . . 10

Figures

Page

Figure 1. Marine mammal strandings by month at Cape Hatteras National Seashore, North Carolina in 2017. . . . 4

Figure 2. Strandings by island at Cape Hatteras National Seashore, North Carolina in 2017. . . . 4

Figure 3. Condition codes of 2017 marine mammal strandings at Cape Hatteras National Seashore. . . . 5

Figure 4. Species and number of individuals stranded at Cape Hatteras National Seashore in 2017. . . . 5

Figure 5. 2017 strandings in Cape Hatteras National Seashore compared to strandings in the rest of the Outer Banks. . . . 6

Figure 6. 2017 strandings in Cape Hatteras National Seashore (67 miles of shoreline) compared to strandings in the rest of North Carolina (~322 miles of shoreline). . . . 6

Figure 7. Harp seal in the village of Salvo on March 16, 2017. . . . 7

Figure 8. Stranding history at Cape Hatteras National Seashore compared to the rest of the Outer Banks. . . . 8

Figure 9. Stranding history at Cape Catteras National Seashore compared to the rest of North Carolina. . . . 9

Figure 10. Historical number of strandings on the Seashore, 2001–2017. . . . 9

Tables

Page

Table 1. Observations of human interactions associated with marine mammal strandings at Cape Hatteras National Seashore, North Carolina in 2017. . . . 7

Abstract

Cape Hatteras National Seashore (Seashore), located on the Outer Banks of North Carolina, experiences a high number of marine mammal strandings each year. This includes cetaceans (whales, dolphins, and porpoises), pinnipeds (seals), and on rare occasions sirenians (manatees). In 2017, 33 strandings were documented, which is below the 10-year average of 53 strandings. Eight species were stranded and the majority of strandings were of bottlenose dolphins (*Tursiops truncatus*). Most strandings occurred on Hatteras Island. Three animals were stranded alive, including a pygmy sperm whale (*Kogia breviceps*) and a harp seal (*Pagophilus groenlandicus*) that were both euthanized and a bottlenose dolphin that died on its own at the stranding site.

Given its proximity to the continental shelf, the Seashore continues to be the most likely location of marine mammal strandings, accounting for 59% of all strandings on the Outer Banks and 33% of all North Carolina strandings. Seven animals were documented as having human interaction lesions that may have contributed to the stranding event.

Introduction

Cape Hatteras National Seashore (Seashore) was established to preserve significant segments of unspoiled barrier islands along the Outer Banks of North Carolina from Nags Head, NC to Ocracoke Inlet. The Seashore's 67-mile long series of dynamic barrier islands face the Atlantic Ocean on the east side and the Pamlico sound on the west side. The waters off the Outer Banks, known for history, hurricanes, and shipwrecks, also happen to be a hotspot for marine mammal activity, and unfortunately, strandings. A stranding is defined as a marine mammal found on the beach that is unable to return to the water on its own and this can occur any time of the year. Recorded strandings date back to 1884, and the Outer Banks likely has the longest running record of marine mammal strandings in the world.

The barrier island chains of the Seashore extend into the Atlantic Ocean in very close proximity to the continental shelf. There are three main islands: Hatteras, Bodie, and Ocacroke.

The waters around these islands are influenced chiefly by the collision of the southern Gulf Stream and the northern Labrador Current just off the coast. The surrounding water temperatures can vary considerably as a result. At any given time, a wide diversity of marine mammals swim and feed very close to the Seashore. The warmer temperatures of the Gulf Stream bring southern species closer to the islands while the colder temperatures of the northern Labrador Current bring northern species closer to the islands. This increases the chances of marine mammals becoming stranded on the Seashore beaches.

Additionally, fisheries operations, strong hurricanes and Nor'easters, and infectious diseases may adversely affect mammal health and lead to a higher risk of stranding events along the Seashore. A variety of military training exercises also occur on a yearly basis along the east coast from Virginia to Florida; some include sonar. There is experimental evidence suggesting that anthropogenic sonar disorients and causes harm to marine mammals (Richardson, 1995). The Outer Banks Marine Mammal Stranding Network (OBXMMSN) is notified prior to these military activities and given special instructions if unusual strandings should occur during the

Atlantic spotted dolphin (deceased) that was stranded on the Seashore.

exercises. In the case of single stranded animals, National Oceanic and Atmospheric Administration (NOAA) personnel are notified immediately.

Over time, the Seashore has recorded individuals from a resident bottlenose dolphin population that resides in the local coastal environment with some individuals exceeding 50 years of age. Due to their year-round presence in social groups, bottlenose dolphins are the most commonly stranded species at the Seashore.

The Seashore provides approximately 70 miles of Oceanside shoreline for seals. The colder, northern waters of New England and Canada are home to multiple species of seals that reside there year-round. Seals will travel away from these areas in search of food when ocean conditions (temperature) are favorable. When ocean temperatures on the Outer Banks plummet during winter and spring months, seal sightings are a common occurrence at the Seashore.

Seals can be found "hauled out" to rest, avoid predators, and for thermoregulation on Seashore beaches. Four species of pinnipeds have been documented on the Seashore: harbor seals (*Phoca vitulina*), gray seals (*Halichoerus grypus*), hooded seals (*Crystophora crista*), and harp seals (*Pagophilus groenlandica*). By far, the most common species documented on Seashore beaches is the harbor seal. Most seals observed at the Seashore are young animals, approximately four months to two years old, and as such are often in various stages of body condition. The largest documented haul-out site within the Seashore occurs on Green Island (southwest of Bonner Bridge), where more than 30 individuals have been observed at one time.

Each year, we monitor Seashore beaches for stranded marine mammals and live seals. In this report, we summarize the 2017 stranding and seal sighting data at Cape Hatteras National Seashore.

Methods

Stranded bottlenose dolphin (deceased) on the Seashore.

By adhering to the Seashore's Cetacean Response and Pinniped Response protocols (NPS 2017a, b), National Park Service technicians locate live and dead marine mammals by patrolling the beaches of the three islands daily using a 4x4 truck or Utility Terrain Vehicle, and conducting walkthroughs on the Pamlico sound side of the islands during winter and spring. Technicians also receive and respond-to many strandings reported by the general public and the Outer Banks Marine Mammal Stranding Network (OBXMMSN), of which the Seashore is a member. The network is chiefly comprised of the National Park Service and the North Carolina Wildlife Resources Commission, and is governed by the North Carolina State Stranding Coordinator based out of the University of North Carolina – Wilmington (UNCW). Any member of the OBXMMSN can assist with any live or dead stranding event.

Once an animal is found, the condition of the animal is assessed to first determine whether it is alive or dead. If dead, the state of decomposition is assessed and if fresh or only moderately decomposed, a necropsy is conducted with the goal of determining what may have contributed to the stranding. Tissue samples are taken from each animal, preserved, and transferred to university research labs where they are used for research projects. In some cases, animals are found alive. Generally, due to the animal's poor condition and the lack of rehabilitation facilities, trained staff administer chemical euthanasia. University researchers, typically from UNCW or North Carolina State University, regularly receive tissue samples from the Seashore for histological analysis and assist with large-whale strandings.

The seals haul out on Seashore beaches primarily from December to April. They are generally healthy and strict monitoring protocols are followed to safely observe the seal at a distance so as not to alter its behavior. If an abnormality is observed (e.g. poor health, entanglement, broken appendage, open wounds), only then is intervention acceptable. If necessary, a capture and rehabilitation plan is devised and implemented by OBXMMSN members.

Results and Discussion

Strandings

In 2017, there were 33 strandings recorded at the Seashore, with the peak occurring in the winter-spring transition (January–April; Figure 1). In the remainder of the year, there were lower recorded strandings with none recorded in June and September. This follows the typical annual pattern of strandings for the Seashore.

Given its size and characteristic protrusion near the Gulf Stream, Hatteras Island typically has the most marine mammal strandings (Figure 2). Both Bodie and Ocracoke Islands had an average number of strandings and accounted for approximately one-quarter of the 2017 strandings.

The condition in which an animal arrives on the beach determines the level of data collection and

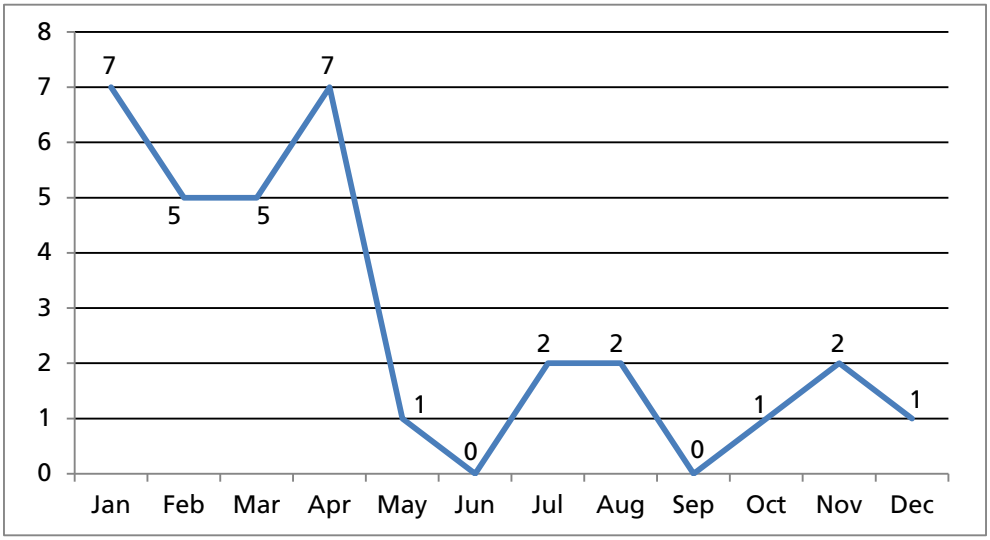

Figure 1. Marine mammal strandings by month at Cape Hatteras National Seashore, North Carolina in 2017.

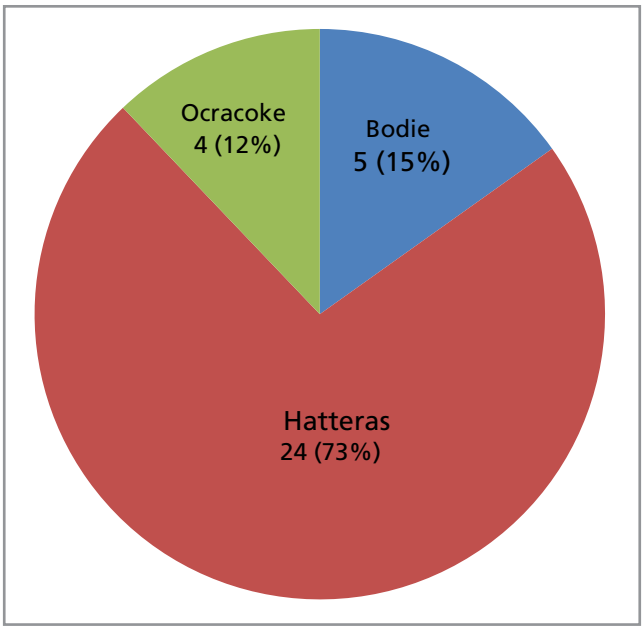

Figure 2. Strandings by island at Cape Hatteras National Seashore, North Carolina in 2017.

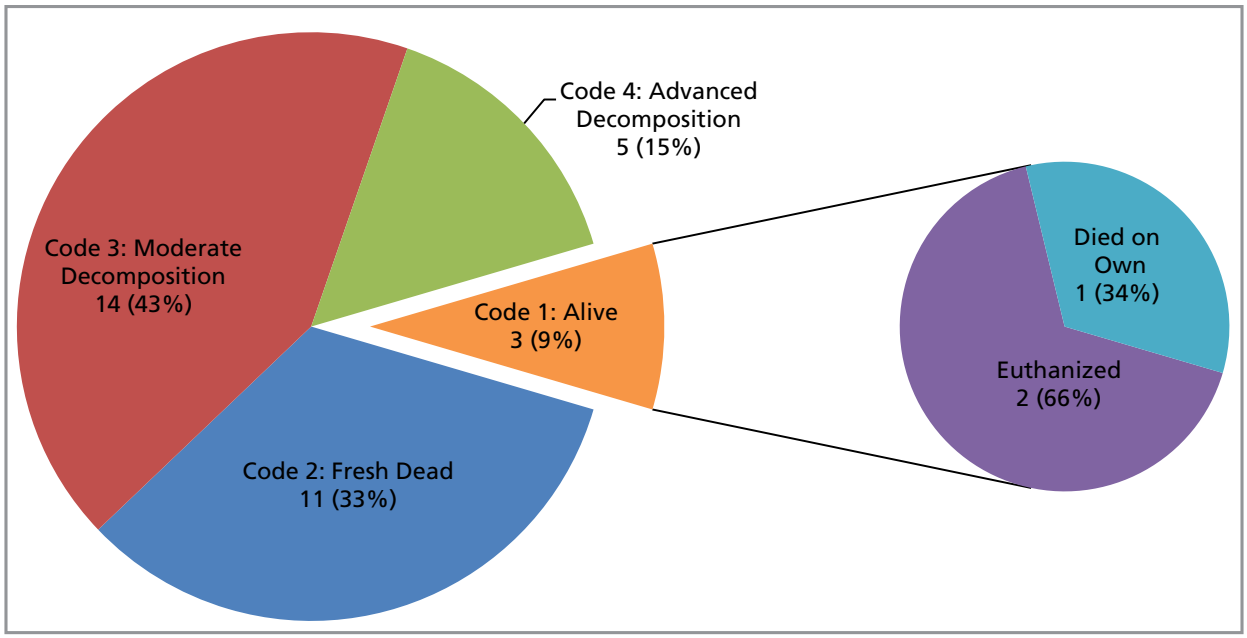

Figure 3. Condition codes of 2017 marine mammal strandings at Cape Hatteras National Seashore.

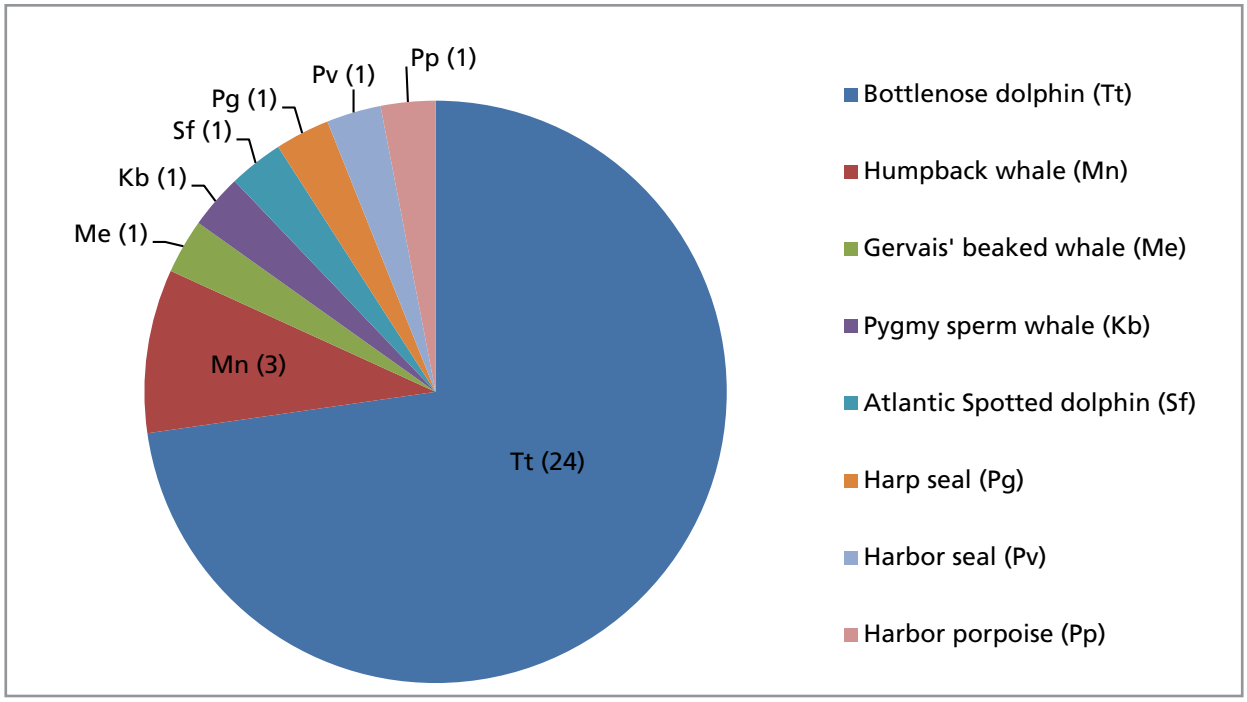

Figure 4. Species and number of individuals stranded at Cape Hatteras National Seashore in 2017.

sampling that follows. Very few animals experienced advanced stages of decomposition in 2017 (Figure 3). This is fortunate because advanced necropsy and sampling (histological, genetic, pathological, clinical, and life history) can be carried out to provide further insight into potential cause of death or reason for stranding. Three animals (9%) were stranded alive. Two of these were euthanized: a pygmy sperm whale (*Kogia breviceps*) and a harp seal (*Pagophilus groenlandicus*). The third was a bottlenose dolphin and it died on its own at the stranding site.

Eight stranded species were observed in 2017, which is within the range of stranded species (6–14) typically observed (Figure 4). One yearly trend that remains unchanged is the abundant presence of

stranded bottlenose dolphins; 73% of 2017 animals were bottlenose dolphins, which is within the historical range. Two pinniped species were documented as stranded in the winter/spring months; one harbor seal (deceased, moderate decomposition) and one harp seal (alive, euthanized). Three consecutive cases of humpback whales (*Megaptera novaeangliae*) were documented; an unusual occurrence. The unusually high numbers of humpback whale strandings along the Atlantic coast for 2017 led the National Oceanic and Atmospheric Administration to officially declare an Unusual Mortality Event for this species.

The marine mammal strandings documented in 2017 at the Seashore encompassed over 50% of total strandings documented on the outer banks as well as roughly one-third of total North Carolina strandings (Figures 5 and 6, respectively).

Human interaction is one common stranding element that is observed on a yearly basis. Whether or not human interactions directly contributed to each animal stranding remains hard to determine. Examples of human interactions include entanglement (fishery), hooking, ingestion of unnatural material, vessel trauma (e.g., boat-strike or propeller hits), gunshot, harassment, or mutilation. Of the 33 stranded animals recorded on the Seashore, seven (21%) showed signs of human interaction (Table 1). Five cases of human interaction involved bottlenose dolphins, while the remaining two involved humpback whales. One human interaction differed from the usual fisheries interaction because it involved plastics (CAHA388).

Live Seal Sightings

In 2017, seal activity was sparse and occurred from February to May. Two species of seals were documented on the Seashore for a total of ten sightings (some sightings are of the same individual). Generally, the most common seal observed at the Seashore is the harbor seal (*Phoca vitulina*); four individuals were observed. One harp seal (*Pagophilus groenlandica*) was also observed on multiple occasions based on pelt pattern ID (3/9-3/16). On the last sighting date (March 16) in the village of Salvo (Figure 7), this particular seal displayed symptoms of an acute neurological disease by thrashing uncontrollably and displaying erratic behavior with closed eyes. Based on veterinary consultation, the decision was made to capture and euthanize the seal. Potential causes for this affliction include harmful algal blooms (observed in the area on March 9, 2017) and associated impacts (such as domoic acid toxicosis), though neither was confirmed.

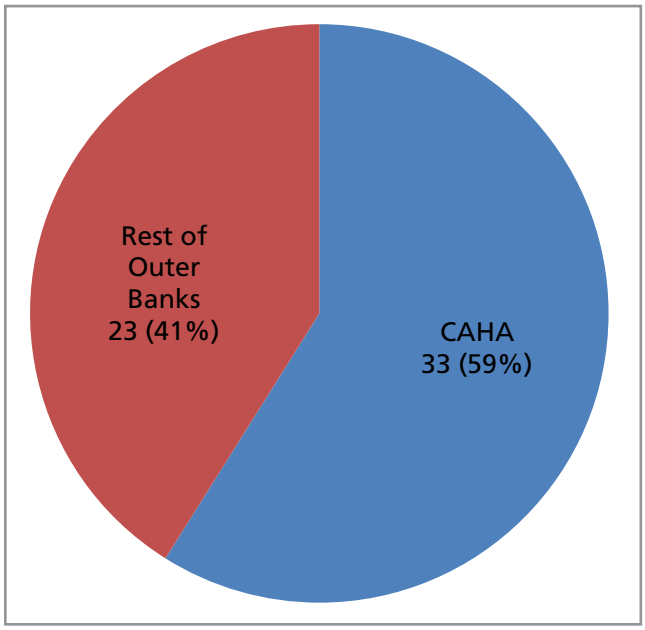

Figure 5. 2017 strandings in Cape Hatteras National Seashore compared to strandings in the rest of the Outer Banks.

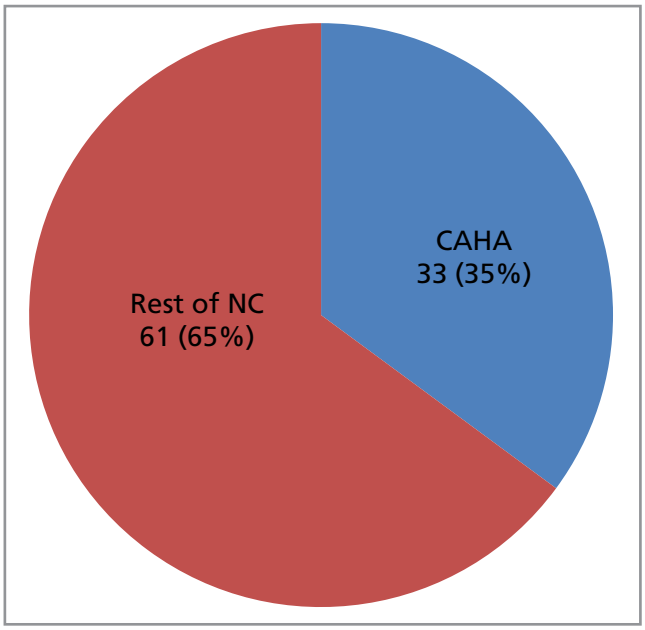

Figure 6. 2017 strandings in Cape Hatteras National Seashore (67 miles of shoreline) compared to strandings in the rest of North Carolina (~322 miles of shoreline).

Table 1. Observations of human interactions associated with marine mammal strandings at Cape Hatteras National Seashore, North Carolina in 2017.

Field ID #	Marine Mammal Common Name	Marine Mammal Common Name	Type of Human Interaction	Human Interaction Cases
CAHA378	*Tursiops truncatus*	Bottlenose dolphin	Fisheries	Pregnant female. Fresh monofilament impressions/ lacerations at left pectoral flipper, rostrum, and dorsal fin.
CAHA380	*Tursiops truncatus*	Bottlenose dolphin	Fisheries	Monofilament impressions and lacerations throughout all appendages, head, and rostrum. Commercial fishermen associated with the event were contacted on-site. Investigation by the National Marine Fisheries Service in cooperation with the National Park Service.
CAHA381	*Tursiops truncatus*	Bottlenose dolphin	Fisheries	Monofilament impressions and lacerations throughout all appendages, head and rostrum. Commercial fishermen associated with the event were contacted on-site. Investigation by the National Marine Fisheries Service in cooperation with the National Park Service.
CAHA387	*Tursiops truncatus*	Bottlenose dolphin	Fisheries	Stranded alive; died on site. Transferred to North Carolina Department of Marine Fisheries. No data available.
CAHA388	*Tursiops truncatus*	Bottlenose dolphin	Plastics	Stomach full and compacted with plastics of various shapes and sizes.
CAHA391	*Megaptera novaeangliae*	Humpback whale	Fisheries	Lacerations at insertion and leading edge of right pectoral flipper. Multiple healed lacerations at peduncle near anus. Lacerations at leading edge of right fluke blade.
CAHA393	*Megaptera novaeangliae*	Humpback whale	Fisheries	Multiple line impressions and one laceration at left ventral flipper.

Figure 7. Harp seal in the village of Salvo on March 16, 2017.

Gray seals (*Halichoerus grypus*) are less common to this area and none were observed in 2017. One unidentified seal sighting occurred. Most seal sightings this year occurred on Hatteras Island, with a few on Bodie Island. Monthly, this can be summarized as two in February, five in March, two in April, and one in May. Historically, the south end of Green Island has been used by harbor seals as a haul-out site; therefore a sighting doesn't necessarily imply one individual. Previously, up to thirty-three seals have been observed resting on the island; however, none have been observed since the spring of 2015. Dredging and bridge-building equipment has been present at Oregon Inlet for multiple years, which is 0.4 miles from the Green Island haul-out site. The reduction in seal activity in/around Oregon Inlet may be attributed to the large equipment and anthropogenic noise within the 0.3-mile-wide inlet and the associated bridge construction project.

Atlantic Fleet Training and Testing (AFTT)

In 2017, no military training exercise operations along the Atlantic coast were reported to the Seashore.

Historical Data

The observed data suggest that the Seashore receives a large proportion of the total strandings in the Outer Banks and the state of North Carolina (Figure 8 and Figure 9). Strandings on the Seashore account for an average of 53 individual animals per year from 2008 to 2017. This is an average of nearly two-thirds of all Outer Banks strandings and one-third of all North Carolina strandings during this same period.

Since 2001, there has been a consistent effort to locate and document stranded marine mammals on the Seashore; animals were located by an established stranding network. The number of strandings at the Seashore has varied from 29 to 103 individuals, and a recent noticeable decreasing trend is observed beyond 2013 (Figure 10). Due to the Seashore's close geographic position to the continental shelf (and Gulf Stream), the range of 29 to 103 individuals is still high compared to bordering states that are farther from the shelf (i.e., Virginia and South Carolina). This trend is expected to continue into the future.

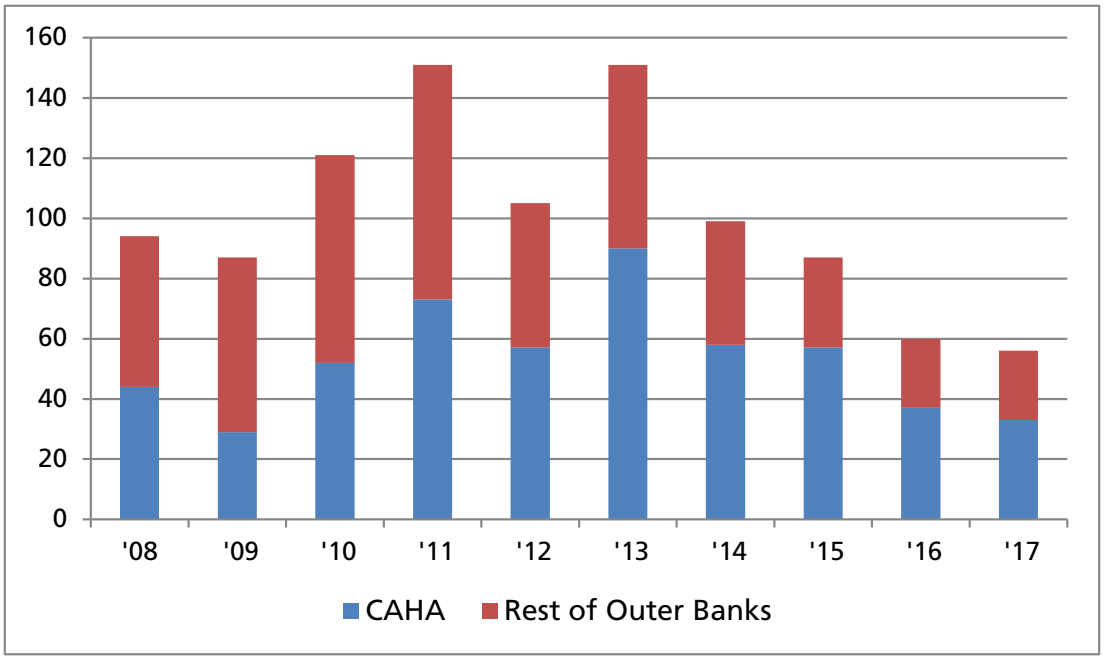

Figure 8. Stranding history at Cape Hatteras National Seashore compared to the rest of the Outer Banks.

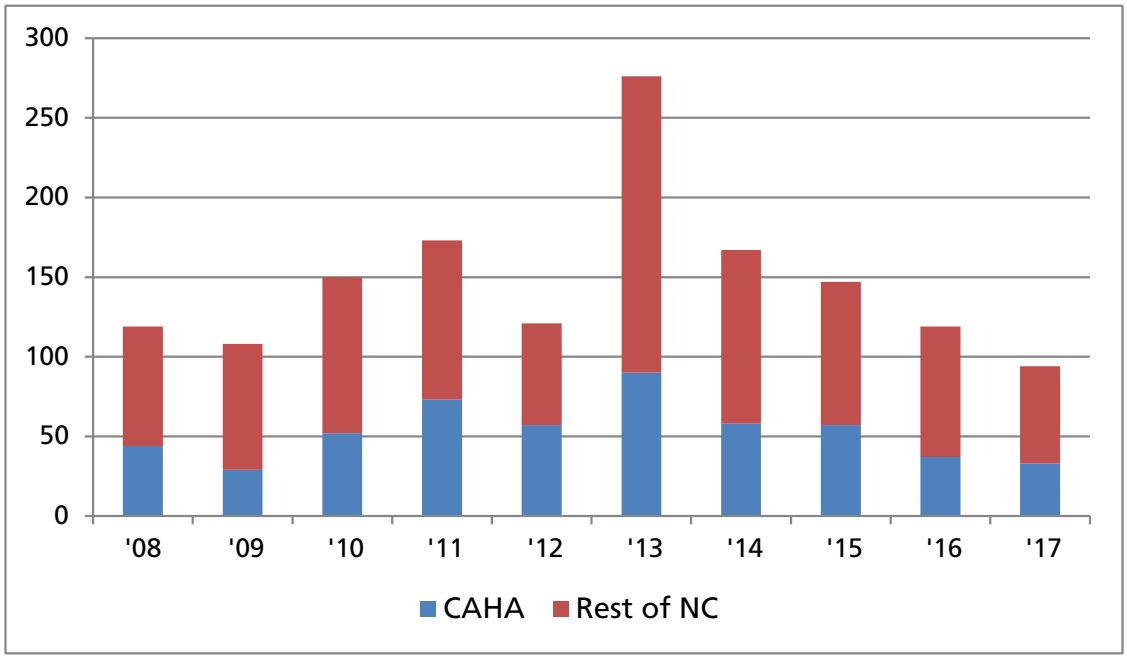

Figure 9. Stranding history at Cape Catteras National Seashore compared to the rest of North Carolina.

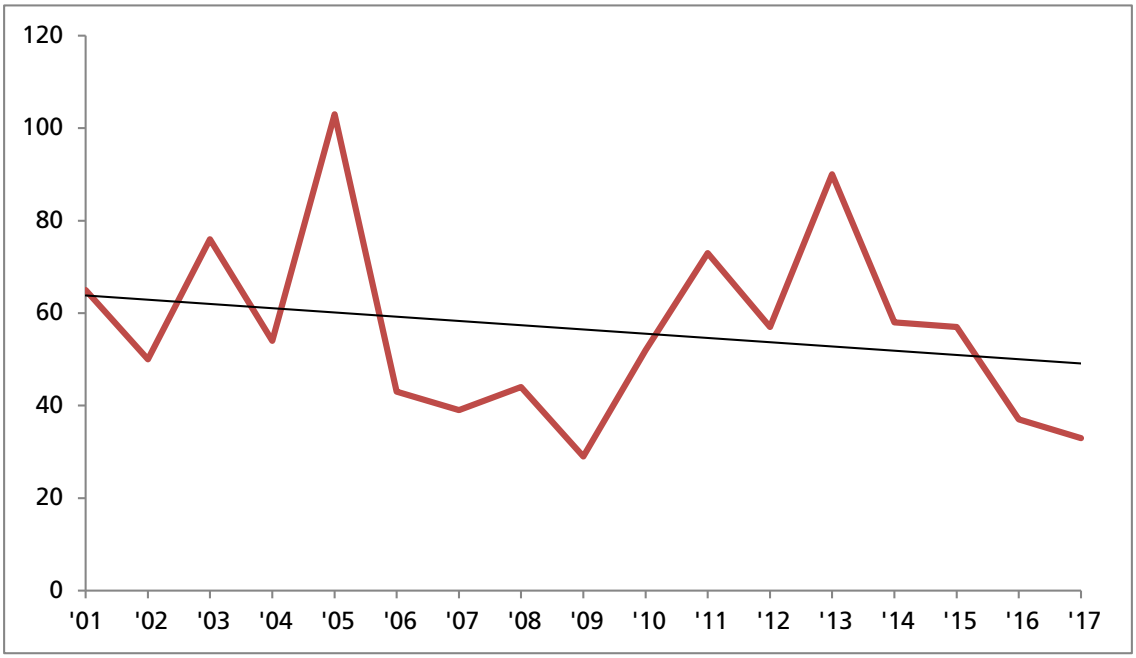

Figure 10. Historical number of strandings on the Seashore, 2001–2017.

Literature Cited

National Park Service (NPS). 2017a. Standard operating procedure (draft): Cetacean response at Cape Hatteras National Seashore.

National Park Service (NPS). 2017b. Standard operating procedure (draft): Pinniped response at Cape Hatteras National Seashore. Cape Hatteras National Seashore, North Carolina, USA.

Richardson, W.J., C. R. Greene, C. I. Malme, and D. H. Thomson. 1995. Marine mammals and noise. Academic Press, San Diego, CA.

The Department of the Interior protects and manages the nation's natural resources and cultural heritage; provides scientific and other information about those resources; and honors its special responsibilities to American Indians, Alaska Natives, and affiliated Island Communities.

NPS 603/148348, September 2018

National Park Service
U.S. Department of the Interior

Natural Resource Stewardship and Science
1201 Oak Ridge Drive, Suite 150
Fort Collins, Colorado 80525