

MARINE MAMMAL AND SEA TURTLE STRANDING RESPONSE 2011 GRANT REPORT

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VIRGINIA
AQUARIUM
STRANDING RESPONSE



Virginia Coastal Zone
MANAGEMENT PROGRAM

*VIRGINIA AQUARIUM FOUNDATION
STRANDING RESPONSE PROGRAM*

*Marine Mammal and Sea Turtle
Stranding Response
2011 Grant Report*

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**A FINAL REPORT TO THE
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COMMONWEALTH OF VIRGINIA**

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The mission of the Virginia Aquarium & Marine Science Center is to inspire conservation of the marine environment through education, research and sustainable practices. The Aquarium is operated by the City of Virginia Beach in cooperation with the Virginia Aquarium Foundation (VAQF) and the Commonwealth of Virginia.

The Virginia Aquarium Research & Conservation Division is responsible for directing the organization's efforts in these areas. With primary support from the VAQF, the division is dedicated to conservation of the marine environment through research, partnerships, marine animal rescue and education.



Virginia Coastal Zone MANAGEMENT PROGRAM

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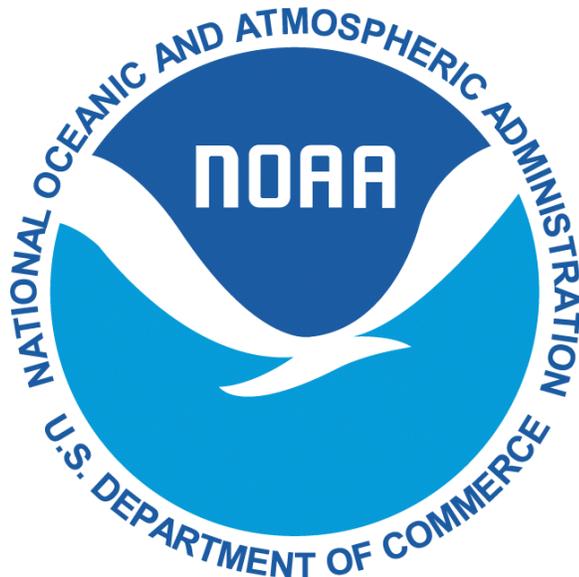


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INTRODUCTION

All marine mammals and sea turtles are designated as protected species by the Marine Mammal Protection Act (1972) and/or the Endangered Species Act (1973). The Virginia Aquarium & Marine Science Center Foundation Stranding Response Program (VAQS) holds permits from state and federal authorities for all activities in this report related to marine mammal and sea turtle stranding response and research. VAQS has been responding to marine mammal and sea turtle strandings (more than 4,700) in Virginia since 1987. The Aquarium and the Virginia Aquarium Marine Animal Care Center (MACC) are located in Virginia Beach, VA. VAQS currently maintains the state marine mammal stranding database. In addition, VAQS and their cooperators coordinate the Virginia Sea Turtle Stranding and Salvage Network throughout Virginia. Sea turtle stranding data are recorded in the VAQS database and the state sea turtle stranding database.

VAQS uses staff, volunteers and other organizations (cooperators) to report, record, collect, and examine stranded animals. The organization and training of primary response cooperators is crucial to the stranding network. Rapid response to strandings can result in the rescue of live animals and the collection of valuable data that may otherwise be lost due to decomposition and/or scavenging. Formed in 1991, the VAQS Stranding Response Team (Team) is composed of staff and volunteers trained to respond to stranded animals. VAQS staff provides training programs for 65 Team volunteers and personnel from cooperating agencies and organizations. Instruction in biology, ecology and both live and dead stranding response protocols are provided for marine mammal and sea turtle species found in Virginia. These cooperative training efforts have included the U.S. Coast Guard, U.S. Fish and Wildlife Service, NOAA Fisheries Service (NMFS), The Nature Conservancy, Virginia Marine Resources Commission, Virginia Department of Game and Inland Fisheries, Virginia Institute of Marine Science (VIMS), state parks, national wildlife refuges, and regional law enforcement authorities. As a result of these continuing efforts, VAQS continues to maintain and improve statewide stranding response.

Marine mammal groups found in Virginia include cetaceans (dolphins, porpoises and whales), pinnipeds (seals) and sirenians (manatees). Marine mammal strandings occur in all months of the year. During the 1990s, Virginia averaged 61 marine mammal strandings per year with a high of 105 in 1994. Since then, strandings have increased dramatically. For the years 2002-2011, Virginia has averaged 103 marine mammal strandings (Fig. 1).

It is important for organizations such as VAQS to examine stranded marine mammals because these species are very difficult to study in the wild. Very little is known about the natural history of many marine mammal species and strandings provide a rare opportunity to thoroughly examine these animals. With the advent of new techniques such as molecular genetic analyses, stranded animals provide a wealth of information about wild populations that are difficult and expensive to study *in situ*. In some species such as pygmy/dwarf sperm whales and beaked whales, data collected from stranded animals provides the best information available on the animals' natural history. Stranding records can indicate seasonal trends in presence and suggest areas of high concentration of marine mammal species such as bottlenose dolphins and harbor porpoises (Read and Murray, 2000). Spatial and temporal trends in marine mammal mortalities, such as those caused by unusual mortality events and/or fisheries interactions, can also be monitored from stranding records. Each stranded marine mammal is thoroughly examined including body measurements, external appearance, and internal condition (via necropsy). Data and tissues are collected for life history, histological and toxicological studies. Samples are collected by VAQS and supplied to the Smithsonian Institution, Armed Forces Institute of Pathology, NMFS and numerous other research organizations.

In addition to dead strandings, the VAQS Team responds to several live marine mammals each year. The level of response depends on the type of animal. Sick or injured baleen whales and toothed whales larger than 10 feet in length are virtually impossible to rescue and often must be humanely euthanized. Some smaller cetaceans can be rescued if found quickly and in

suitable condition. They must be supported in water as soon as possible and treated for shock. Successful cetacean rehabilitation requires large tanks, experienced personnel and access to sophisticated equipment. Currently, VAQS is not equipped to attempt long-term rehabilitation of a cetacean. As soon as possible, animals that are good candidates for rehab are transferred to other facilities. Pinnipeds (seals), on the other hand, are amphibious animals and can be transported in canine kennels. The MACC has a seal holding pen adequate for short-term triage and a seal rehabilitation unit capable of holding one seal. Seals in triage can be held in a 4' x 4' dry pen with gated entry into a 4' x 4' pool. Following triage, animals are placed in a seal rehabilitation area (large enough for one animal) or are transferred to other facilities in the stranding network that specialize in long-term rehabilitation and release of pinnipeds. Since 2001, VAQS has responded to an average of 5.1 cetaceans and 4.0 pinniped live strandings in Virginia each year. The VAQS Team also responds to live animal emergencies in northeastern North Carolina. In recent years, the number of responses to live marine mammal strandings in North Carolina has increased (8.1 per year since 2001).

Five species of sea turtles (loggerhead, Kemp's ridley, leatherback, green, and hawksbill) are found in Virginia. Sea turtle strandings occur primarily in the late spring, summer and fall. The VAQS Team responded to an average of 83 sea turtle strandings per year during the 1990s. Since then, strandings have increased dramatically. Since 2002, Virginia has recorded an average of 271 sea turtle strandings per year (Fig. 6).

Sea turtles are examined in much the same way as marine mammals. Data are recorded for all strandings, and necropsies are performed on many fresh stranded carcasses. Stranding trends, including probable causes of mortalities, are monitored through stranding records. Stranded sea turtles are checked for flipper and PIT tags and results are reported to NMFS. A small number of loggerhead sea turtles nest on Virginia beaches each year. In addition, a green sea turtle was recorded nesting for the first time in Virginia in 2005. The VAQS Team participates in a nest sitting program with the Back Bay National Wildlife Refuge. Live strandings of sea turtles have also increased and the VAQS Team has successfully rehabilitated and released many of the stranded turtles. Since 2001, there have been an average of 10.8 live sea turtle strandings in Virginia each year. In addition, VAQS Team expertise in sea turtle rehabilitation has resulted in many turtles (more than 60) that have stranded outside Virginia being transferred to VAQS for rehabilitation.

In addition to stranding response, VAQS conducts research on marine mammals and sea turtles. Photo-identification is a non-invasive technique that takes advantage of naturally occurring marks on animals. Photo-ID is used to study both bottlenose dolphins and large whales, primarily humpback whales, in the nearshore waters of Virginia and North Carolina. VAQS has also been conducting research on loggerhead sea turtles since 1990. Early research involved the study of growth potentials of loggerhead hatchlings in controlled environments. Post-release satellite tracking of aquarium-reared loggerheads was conducted with the help of VIMS in the 1990s. Growth and nutritional studies continue with hatchling loggerheads and non-releasable loggerheads, Kemp's ridleys and greens. With the support of additional grants and donations in recent years, VAQS has been able to conduct numerous satellite tagging projects with rehabilitated sea turtles.

VAQS Team staff and volunteers present the results of their research at national and regional workshops, at professional meetings and in numerous publications (Appendix I). In addition, VAQS research has been presented to more than 12 million people through innovative Aquarium exhibits and public programs. Staff and volunteers present educational programs related to stranding events, on-going stranding response and research throughout the year. Recently, staff have been gaining valuable experience in live animal rehab by visiting and working with staff at other facilities. VAQS staff also serves on federal management and scientific teams studying the interactions of protected species with commercial fisheries and other potentially threatening human activities. They regularly use their expertise and data to comment on projects that may have an effect on regional marine mammal and sea turtle populations, including a proposed naval

undersea training range off Virginia's eastern shore, and possible offshore energy exploration and development. Finally, public and private organizations conducting natural resource surveys and environmental assessments routinely utilize the VAQS stranding database and expertise for information regarding protected species in Virginia.

STRANDING RESPONSE METHODS

When examining dead stranded marine mammals and sea turtles, the VAQS Team follows data collection protocols developed by NMFS (Appendix IV). For marine mammals, Level A data are collected on all strandings and recorded in the marine mammal stranding database. Level A data include:

observer	date
species	location
condition	body length
weight	gender
findings of human interaction *	
sample collection and dissemination	
disposition of carcass	

(* Findings of human interaction consist of clues on a carcass that human activities were responsible for injuries and/or the death of the animal. The two most common types of human interactions are fishery entanglements and vessel strikes. In addition, special data collection protocols and forms have been developed by VAQS for assessing human interactions in marine mammal and sea turtle strandings).

Level B and C data are collected from fresh carcasses. Level B and C data are recorded on numerous other data sheets often provided by other research organizations. These more involved data include:

- age
- extensive body measurements
- descriptions and photographs of external & internal appearance
- parasite and pathology occurrence
- stomach contents
- reproductive status
- genetic information
- tissue contaminant levels
- information for specific research

In order to provide timely, accurate and usable data, VAQS compiles these data in a database. The computer system, database and software allow for analytical study of the data including GIS mapping. When combined with the extensive VAQS photo and video catalogs, the marine mammal stranding database can be an invaluable tool for scientists, natural resource managers and other state and federal agencies.

Sea turtle data are collected in much the same manner as for marine mammals (Appendix IV). In addition to the Level A data listed above, the VAQS Team also examines sea turtle carcasses for several types of tags. PIT tags and wire tags require specialized equipment in order to be detected. Fresh turtles are examined for stomach contents, gender and findings of human interaction.

Live marine mammals and sea turtles have become an increasing part of stranding response for the VAQS Team. Live stranding response is quite different from responding to dead animals. While time is important when responding to a fresh dead stranding, timely response is crucial to the welfare and potential survival of live stranded animals. Once a live stranding is confirmed, staff and volunteers can be ready to respond in minutes. Cooperating agencies, especially on Virginia's eastern shore, have immensely improved the VAQS Team's ability to rescue animals.

Whenever possible, live stranded animals are rushed to the Stranding Center where they are immediately treated for shock and other obvious injuries. VAQS veterinary staff and the Team veterinary technician have developed protocols and data sheets for live animal response and rehabilitation. VAQS staff has established an excellent working relationship with medical diagnostic service companies and with local vet clinics that provide valuable services in the form of blood and sample analyses, radiograph support and doses of less common drugs. In addition, the medical team works with several specialized veterinarians and technicians, including eye specialists and advanced diagnostic technicians, on special cases. The VAQS Team is now experienced at working with live stranded sea turtles and seals and has gained valuable experience with live cetaceans. VAQS sea turtle rehabilitation experience was put into action during response to the Deepwater Horizon Oil Spill in the Gulf of Mexico in 2010. Three VAQS staff were deployed over a total period of more than five weeks to assist sea turtle rehabilitation efforts in Louisiana and Florida.

DISCUSSION OF 2011 VIRGINIA STRANDING DATA

MARINE MAMMALS

VAQS stranding data are presented for the calendar year 2011. A total of 90 marine mammals stranded in Virginia during 2011 (Table 1). In the past ten years, the number of marine mammal strandings has varied from a low of 85 in 2007 to a high of 119 in 2005 (Fig. 1). The high numbers of strandings in 2003 and 2005 were accompanied by high numbers of harbor porpoise strandings (Fig. 5B). Marine mammal strandings occur in all months of the year, but some marine mammals (*i.e.* bottlenose dolphins, harbor porpoises and seals) tend to strand seasonally, while others (*i.e.* large whales and other cetaceans) can occur at any time of the year (Fig. 2). In the past ten years, bottlenose dolphins have comprised the majority of the marine mammals that strand each year. 2011 was another active year for VAQS with bottlenose dolphins comprising 63% of the strandings (Fig. 3). Marine mammal strandings occurred throughout Virginia's ocean and bay waters. Normally, the strandings are most common along the eastern shore and southern shore of the Chesapeake Bay mouth and the southern ocean coast (Fig. 4). Pictures of some of the notable marine mammal strandings from 2011 are included in Appendix II.

Marine mammals are divided into five data groups for analyses. These data groups are: (1) bottlenose dolphin - the most common marine mammal in Virginia, (2) harbor porpoise - a common small cetacean that occurs in late winter and spring, (3) large whales - primarily baleen whales such as humpback, fin, right and minke whales, (4) other cetaceans - primarily oceanic species with low stranding rates such as pilot whales, pygmy and dwarf sperm whales, pelagic dolphins and beaked whales, and (5) pinnipeds - harbor, harp, hooded and gray seals. Live stranded animals are included in these analyses and are also addressed separately below.

Live strandings

In 2011, VAQS recorded nine live marine mammal strandings, three of which stranded in northeastern North Carolina (Table 2). These strandings occurred throughout the year and consisted of four seals and five cetaceans. Seals were recovered, provided with emergency medical care and triage, and then provided with long-term rehabilitation, if needed. One of the seals was successfully rehabilitated and released. The five cetaceans included one bottlenose dolphin, one striped dolphin, one pygmy sperm whale, one dwarf sperm whale and one humpback whale. Four of the cetaceans that stranded either died on the beach or were humanely euthanized. The humpback whale was entangled in commercial fishing gear but apparently freed itself (see Appendix II).

Bottlenose dolphin

Bottlenose dolphins (*Tursiops truncatus*) are the most common marine mammals sighted in Virginia waters. They are also the most commonly stranded marine mammals in the state. Most dolphins strand from April to October, which is concurrent with their seasonal appearance in Virginia coastal waters (Barco *et al.* 1999; Fig. 2). During 2011, 57 bottlenose dolphin strandings were recorded in Virginia (Figure 5A). This number was identical to 2010 and much lower than 2009 when 80 dolphins were stranded, a record high number for Virginia since the 1987 dolphin mortality event. Strandings occurred primarily along the Atlantic Ocean and lower Chesapeake Bay shorelines, although they were also recovered inside the bay, as well (Fig. 4). In 2011, 39% (22) of the strandings occurred in Virginia Beach, 40% (23) on the eastern shore, 3.5% (2) in Norfolk and 17.5% (10) on the western shores of Chesapeake Bay north of the James River. Gender was determined for 43 of the 57 stranded dolphins. Females comprised 35% (15) and males comprised 65% (28) of the known gender animals. Twenty two (39%) of the stranded dolphins (includes estimated lengths) were less than 160 cm (defined as “young of the year”, YOY), the approximate size of a one-year old dolphin (Fig. 5A; Urian *et al.* 1996). Examination of YOY has revealed evidence of infanticide in the form of broken bones, hemorrhaging and organ damage (Dunn *et al.* 2002). Of the dolphins that were fresh to moderately decomposed (n = 35), signs of human interaction could not be determined in 25 (71%), were positive in nine (26%), and were not observed in one (3%). Most of the signs of interactions were related to fisheries entanglements.

Harbor porpoise

Harbor porpoise (*Phocoena phocoena*) were observed only occasionally in Virginia stranding records during the 1980's. Increases in harbor porpoise strandings occurred along the mid-Atlantic coast in 1993-1994 and the increases were most dramatic in Virginia (Cox *et al.* 1998, Swingle *et al.* 1995). In recent years, they have often been the second most commonly stranded marine mammals in Virginia. Harbor porpoises typically strand in late winter and early spring (Fig. 2), and strandings occur along the ocean shorelines (Fig. 4). During 1999, 40 harbor porpoise strandings were recorded in Virginia, but in 2000, that number dropped precipitously to only four. 2001 was another big year (30 strandings), followed by only six harbor porpoise strandings in 2002. Subsequent years have seen the numbers vary widely, from a high of 22 strandings in 2005, to a low of two strandings in 2011. There were two harbor porpoise strandings in Virginia in 2011 (Fig. 5B). Whether these stranding patterns relate to fluctuations in abundance of the population or stocks, a threat that is cyclical in nature, or other factors, is not yet known.

Large whales

Large whales do not strand often in Virginia. With the exception of the sperm whale, large whales are typically baleen whales such as humpbacks or fins. All of the large whales normally found in Virginia are endangered species. Because of the logistics involved in examinations of large whales, an extensive large whale response protocol was developed (Blaylock *et al.* 1996). The protocol was developed in response to increased strandings of humpback whales in Virginia and North Carolina in the early 1990's (Swingle *et al.* 1993, Barco *et al.* 2002). The response protocol has since been further developed and is specifically applied to northern right whales (McLellan *et al.* 2004). During 2008, there were no large whale strandings in Virginia. In 2011, VAQS responded to one humpback whale (*Megaptera novaeangliae*), one sei whale (*Balaenoptera borealis*) and one sperm whale (*Physeter macrocephalus*) in Virginia, and one sperm whale in North Carolina. Overall, there have been 2.7 large whale strandings per year in Virginia since 2002 (Fig. 5C). In addition to strandings, VAQS also responds to large

whale entanglements. VAQS staff has been qualified to respond to entangled whales by the Provincetown Center for Coastal Studies in MA. In addition, specialized whale disentanglement gear and supplies are stored at the VAQS Stranding Center for use in the mid-Atlantic region. This equipment and training were essential in the successful disentanglement of a humpback whale in the waters off Virginia Beach in 2007.

Other cetaceans

“Other cetacean” species generally include pelagic delphinids, *Kogia* species and beaked whales. This group accounted for 17 strandings during 2011. These strandings typically occur along the ocean and lower bay shorelines and sometimes involve live animals. In 2011, there were nine common dolphins (*Delphinus delphis*), one Risso’s dolphin (*Grampus griseus*), two striped dolphins (*Stenella coeruleoalba*), one pygmy sperm whale (*Kogia breviceps*), one dwarf sperm whale (*Kogia sima*) and three small cetaceans that were unable to be identified to species.

Pinnipeds

Pinniped strandings have generally increased in Virginia since the early 1990s, and 11 strandings were recorded from Virginia during 2011 (Fig. 3, 5D). The strandings were identified as five harp seals (*Phoca groenlandica*), one gray seal (*Halichoerus grypus*), and four harbor seals (*Phoca vitulina*). Regular sightings of seals in Virginia continue to be common occurrences in winter and early spring. During 2011, there was again a small number of harp seal strandings in Virginia. Harp seals are known as “ice seals” because their normal range and preferred habitats involve offshore pack ice. This raises the question – what are ice seals doing in Virginia? There are no apparent answers to this question as yet, but data continues to be collected by the VAQS Team and others in the stranding network that may help to shed light on this phenomenon.

Improved education and training of stranding network personnel have decreased the unwarranted captures of otherwise healthy seals which have hauled-out to rest on Virginia shorelines, piers, jetties and rock islands. One seal stranded alive during the year, though it did not survive. Seal rescue and rehabilitation efforts continue to represent significant challenges for the VAQS Team and they continue to improve and gain valuable experience and expertise.

SEA TURTLES

2011 was another year of decreased levels of sea turtle strandings in Virginia (Table 3). Since 2002, Virginia has experienced both extremely high (531 in 2003) and relatively low (173 in 2011) numbers of sea turtle strandings, with an average of 271 per year (Fig. 6). The VAQS Team responded to 149 sea turtle strandings during the year and an additional 24 strandings were reported by stranding network cooperators trained by VAQS (Table 3). Cooperators’ reports are given VASC, VDGIF, and other unique numbers in the database. VASC reports originate from Chincoteague, Eastern Shore and Back Bay National Wildlife refuges, and also from Kiptopeke and False Cape State Parks. June was the busiest month with 40 strandings (23%), but there were significant numbers of strandings in May and the months of July through November, as well (Fig. 7). Loggerheads (*Caretta caretta*, n = 131) were the primary species recorded, followed by Kemp’s ridleys (*Lepidochelys kempii*, n = 30), greens (*Chelonia mydas*, n = 5), leatherbacks (*Dermochelys coriacea*, n = 4) and three sea turtles that were unidentified to species (Fig. 8). The distribution of strandings was primarily along the ocean and lower bay shorelines (Fig. 9). The eastern shore of Virginia was the area where 36% (62) of the sea turtle strandings were found. Accomack County accounted for 13% (23) and Northampton County for 23% (40) of the total. Strandings in Virginia Beach, Norfolk and other southside cities contributed to 50% (86) of the total. The remainder 14% (24) originated from the western shores of the Chesapeake Bay

north of the James River.

Improved efforts by VAQS to recruit and train cooperators have greatly enhanced stranding response on the eastern shore. Externally, a number of dead stranded turtles appeared to have been hit by vessels (n = 45, 26%). In some cases, the carcasses were fresh enough to conduct thorough necropsies. Necropsies on stranded turtles sometimes reveal signs of human interaction in the form of fish lures, hooks, line and plastic debris in the gut. This fishing equipment could be from recreational or commercial (long-line) gear and may have been actively fishing or “ghost” gear. Further understanding the impacts that recreational and commercial fishing have on turtles is needed. Lastly, the VAQS Team participated in several research projects with NMFS and USFWS. Flippers were collected from sea turtles for studies on aging, and skin samples were collected for a genetic study. Live turtles rehabilitated by VAQS were used in tracking studies of post-release movements. Pictures of some of the notable sea turtle strandings in 2011 are included in Appendix III.

Live strandings

2011 was another busy year for the VAQS Team with 15 live sea turtle strandings from Virginia – 12 loggerheads, two Kemp’s ridley, and one sea turtle that was unidentified to species. Eleven of these turtles were successfully recovered, rehabilitated and released, and two remained in rehab at the end of the year. In addition, four sea turtles (2 from New Jersey, 1 from Maryland, 1 from Delaware) were transferred to the VAQS Stranding Center from other stranding network facilities outside of Virginia. During the year, two of these sea turtles were released. Throughout the year, the VAQS Team spent many hours medicating and feeding sea turtles. Some of the sea turtles had stranded in the previous year and had been in rehab for many months prior to release. When the year ended, there were two sea turtles in rehab at the VAQS Stranding Center (Table 4).

VAQS ACTIVITIES DURING 2011

VAQS conducted trainings on biology, ecology and stranding response protocols for sea turtles and marine mammals during the year. Trainings were provided to Virginia Aquarium Outreach Instructors, VAQS Team volunteers and to other cooperators in the state stranding network including: Back Bay National Wildlife Refuge, Eastern Shore National Wildlife Refuge, Chincoteague National Wildlife Refuge; Virginia Beach police, animal control and beach maintenance personnel; U.S. Coast Guard; Dam Neck and other military base natural resources personnel; personnel from VMRC, VDGIF, and state parks; The Nature Conservancy and other natural resources groups. In addition, lectures were presented on the topics of marine mammal and sea turtle necropsies, new findings from sea turtle research, and federal efforts to manage and protect marine mammals. VAQS staff attended numerous conferences and workshops and shared knowledge of sea turtle and marine mammal strandings in Virginia. Educational programs were presented at many local and regional festivals, to school groups and civic organizations as well as during special VAQ events. A portable exhibit was utilized showing the activities of the VAQS and the Virginia stranding network, and promoting conservation of marine animal species and their habitats. A complete list of all professional, education and training activities is included in Appendix I of this report.

Grant funds were used in conjunction with funds from the Virginia Aquarium Foundation to staff the Aquarium’s Marine Animal Care Center with a full-time stranding response manager, stranding response volunteer & information specialist, two full-time stranding response technicians, and two hourly stranding assistants. The VAQS Team completed another calendar year using an on-call system developed to ensure that volunteers were available for stranding response, seven days per week, for the entire year. Created and managed by volunteer team response leaders, the on-call system greatly enhances the Team’s readiness and rapid response.

VAQS Team volunteers logged more than 16,900 hours during 2011.

VAQS continued several research projects that have been ongoing for many years. The 19th annual Dolphin Count was conducted in July. Bottlenose dolphins were recorded by shore-based and boat-based observers along Virginia's ocean coast. While not a scientific abundance study, the results of the annual dolphin count indicate the importance of Virginia's coastal waters as habitat for bottlenose dolphins. Photo-identification research on bottlenose dolphins continued for the 21st year. The photo-ID catalog now contains more than 1250 individual dolphins, some of which are regular visitors to Virginia and have been observed in multiple years. VAQS continued to curate the Mid-Atlantic Humpback Whale Photo-Identification Catalog. Results of matching efforts between the mid-Atlantic catalog and others from the western North Atlantic continues to result in new data about the origin of many whales observed in Virginia (Barco *et al.* 2002). The catalog contains images from stranded and live whales observed in coastal waters from New Jersey through North Carolina. VAQS conducted another project working with a pound net fisherman in the Chesapeake Bay. The study further examined an alternate design for a pound net leader that will reduce the accidental entanglement of bottlenose dolphins and sea turtles. VAQS staff continues to conduct advanced necropsies on fresh-dead sea turtles to investigate causes of mortalities and to determine baseline health information for regional populations. Finally, nutritional and growth studies continued with sea turtles in the Virginia Aquarium's long-term and short-term collections.

SUMMARY

Data collected by VAQS and the Virginia stranding network continue to be critical to the long-term monitoring of sea turtle and marine mammal populations. Fresh-stranded cetaceans continue to be extensively sampled as part of a cooperative research project (involving the University of North Carolina at Wilmington, Duke University and the NC State Vet School) to better assess marine mammal health. These types of studies are crucial to developing a better understanding of the overall health status of marine mammal populations in the wild. Stranding records from Virginia indicate that marine mammal strandings, particularly bottlenose dolphins, remain very high and that a significant percentage of the mortalities are related to human activities such as commercial fishing. For this reason, VAQS staff serves as expert members on three federal Take Reduction Teams to reduce the incidental mortalities of marine mammals in commercial fishing operations. The recently enacted changes to the rules regulating pound net leaders, supported by VAQS research efforts, should reduce the incidental takes of dolphins and sea turtles. Sea turtle strandings declined dramatically in 2005-2007, but numbers then rose significantly in 2008 and 2009. With numbers reduced in 2011 to their lowest levels in more than 10 years, it is hoped that management efforts informed by stranding data are beginning to reduce sea turtle mortalities. Monitoring stranding activity in 2012 should continue to provide valuable information to help understand if this decrease represents a significant trend, or only a temporary change. The VAQS continues to work closely to monitor and investigate the high rates of sea turtle strandings on Virginia's eastern shore. In addition, data collected from strandings provides excellent information on life histories of the many species of marine mammals and sea turtles that inhabit Virginia waters. Stranded animals are the only source of this type of scientific information for most species of marine mammals. The sei whale and True's beaked whale strandings in 2003, the melonheaded whale strandings in 2008 and the Sowerby's beaked whale strandings in 2009 provide excellent examples of the unique opportunities that strandings provide to study rare and previously unknown species from Virginia.

The VAQS Stranding Center has increased its role in the response, rescue and rehabilitation of sea turtles and seals. The high level of live stranding responses continued in 2011, and the need for a fully functional response and rehabilitation facility is clear. VAQS is planning to continue its efforts on behalf of live stranded sea turtles and marine mammals in Virginia and northeastern North Carolina and plans are being developed for a larger and better-equipped

marine animal care facility.

Marine mammal and sea turtle strandings in Virginia remained at significantly high levels during 2011. Though sea turtles and bottlenose dolphins were stranding in lower numbers, there remains much more work to do. Continued monitoring and reporting of these trends in strandings of protected species will be priorities for the stranding network in 2012.

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Table 1: Marine mammal strandings in Virginia during 2011, n = 90.
 (Data from the VAQS Marine Mammal Stranding Database)
 [Length=cm; * indicates estimated length; ND = no data; U = unknown]

<u>Field #</u>	<u>Date</u>	<u>Species</u>	<u>Location</u>	<u>Latitude</u>	<u>Longitude</u>	<u>Condition</u>	<u>Length</u>	<u>Sex</u>
VAQS20111001	1/4/2011	dwarf sperm whale	Virginia Beach	36.8718	-75.9801	Live	166	M
VAQS20111002	1/19/2011	common dolphin	Virginia Beach	36.9242	-75.9999	Dead	232	M
VAQS20111003	2/4/2011	common dolphin	Northampton	37.4387	-75.6683	Dead	271	U
VAQS20111004	2/5/2011	common dolphin	Virginia Beach	36.5692	-75.8723	Dead	214	M
VAQS20111006	2/12/2011	bottlenose dolphin	Accomack	37.5587	-75.9326	Dead	ND	U
VAQS20111005	2/13/2011	harp seal	Northampton	37.4148	-75.8586	Dead	165	M
VAQS20111007	2/25/2011	striped dolphin	Hampton	37.0680	-76.2805	Dead	198	M
VAQS20111008	2/25/2011	striped dolphin	Virginia Beach	36.7601	-75.9487	Live	209	F
VAQS20111009	3/3/2011	harp seal	Accomack	37.8690	-75.4351	Dead	165	M
VAQS20111010	3/7/2011	common dolphin	Northampton	37.4814	-75.9207	Dead	219	M
VAQS20111011	3/9/2011	common dolphin	Virginia Beach	36.9281	-76.0454	Dead	217	F
VAQS20111012	3/12/2011	harp seal	Virginia Beach	36.9063	-76.0930	Live	170	M
VAQS20111014	3/17/2011	bottlenose dolphin	Virginia Beach	36.7572	-75.9474	Dead	200	M
VAQS20111015	3/17/2011	bottlenose dolphin	Virginia Beach	36.7621	-75.9494	Dead	162	M
VAQS20111016	3/18/2011	harp seal	Accomack	37.8771	-75.3524	Dead	150	M
VAQS20111017	3/27/2011	sei whale	Virginia Beach	36.6995	-75.9254	Dead	1317*	F
VAQS20111019	3/28/2011	bottlenose dolphin	Virginia Beach	36.9319	-76.0353	Dead	252*	M
VAQS20111018	3/28/2011	common dolphin	Hampton	37.0171	-76.2972	Dead	209	F
VAQS20111021	3/29/2011	bottlenose dolphin	Virginia Beach	36.8644	-75.9780	Dead	210*	M
VAQS20111020	3/29/2011	harbor porpoise	Virginia Beach	36.6400	-75.8952	Dead	116	M
VAQS20111022	3/29/2011	harbor porpoise	Virginia Beach	36.7094	-75.9293	Dead	131	F
VAQS20111023	3/31/2011	bottlenose dolphin	Northampton	37.0958	-75.9808	Dead	240	M
VAQS20111024	3/31/2011	common dolphin	Northampton	37.0840	-75.9700	Dead	230	M
VAQS20111013	4/6/2011	harbor seal	Northampton	37.0846	-75.9483	Dead	147	M
VAQS20111025	4/10/2011	bottlenose dolphin	Virginia Beach	36.6620	-75.9062	Dead	249	M
VAQS20111026	4/11/2011	common dolphin	Accomack	37.8694	-75.3598	Dead	221	M
VAQS20111027	4/13/2011	unknown delphinid	Norfolk	36.9576	-76.2545	Dead	ND	U
VAQS20111028	4/15/2011	humpback whale	Virginia Beach	36.7006	-75.9197	Live	760*	U
VAQS20111029	4/16/2011	Risso's dolphin	Virginia Beach	36.7410	-75.9415	Dead	275	M
VAQS20111030	4/17/2011	harp seal	Accomack	37.6952	-75.5792	Dead	158	M
VAQS20111031	4/19/2011	harbor seal	Hampton	37.0031	-76.3572	Dead	138	F
VAQS20111032	4/21/2011	harbor seal	Accomack	38.0256	-75.2441	Dead	96	F
VAQS20111033	4/22/2011	bottlenose dolphin	Northampton	37.0936	-75.9805	Dead	ND	U
VAQS20111034	4/23/2011	common dolphin	Northampton	37.1436	-75.9738	Dead	228	U
VAQS20111035	4/29/2011	bottlenose dolphin	Northampton	37.3213	-76.0174	Dead	194	F
VAQS20111036	4/30/2011	gray seal	Accomack	37.9204	-75.3915	Dead	112	F
VAQS20111037	5/7/2011	bottlenose dolphin	Virginia Beach	36.6450	-75.8975	Dead	100	F
VAQS20111038	5/7/2011	bottlenose dolphin	Northampton	37.2084	-76.0138	Dead	206	M
VAQS20111039	5/9/2011	bottlenose dolphin	Accomack	37.9195	-75.3225	Dead	105	F
VAQS20111041	5/9/2011	unknown pinniped	Accomack	37.8679	-75.4437	Dead	ND	U
VAQS20111043	5/10/2011	bottlenose dolphin	Accomack	37.8648	-75.3917	Dead	101*	U
VAQS20111040	5/11/2011	bottlenose dolphin	Virginia Beach	36.5753	-75.8728	Dead	100	M
VAQS20111042	5/14/2011	bottlenose dolphin	Virginia Beach	36.7620	-75.9494	Dead	115	M
VAQS20111044	5/15/2011	harbor seal	Virginia Beach	36.8078	-75.9645	Dead	134	U
VAQS20111046	5/20/2011	bottlenose dolphin	Virginia Beach	36.7355	-75.9398	Dead	105	F
VAQS20111047	5/20/2011	bottlenose dolphin	Mathews	37.4490	-76.2607	Dead	270	F
VAQS20111045	5/21/2011	bottlenose dolphin	Accomack	37.8526	-75.3797	Dead	118	U
VAQS20111048	5/22/2011	bottlenose dolphin	Virginia Beach	36.9137	-76.0802	Dead	201	M
VAQS20111049	5/23/2011	bottlenose dolphin	Northampton	37.0861	-75.9458	Dead	255	F
VAQS20111051	5/25/2011	bottlenose dolphin	Northampton	37.1951	-76.0065	Dead	196*	U
VAQS20111052	5/25/2011	bottlenose dolphin	Northampton	37.1948	-76.0060	Dead	164	M

Table 1: Marine mammal strandings *cont.*

<u>Field #</u>	<u>Date</u>	<u>Species</u>	<u>Location</u>	<u>Latitude</u>	<u>Longitude</u>	<u>Condition</u>	<u>Length</u>	<u>Sex</u>
VAQS20111069	5/27/2011	unknown delphinid	Accomack	37.8872	-75.4183	Dead	ND	U
VAQS20111050	6/1/2011	bottlenose dolphin	Virginia Beach	36.7859	-75.9578	Dead	110*	F
VAQS20111053	6/4/2011	bottlenose dolphin	Mathews	37.4291	-76.2525	Dead	112*	U
VAQS20111077	6/7/2011	bottlenose dolphin	Northampton	37.1660	-75.9865	Dead	110	M
VAQS20111054	6/8/2011	bottlenose dolphin	Northampton	37.0843	-75.9493	Dead	283*	U
VAQS20111055	6/8/2011	bottlenose dolphin	Virginia Beach	36.9318	-76.0355	Dead	114	M
VAQS20111056	6/8/2011	bottlenose dolphin	Newport News	36.9858	-76.3923	Dead	110*	M
VAQS20111057	6/9/2011	bottlenose dolphin	Virginia Beach	36.6277	-75.8898	Dead	253	F
VAQS20111058	6/11/2011	bottlenose dolphin	Northampton	37.1880	-75.9982	Dead	ND	U
VAQS20111059	6/27/2011	bottlenose dolphin	Accomack	37.7047	-75.8497	Dead	ND	U
VAQS20111060	6/28/2011	bottlenose dolphin	Virginia Beach	36.5655	-75.8707	Dead	120	M
VAQS20111061	6/29/2011	bottlenose dolphin	Accomack	37.5870	-75.9340	Dead	ND	U
VAQS20111062	7/3/2011	bottlenose dolphin	Hampton	37.0329	-76.2934	Dead	114	M
VAQS20111063	7/7/2011	bottlenose dolphin	Northumberland	37.8565	-76.2463	Dead	281	M
VAQS20111064	7/13/2011	bottlenose dolphin	Northampton	37.1373	-75.9723	Dead	107	M
VAQS20111065	7/15/2011	bottlenose dolphin	Accomack	37.8607	-75.3904	Dead	109	M
VAQS20111066	7/18/2011	bottlenose dolphin	Accomack	37.9203	-75.3218	Dead	200*	U
VAQS20111067	7/21/2011	unknown delphinid	Newport News	36.9855	-76.3925	Dead	ND	U
VAQS20111068	7/24/2011	bottlenose dolphin	Hampton	37.0363	-76.2917	Dead	265	M
VAQS20111070	8/5/2011	bottlenose dolphin	Virginia Beach	36.6406	-75.8957	Dead	205	F
VAQS20111071	8/5/2011	bottlenose dolphin	York	37.2383	-76.5074	Dead	213	F
VAQS20111072	8/6/2011	bottlenose dolphin	Virginia Beach	36.6916	-75.9221	Dead	188	M
VAQS20111073	8/10/2011	pygmy sperm whale	Accomack	37.6881	-75.6153	Live	286	F
VAQS20111074	8/17/2011	bottlenose dolphin	Virginia Beach	36.9194	-75.9941	Dead	122	M
VAQS20111075	8/18/2011	bottlenose dolphin	Virginia Beach	36.8327	-75.9689	Dead	155*	F
VAQS20111076	8/29/2011	bottlenose dolphin	Accomack	37.9320	-75.3883	Dead	256	F
VAQS20111078	8/29/2011	bottlenose dolphin	James City	37.4120	-76.8925	Live	280	M
VAQS20111079	9/15/2011	bottlenose dolphin	Hampton	37.0016	-76.3645	Dead	205	F
VAQS20111080	9/28/2011	bottlenose dolphin	Northampton	37.0922	-75.9800	Dead	193	M
VAQS20111081	10/8/2011	bottlenose dolphin	Virginia Beach	36.9093	-76.0976	Dead	184	F
VAQS20111082	10/9/2011	bottlenose dolphin	Norfolk	36.9312	-76.1890	Dead	234	M
VAQS20111083	10/13/2011	bottlenose dolphin	Mathews	37.3203	-76.2731	Dead	129	M
VAQS20111084	10/13/2011	bottlenose dolphin	Virginia Beach	36.9237	-76.1451	Dead	128	M
VAQS20111085	10/20/2011	bottlenose dolphin	Northampton	37.2729	-76.0216	Dead	119	F
VAQS20111086	10/23/2011	sperm whale	Northampton	37.1296	-75.8839	Dead	ND	U
VAQS20111087	10/25/2011	bottlenose dolphin	Virginia Beach	36.7539	-75.9459	Dead	ND	U
VAQS20111088	10/30/2011	bottlenose dolphin	Norfolk	36.9314	-76.1917	Dead	155	M
VAQS20111089	12/27/2011	bottlenose dolphin	Virginia Beach	36.9275	-76.0458	Dead	ND	U
VAQS20111090	12/30/2011	bottlenose dolphin	Northampton	37.1438	-75.8698	Dead	ND	U

Table 2: Live stranded marine mammals recorded by VAQS in 2011.

<u>Field Number</u>	<u>Species</u>	<u>Strand Date</u>	<u>State</u>	<u>Final Disposition</u>
VAQS20111001	dwarf sperm whale	1/4/2011	VA	Euthanized 4 January 2011
VAQS20111008	striped dolphin	2/25/2011	VA	Died 25 February 2011
CAHA029-2011-03-09 (*a)	gray seal	3/9/2011	NC	Died 9 March 2011
VAQS20111012	harp seal	3/12/2011	VA	Left at sight 12 March 2011
KLC100 (*a)(*b)	gray seal	3/13/2011	NC	Released 24 June 2011 from Ocean City, MD
VGT265(*a)	harbor seal	3/29/2011	NC	Died 23 May 2011
VAQS20111028	humpback whale	4/15/2011	VA	Attempted disentanglement 15 April 2011
VAQS20111073	pygmy sperm whale	8/10/2011	VA	Euthanized 10 August 2011
VAQS20111078	bottlenose dolphin	8/29/2011	VA	Died 2 September 2011

(*a) Transferred from North Carolina Wildlife Resource Commission in Dare, NC

(*b) Transferred to National Aquarium in Baltimore, MD

Table 3: Sea turtle strandings in Virginia during 2011, n=173. (Data from the VAQS Sea Turtle Stranding Database)

[Length = carapace length notch to tip cm; ND = no data; U = unknown]

<u>Field #</u>	<u>Date</u>	<u>Species</u>	<u>Location</u>	<u>Latitude</u>	<u>Longitude</u>	<u>Condition</u>	<u>Length</u>	<u>Sex</u>
VAQS20112001	1/20/2011	Kemp's ridley	Northampton	37.4482	-75.9735	Dead	35	U
VAQS20112002	2/4/2011	unidentified	Northampton	37.1729	-75.8350	Dead	ND	U
VDGIF2011001	2/4/2011	loggerhead	Northampton	37.4328	-75.6748	Dead	ND	U
VAQS20112003	4/20/2011	loggerhead	Northampton	37.2353	-76.0166	Dead	ND	U
VASC20112001	5/10/2011	loggerhead	Accomack	37.8606	-75.3672	Dead	ND	F
VAQS20112004	5/12/2011	loggerhead	Virginia Beach	36.9880	-76.1336	Live	68	U
VAQS20112005	5/12/2011	loggerhead	Virginia Beach	36.6473	-75.8989	Dead	88	U
VAQS20112006	5/18/2011	Kemp's ridley	Virginia Beach	36.6162	-75.8846	Dead	37	M
VAQS20112007	5/18/2011	loggerhead	Virginia Beach	36.9167	-76.0603	Dead	64	M
VAQS20112008	5/20/2011	loggerhead	Norfolk	36.9322	-76.1958	Dead	61	M
VAQS20112009	5/20/2011	Kemp's ridley	Virginia Beach	36.9289	-76.0093	Dead	32	M
VAQS20112010	5/21/2011	Kemp's ridley	Norfolk	36.9633	-76.2603	Live	37	U
VAQS20112012	5/22/2011	loggerhead	Northampton	37.9165	-75.3759	Dead	69	M
VAQS20112013	5/22/2011	loggerhead	Northampton	37.2373	-76.0408	Live	100	M
VAQS20112014	5/22/2011	loggerhead	Northampton	37.1575	-75.9774	Dead	ND	M
VAQS20112015	5/22/2011	Kemp's ridley	Northampton	37.1564	-75.9770	Dead	36	M
VAQS20112016	5/24/2011	loggerhead	Accomack	37.9074	-75.3302	Dead	92	F
VAQS20112011	5/25/2011	Kemp's ridley	Virginia Beach	36.8172	-75.9664	Dead	41	M
VAQS20112017	5/27/2011	loggerhead	Northumberland	37.8175	-76.2663	Dead	65	U
VAQS20112018	5/28/2011	loggerhead	Virginia Beach	36.9318	-76.0026	Dead	104	M
VAQS20112019	5/28/2011	loggerhead	Virginia Beach	36.5521	-75.8681	Live	78	U
VAQS20112022	5/28/2011	loggerhead	Mathews	37.3570	-76.3310	Dead	74	U
VAQS20112020	5/29/2011	Kemp's ridley	Northampton	37.1456	-75.9743	Dead	50	M
VAQS20112021	5/29/2011	loggerhead	Northampton	37.1295	-75.9697	Dead	84	M
VAQS20112031	5/29/2011	loggerhead	Accomack	37.5072	-76.6487	Dead	ND	U
VAQS20112036	5/30/2011	unidentified	Mathews	37.4927	-76.2735	Dead	ND	U
VDGIF2011002	5/30/2011	loggerhead	Accomack	37.8682	-76.0053	Dead	ND	U
VAQS20112023	6/1/2011	loggerhead	Northampton	37.1783	-75.9912	Dead	66	U
VAQS20112024	6/1/2011	loggerhead	Northampton	37.1837	-75.9978	Dead	56	F
VAQS20112025	6/1/2011	Kemp's ridley	Gloucester	37.2455	-76.5022	Live	25	U
VAQS20112026	6/1/2011	Kemp's ridley	Virginia Beach	36.9272	-76.0463	Dead	34	F
VAQS20112027	6/2/2011	loggerhead	Virginia Beach	36.9497	-76.1707	Dead	72	F
VAQS20112028	6/2/2011	Kemp's ridley	Virginia Beach	36.7531	-75.9458	Dead	37	F
VAQS20112040	6/2/2011	loggerhead	Lancaster	37.6765	-76.3376	Dead	ND	U
VASC20112002	6/2/2011	loggerhead	Accomack	37.9323	-75.3139	Dead	80	U
VAQS20112029	6/3/2011	loggerhead	Hampton	37.0560	-76.2833	Dead	59	F
VAQS20112030	6/4/2011	loggerhead	Northampton	37.1461	-75.9744	Dead	70	F
VAQS20112032	6/4/2011	loggerhead	Virginia Beach	36.9051	-76.0845	Dead	76	F
VAQS20112034	6/4/2011	loggerhead	Mathews	37.4291	-76.2525	Dead	ND	U
VAQS20112033	6/6/2011	loggerhead	Virginia Beach	36.7466	-75.9438	Dead	68	F
VAQS20112035	6/6/2011	loggerhead	Mathews	37.4920	-76.2731	Dead	60	F
VAQS20112037	6/6/2011	loggerhead	Northumberland	37.8580	-76.2459	Dead	72	U
VAQS20112038	6/7/2011	loggerhead	Hampton	37.0585	-76.2825	Dead	85	U
VAQS20112039	6/7/2011	loggerhead	Accomack	37.8998	-75.4075	Dead	60	M
VASC20112004	6/7/2011	loggerhead	Accomack	37.8721	-75.3875	Dead	64	F
VAQS20112041	6/9/2011	loggerhead	Northampton	37.2423	-76.0177	Dead	ND	U
VASC20112005	6/9/2011	loggerhead	Accomack	37.8683	-75.3961	Dead	71	U
VASC20112006	6/9/2011	loggerhead	Accomack	37.8765	-75.3533	Dead	60	F
VASC20112007	6/9/2011	loggerhead	Accomack	37.8758	-75.3539	Dead	66	M

Table 3: Sea turtle strandings *cont.*

<u>Field #</u>	<u>Date</u>	<u>Species</u>	<u>Location</u>	<u>Latitude</u>	<u>Longitude</u>	<u>Condition</u>	<u>Length</u>	<u>Sex</u>
VASC20112008	6/9/2011	loggerhead	Accomack	37.8751	-75.3545	Dead	57	U
VAQS20112042	6/11/2011	loggerhead	Virginia Beach	36.9125	-76.1085	Dead	ND	U
VAQS20112043	6/14/2011	loggerhead	Norfolk	36.9567	-76.2531	Dead	62	F
VAQS20112044	6/15/2011	loggerhead	Norfolk	36.9683	-76.2875	Dead	68	F
VAQS20112045	6/16/2011	Kemp's ridley	Northampton	37.1946	-76.0058	Dead	26	U
VASC20112003	6/16/2011	Kemp's ridley	Northampton	37.0857	-75.9751	Dead	30	U
VAQS20112046	6/17/2011	Kemp's ridley	Hampton	37.0822	-76.2744	Dead	34	U
VAQS20112047	6/18/2011	loggerhead	Northampton	37.3008	-76.0141	Dead	58	F
VAQS20112048	6/18/2011	loggerhead	Norfolk	36.9627	-76.2587	Live	ND	U
VAQS20112049	6/20/2011	Kemp's ridley	Norfolk	36.9661	-76.2709	Dead	ND	U
VAQS20112050	6/22/2011	loggerhead	Northampton	37.2002	-76.0107	Dead	81	U
VAQS20112051	6/25/2011	loggerhead	Virginia Beach	36.8629	-75.9776	Dead	88	U
VAQS20112052	6/25/2011	loggerhead	Northampton	37.0850	-75.9729	Dead	72	M
VAQS20112053	6/26/2011	loggerhead	Virginia Beach	36.9144	-75.9911	Dead	ND	U
VAQS20112054	6/26/2011	loggerhead	Virginia Beach	36.9193	-76.1310	Dead	ND	U
VAQS20112056	6/27/2011	Kemp's ridley	Gloucester	37.2460	-76.5031	Dead	37	M
VAQS20112057	6/27/2011	loggerhead	Hampton	37.0827	-76.2743	Live	73	F
VAQS20112058	6/28/2011	loggerhead	Northampton	37.2652	-76.0142	Dead	56	F
VASC20112009	7/1/2011	loggerhead	Northampton	37.0889	-75.9775	Dead	58	F
VASC20112010	7/1/2011	green	Northampton	37.0842	-75.9703	Dead	25	M
VASC20112011	7/1/2011	Kemp's ridley	Northampton	37.0859	-75.9758	Dead	27	F
VAQS20112059	7/4/2011	loggerhead	Northampton	37.3078	-76.0206	Live	75	U
VAQS20112060	7/4/2011	loggerhead	Northampton	37.2265	-76.0114	Dead	75	U
VAQS20112061	7/5/2011	loggerhead	Hampton	37.0052	-76.3021	Dead	ND	U
VAQS20112062	7/5/2011	loggerhead	Virginia Beach	37.0052	-76.3021	Dead	96	M
VAQS20112063	7/7/2011	loggerhead	Newport News	36.9706	-76.4323	Dead	92	U
VAQS20112064	7/8/2011	loggerhead	Virginia Beach	36.6038	-75.8802	Dead	66	F
VASC20112012	7/9/2011	loggerhead	Northampton	37.0833	-75.9598	Dead	ND	U
VAQS20112065	7/10/2011	loggerhead	Accomack	37.6446	-75.6413	Dead	97	M
VAQS20112066	7/12/2011	loggerhead	Virginia Beach	36.8770	-75.9816	Dead	ND	U
VAQS20112067	7/13/2011	loggerhead	Virginia Beach	36.9135	-76.0759	Dead	70	F
VAQS20112068	7/15/2011	leatherback	Virginia Beach	36.7274	-75.9361	Dead	138	F
VAQS20112069	7/15/2011	loggerhead	Virginia Beach	36.9137	-76.1134	Dead	62	M
VAQS20112070	7/16/2011	loggerhead	Norfolk	36.9506	-76.2438	Dead	83	U
VAQS20112071	7/17/2011	loggerhead	Hampton	37.0025	-76.3035	Dead	78	U
VAQS20112055	7/28/2011	loggerhead	Hampton	37.0262	-76.2959	Dead	71	U
VAQS20112072	7/29/2011	unidentified	York	37.2464	-76.3958	Live	ND	U
VAQS20112073	7/29/2011	loggerhead	Norfolk	36.9407	-76.2252	Dead	ND	U
VAQS20112075	8/1/2011	loggerhead	Virginia Beach	36.8104	-75.9648	Dead	74	F
VAQS20112076	8/1/2011	loggerhead	Norfolk	36.8478	-76.2968	Dead	74	U
VAQS20112077	8/1/2011	loggerhead	Northampton	37.2039	-76.0124	Dead	ND	U
VAQS20112078	8/1/2011	Kemp's ridley	Northampton	37.2043	-76.0120	Dead	25	U
VAQS20112079	8/3/2011	loggerhead	Virginia Beach	36.9286	-76.1703	Dead	58	F
VAQS20112080	8/5/2011	loggerhead	Virginia Beach	36.6166	-75.8849	Dead	ND	M
VAQS20112081	8/5/2011	loggerhead	Norfolk	36.9566	-76.2530	Dead	ND	U
VAQS20112082	8/7/2011	loggerhead	Hampton	37.0382	-76.2911	Dead	73	M
VASC20112013	8/11/2011	loggerhead	Accomack	37.9087	-75.3568	Dead	ND	U
VAQS20112083	8/20/2011	loggerhead	Virginia Beach	36.8418	-75.9711	Dead	75	F
VAQS20112084	8/21/2011	loggerhead	Hampton	37.0683	-76.2804	Dead	67	F

Table 3: Sea Turtle Strandings *cont.*

<u>Field #</u>	<u>Date</u>	<u>Species</u>	<u>Location</u>	<u>Latitude</u>	<u>Longitude</u>	<u>Condition</u>	<u>Length</u>	<u>Sex</u>
VAQS20112074	8/24/2011	loggerhead	Virginia Beach	36.6066	-75.8810	Dead	108	M
VASC20112014	8/25/2011	loggerhead	Accomack	37.9267	-75.3179	Dead	86	U
VAQS20112086	8/27/2011	loggerhead	Virginia Beach	36.9041	-75.9903	Dead	97	U
VAQS20112085	8/28/2011	loggerhead	Norfolk	36.9417	-76.2284	Dead	67	M
VAQS20112087	8/28/2011	loggerhead	Norfolk	36.9379	-76.2187	Dead	69	U
VAQS20112088	8/28/2011	loggerhead	Virginia Beach	36.9317	-76.0254	Live	5	U
VAQS20112089	8/28/2011	loggerhead	Virginia Beach	36.8248	-75.9853	Live	5	U
VAQS20112090	8/29/2011	loggerhead	Virginia Beach	36.7831	-75.9571	Dead	55	U
VAQS20112091	8/29/2011	leatherback	Virginia Beach	36.7831	-75.9571	Dead	ND	U
VAQS20112092	8/30/2011	loggerhead	Virginia Beach	36.9300	-76.0122	Dead	65	U
VAQS20112093	8/30/2011	leatherback	Virginia Beach	36.7272	-75.9363	Dead	136	U
VAQS20112094	8/30/2011	leatherback	Virginia Beach	36.5959	-75.8780	Dead	159	F
VAQS20112095	8/31/2011	loggerhead	Virginia Beach	36.7388	-75.9402	Dead	101	M
VAQS20112096	9/1/2011	loggerhead	Virginia Beach	36.7513	-75.9455	Dead	86	M
VASC20112015	9/1/2011	loggerhead	Accomack	37.9429	-75.3077	Dead	101	F
VASC20112016	9/1/2011	loggerhead	Accomack	37.9467	-75.3054	Dead	84	F
VAQS20112097	9/2/2011	loggerhead	Norfolk	36.9341	-76.2038	Dead	ND	M
VAQS20112098	9/3/2011	loggerhead	Norfolk	36.9406	-76.2250	Dead	73	F
VAQS20112099	9/4/2011	loggerhead	Virginia Beach	36.8311	-75.9758	Live	5	U
VAQS20112100	9/4/2011	loggerhead	Virginia Beach	36.8243	-75.9751	Live	5	U
VAQS20112101	9/4/2011	loggerhead	Virginia Beach	36.8243	-75.9751	Live	5	U
VAQS20112102	9/5/2011	loggerhead	Accomack	37.8635	-75.4532	Dead	83	F
VAQS20112103	9/5/2011	loggerhead	Accomack	37.5926	-75.6466	Dead	ND	U
VASC20112017	9/8/2011	loggerhead	Accomack	37.9926	-75.2700	Dead	98	F
VASC20112018	9/8/2011	loggerhead	Accomack	37.9179	-75.3236	Dead	64	F
VASC20112019	9/9/2011	loggerhead	Northampton	37.0886	-75.9778	Dead	64	F
VASC20112020	9/9/2011	Kemp's ridley	Northampton	37.0918	-75.9419	Dead	59	U
VASC20112021	9/12/2011	loggerhead	Accomack	37.8602	-75.3681	Dead	59	U
VAQS20112104	9/13/2011	loggerhead	Northampton	37.1779	-75.9907	Dead	70	F
VAQS20112105	9/18/2011	loggerhead	Virginia Beach	36.9104	-76.1016	Dead	62	F
VAQS20112107	9/18/2011	loggerhead	Virginia Beach	36.6488	-75.8998	Dead	ND	M
VAQS20112106	9/19/2011	Kemp's ridley	Virginia Beach	36.9111	-76.0861	Dead	53	F
VAQS20112108	9/21/2011	loggerhead	Virginia Beach	36.7989	-75.9615	Dead	85	U
VAQS20112109	9/23/2011	loggerhead	Newport News	36.9847	-76.4418	Dead	88	M
VAQS20112110	9/25/2011	loggerhead	Hampton	37.0093	-76.3465	Dead	ND	U
VAQS20112111	9/25/2011	Kemp's ridley	Accomack	37.8276	-75.4941	Dead	41	U
VAQS20112112	9/30/2011	loggerhead	Accomack	37.8262	-75.4952	Dead	63	U
VAQS20112121	10/2/2011	Kemp's ridley	Northampton	37.4245	-75.9831	Dead	34	U
VAQS20112113	10/3/2011	loggerhead	Northampton	37.1376	-75.9723	Dead	67	M
VAQS20112114	10/4/2011	loggerhead	Northampton	37.4941	-75.9595	Dead	ND	U
VAQS20112115	10/4/2011	loggerhead	Norfolk	36.9389	-76.3259	Live	80	U
VAQS20112116	10/5/2011	loggerhead	Norfolk	36.9344	-76.2056	Dead	ND	U
VAQS20112119	10/5/2011	loggerhead	Northampton	37.3516	-75.9971	Dead	69	U
VAQS20112117	10/7/2011	loggerhead	Virginia Beach	36.3117	-76.1054	Dead	59	M
VAQS20112118	10/9/2011	Kemp's ridley	Virginia Beach	36.9134	-76.1118	Dead	44	M
VAQS20112120	10/9/2011	Kemp's ridley	Virginia Beach	36.8984	-76.0855	Dead	26	F
VAQS20112122	10/10/2011	green	Virginia Beach	36.6708	-75.9111	Dead	29	F
VAQS20112123	10/12/2011	green	Virginia Beach	36.7610	-75.9491	Dead	32	F
VAQS20112128	10/18/2011	loggerhead	Mathews	37.3434	-76.2738	Dead	ND	U

Table 3: Sea Turtle Strandings *cont.*

<u>Field #</u>	<u>Date</u>	<u>Species</u>	<u>Location</u>	<u>Latitude</u>	<u>Longitude</u>	<u>Condition</u>	<u>Length</u>	<u>Sex</u>
VAQS20112124	10/20/2011	green	Northampton	37.1950	-76.0060	Dead	31	U
VAQS20112125	10/21/2011	Kemp's ridley	Gloucester	37.2489	-76.4981	Dead	ND	U
VASC20112022	10/21/2011	loggerhead	Northampton	37.0899	-75.9787	Dead	61	U
VAQS20112126	10/22/2011	loggerhead	Virginia Beach	36.7012	-75.9262	Dead	ND	U
VAQS20112127	10/22/2011	Kemp's ridley	Virginia Beach	36.9290	-76.0094	Dead	ND	U
VAQS20112129	10/24/2011	loggerhead	Northampton	37.1401	-75.9000	Dead	89	U
VAQS20112130	10/25/2011	loggerhead	Norfolk	36.9394	-76.2223	Dead	103	U
VAQS20112131	10/29/2011	loggerhead	Virginia Beach	36.9156	-76.1196	Dead	78	M
VAQS20112132	10/30/2011	green	Virginia Beach	36.9232	-76.0496	Dead	ND	U
VAQS20112134	10/31/2011	loggerhead	Virginia Beach	36.8366	-75.9700	Dead	50	F
VAQS20112135	11/1/2011	loggerhead	Virginia Beach	36.9132	-76.1118	Dead	77	F
VAQS20112133	11/2/2011	Kemp's ridley	Virginia Beach	36.9220	-76.0510	Dead	47	F
VAQS20112136	11/2/2011	Kemp's ridley	Virginia Beach	36.9200	-75.9947	Dead	46	F
VAQS20112137	11/3/2011	loggerhead	Virginia Beach	36.9316	-76.0460	Dead	72	M
VAQS20112138	11/5/2011	loggerhead	Virginia Beach	36.9297	-76.0439	Dead	51	M
VAQS20112139	11/6/2011	loggerhead	Virginia Beach	36.9153	-76.1188	Dead	51	F
VAQS20112140	11/6/2011	Kemp's ridley	Virginia Beach	36.9315	-76.0365	Dead	24	M
VAQS20112141	11/7/2011	loggerhead	Virginia Beach	36.5666	-75.8712	Dead	89	F
VAQS20112142	11/7/2011	loggerhead	Norfolk	36.9297	-76.1792	Dead	ND	U
VAQS20112143	11/7/2011	loggerhead	Virginia Beach	36.9129	-76.1107	Dead	ND	U
VAQS20112144	11/7/2011	Kemp's ridley	Virginia Beach	36.9279	-76.0061	Dead	41	M
VAQS20112145	11/8/2011	loggerhead	Suffolk	36.9010	-76.4206	Dead	67	F
VAQS20112146	11/16/2011	loggerhead	Virginia Beach	36.8775	-76.1110	Dead	69	F
VAQS20112147	11/19/2011	Kemp's ridley	Virginia Beach	36.9277	-76.0444	Dead	ND	U
VAQS20112148	11/28/2011	loggerhead	Northampton	37.2369	-75.9940	Dead	97	M
VAQS20112149	11/30/2011	loggerhead	Northampton	37.1156	-75.9039	Dead	84	U

Table 4: Live stranded sea turtles recorded by VAQS in 2011.

<u>Field Number</u>	<u>Species</u>	<u>Name</u>	<u>Strand Date</u>	<u>State</u>	<u>Final Disposition</u>
VAQS20112004	Cc	Hunky	5/12/2011	VA	Released 29 June 2011 in Chesapeake Bay, VA
VAQS20112010	Lk	Argentum	5/21/2011	VA	Released 29 June 2011 in Chesapeake Bay, VA
VAQS20112013	Cc	25/Big Boy	5/22/2011	VA	Released 18 October 2011 from Virginia Beach, VA
VAQS20112019	Cc	Sterling	5/28/2011	VA	Released 1 August 2011 in Chesapeake Bay, VA
VAQS20112025	Lk	Veinte Cinco	6/1/2011	VA	Released 20 July 2011 from Virginia Beach, VA
ST1068 (*a)	Lk	N/A	6/10/2011	DE	Died 10 June 2011
VAQS20112048	Cc	N/A	6/18/2011	VA	Disentangled and released at site 18 June 2011
VAQS20112057	Cc	Hi Ho Silver	6/27/2011	VA	Died 29 June 2011
VAQS20112059	Cc	Fireworks	7/4/2011	VA	Pending
JXD2011726-01 (*b)	Cc	Ana	7/26/2011	MD	Released 21 November 2011 from offshore NC
VAQS20112072	Un	N/A	7/29/2011	VA	Disentangled and released at site 29 July 2011
VAQS20112088	Cc	Mr. Irene	8/28/2011	VA	Released 13 September from offshore NC
VAQS20112089	Cc	Typhoon	8/28/2011	VA	Released 13 September from offshore NC
MMSC-11-179 (*c)	Cc	Dacey	8/29/2011	NJ	Released 21 November 2011 from offshore NC
VAQS20112099	Cc	Lil Soggy	9/4/2011	VA	Released 13 September from offshore NC
VAQS20112100	Cc	Ted	9/4/2011	VA	Released 13 September from offshore NC
VAQS20112101	Cc	Jordache	9/4/2011	VA	Released 13 September from offshore NC
VAQS20112115	Cc	Boise	10/4/2011	VA	Pending
MMSC-11-196(*c)	Cm	Mistletoe	12/16/2011	NJ	Died 29 December 2011

(*a) Transferred from The Marine Education, Research and Rehabilitation Institute, Nassau, DE for rehabilitation

(*b) Transferred from National Aquarium Baltimore, Baltimore, MD for release

(*c) Transferred from Marine Mammal Stranding Center, Brigantine, NJ for rehabilitation

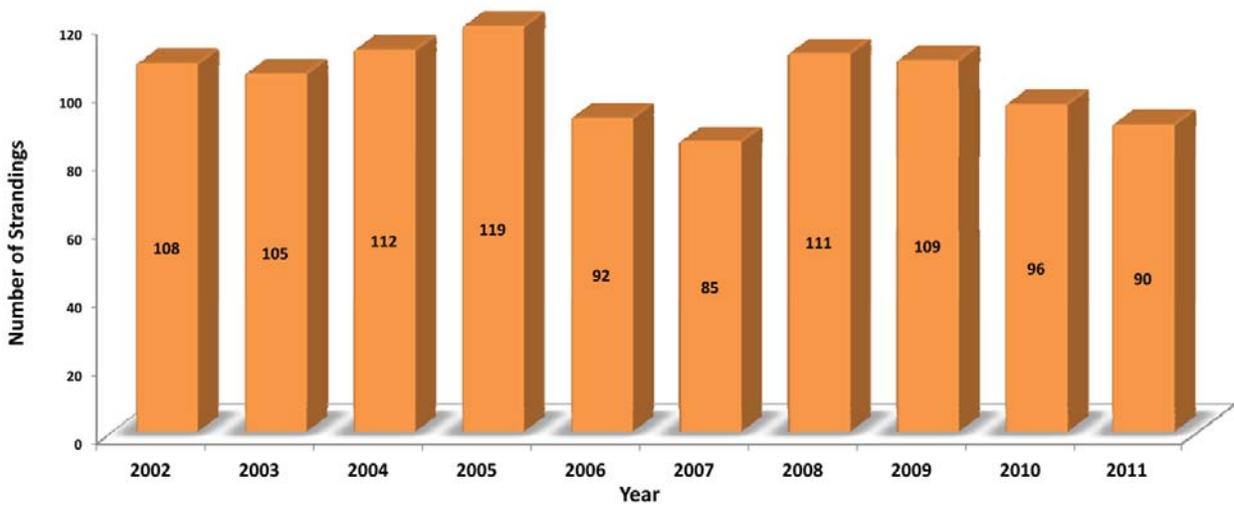


Figure 1: Yearly frequency of marine mammal strandings in Virginia, 2002-2011.

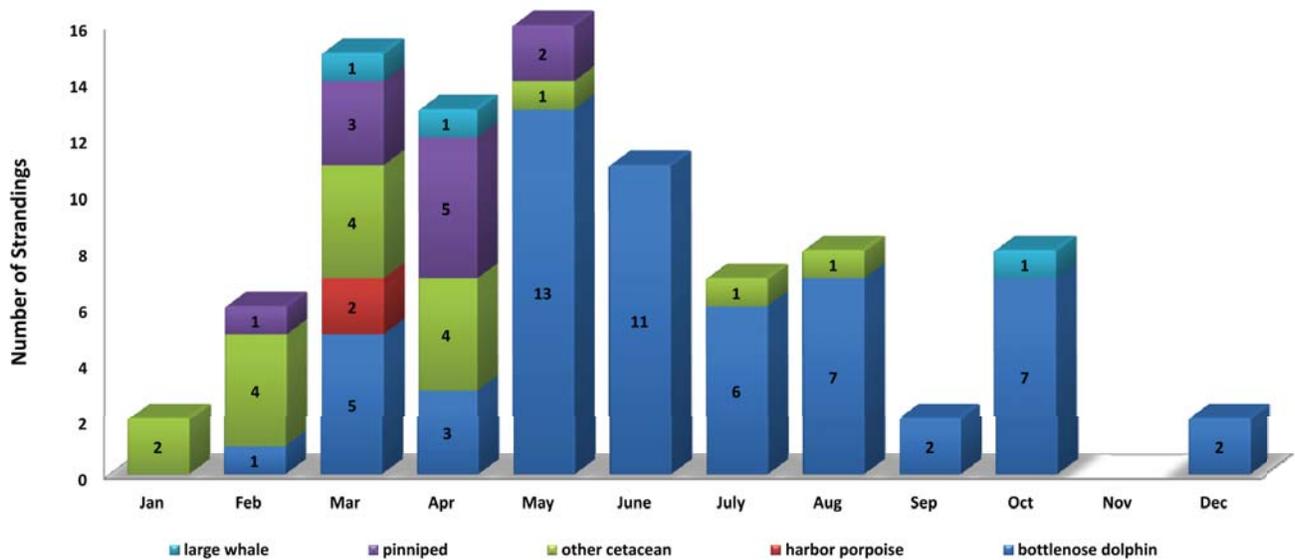


Figure 2: Monthly frequency of marine mammal strandings in Virginia from 2011.

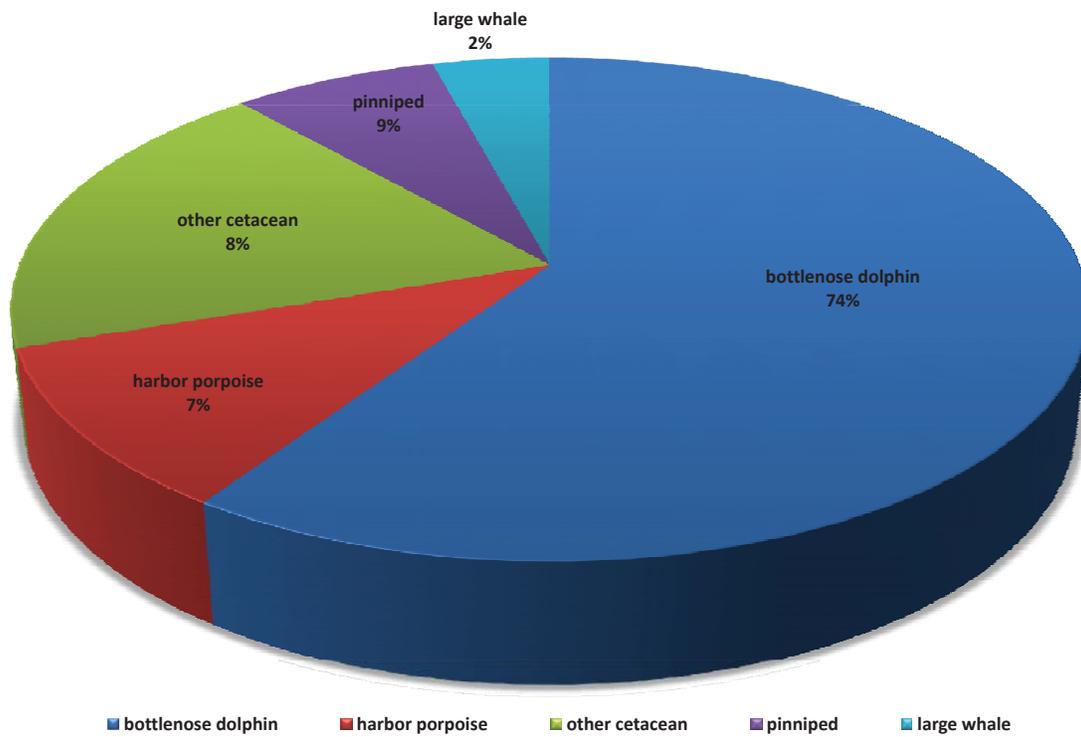


Figure 3: Marine mammal strandings in Virginia from 2011 (bottlenose dolphin n=57, harbor porpoise n=2, other cetaceans n=17, pinnipeds n=11, large whales n=3).

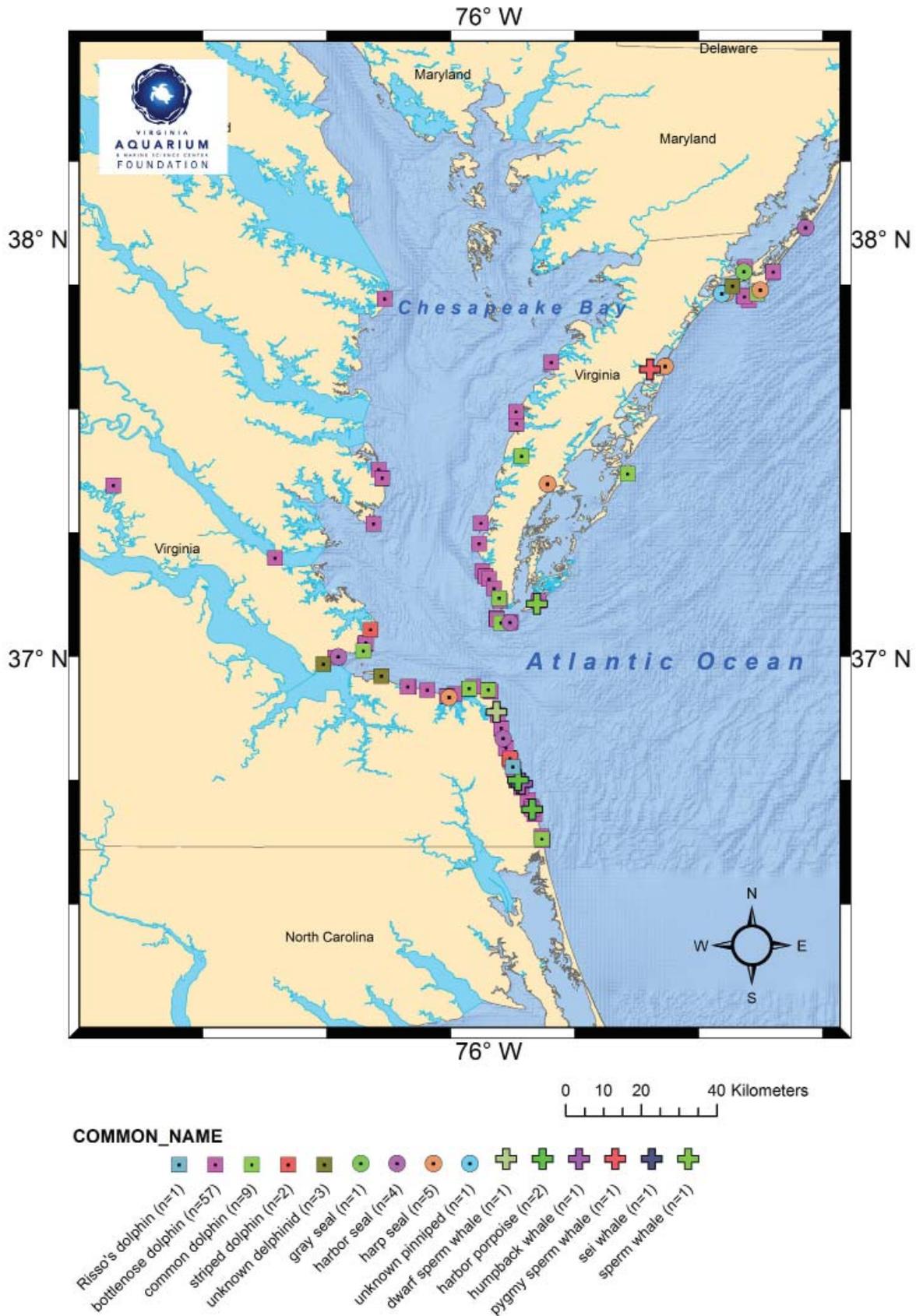
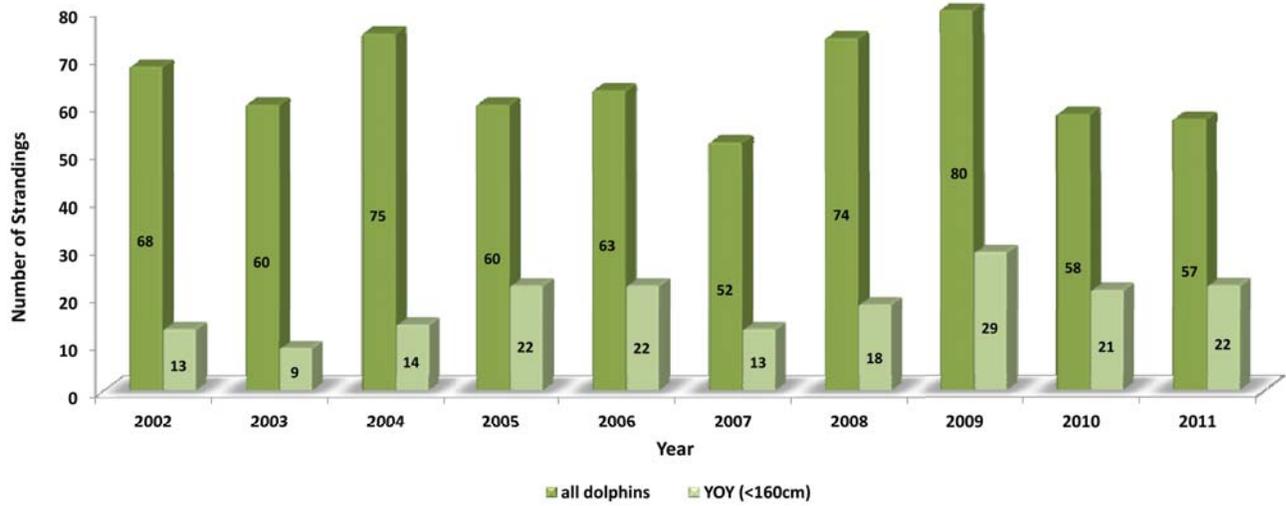


Figure 4: Location of Virginia marine mammal strandings from 2011.

A: Bottlenose dolphin



B: Harbor porpoise

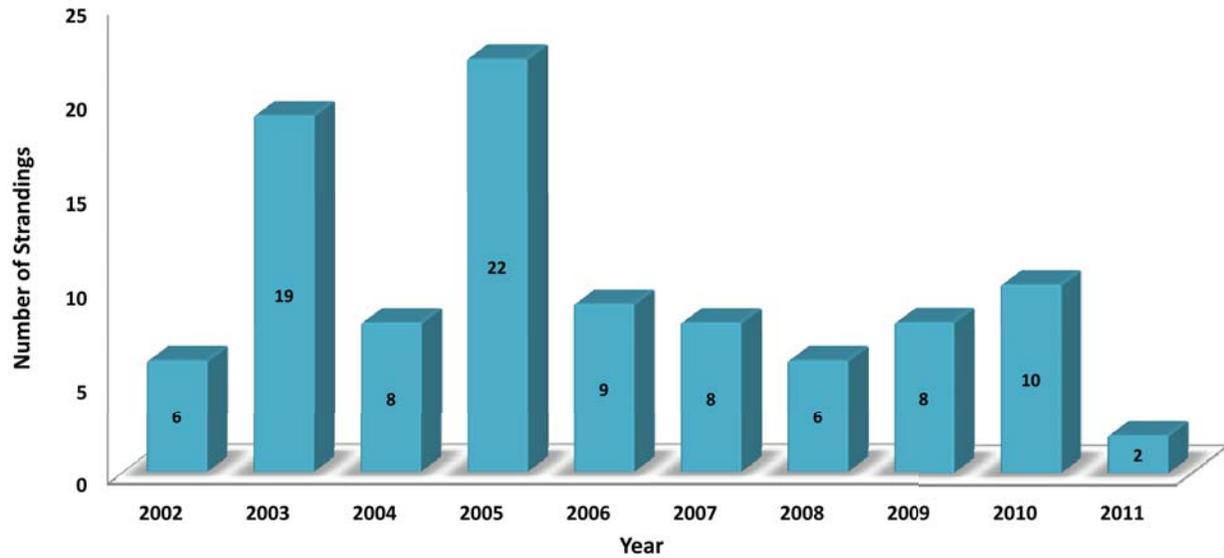
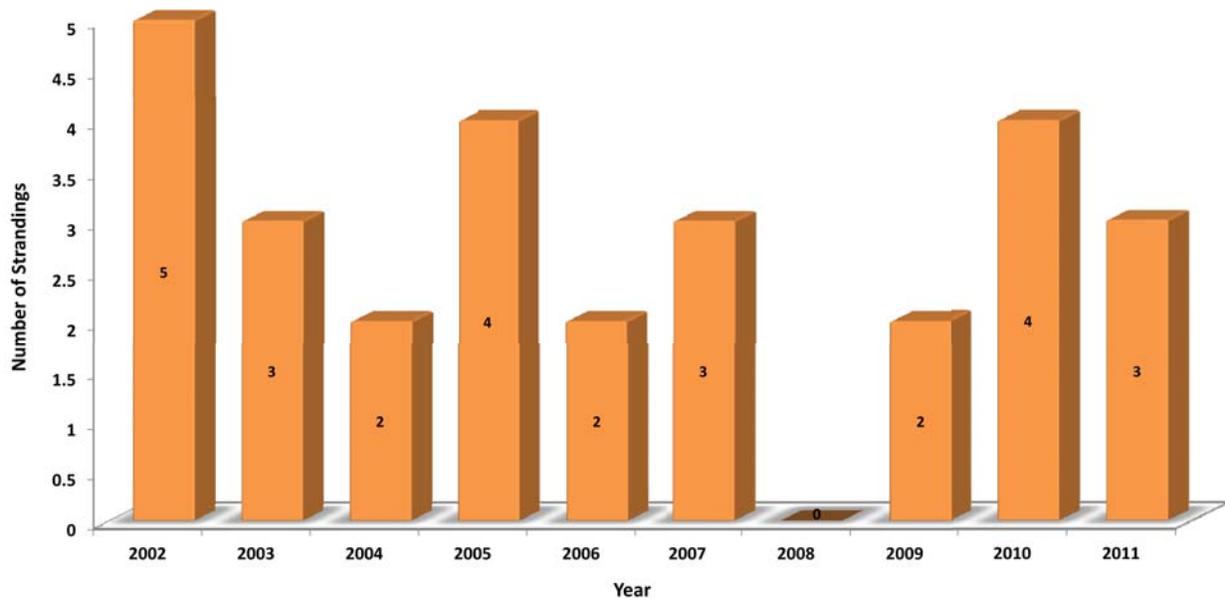


Figure 5 A-B: Yearly stranding frequency for bottlenose dolphin and harbor porpoise in Virginia, 2002-2011 (YOY = young of the year).

C: Large whales



D: Pinnipeds

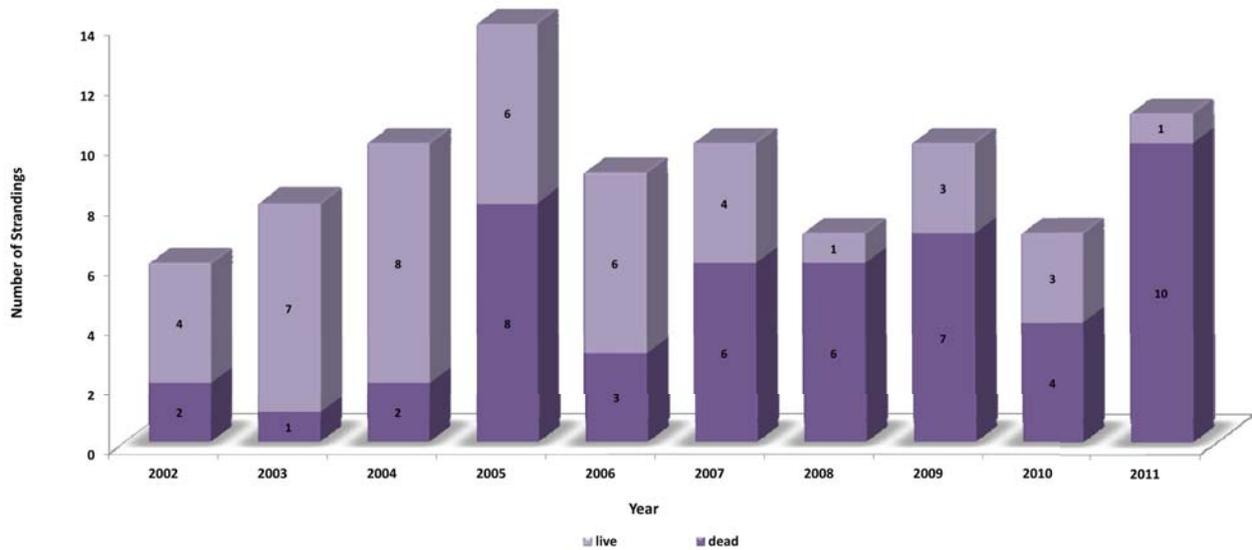


Figure 5 C-D: Yearly stranding frequency for large whales and pinnipeds in Virginia, 2002-2011.

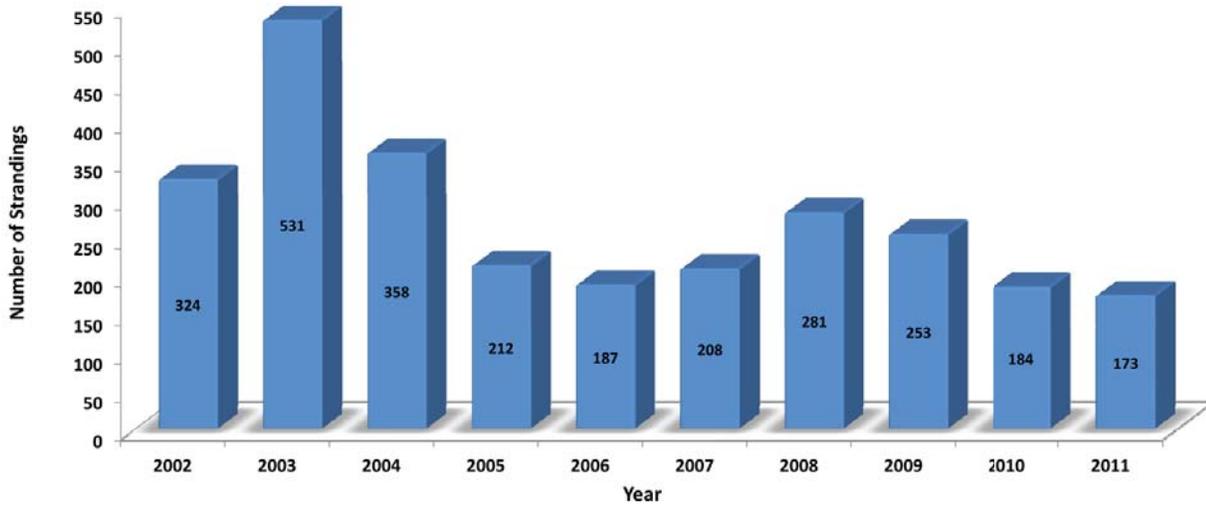


Figure 6: Yearly frequency of sea turtle strandings in Virginia, 2002-2011.

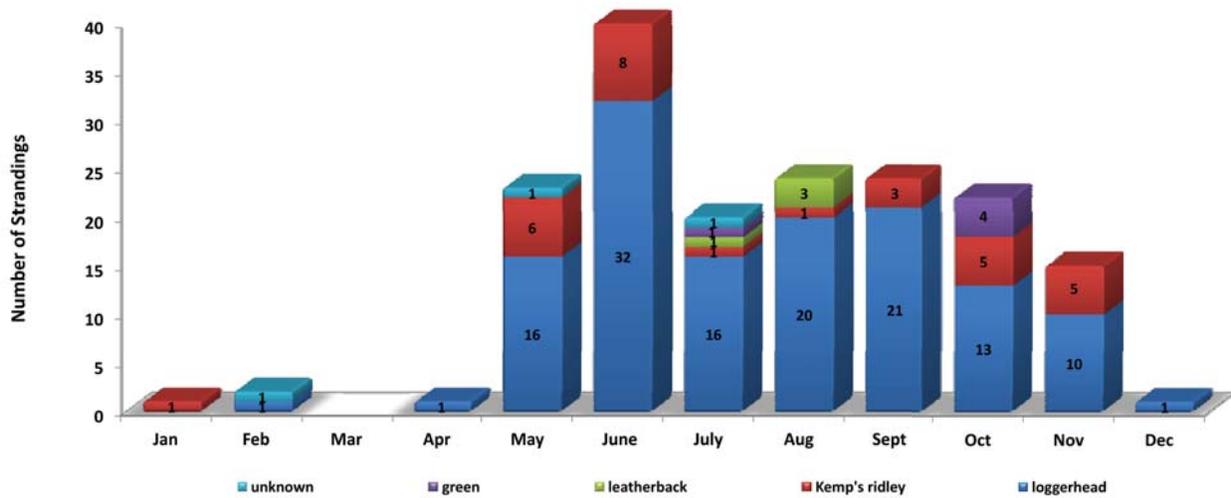


Figure 7: Monthly frequency of sea turtle strandings in Virginia from 2011.

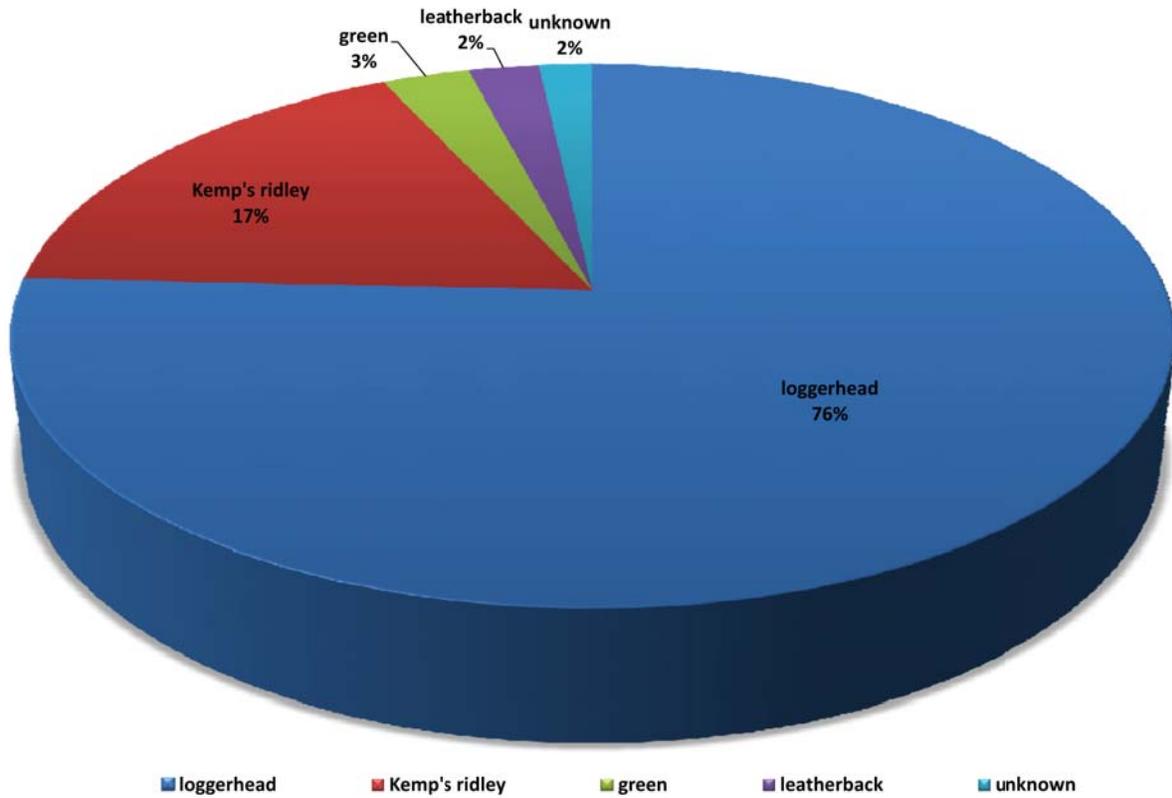


Figure 8: Sea turtle strandings in Virginia from 2011.
(loggerhead n=131, Kemp's ridley n=30, green n=5, leatherback n=4, unknown n=3)

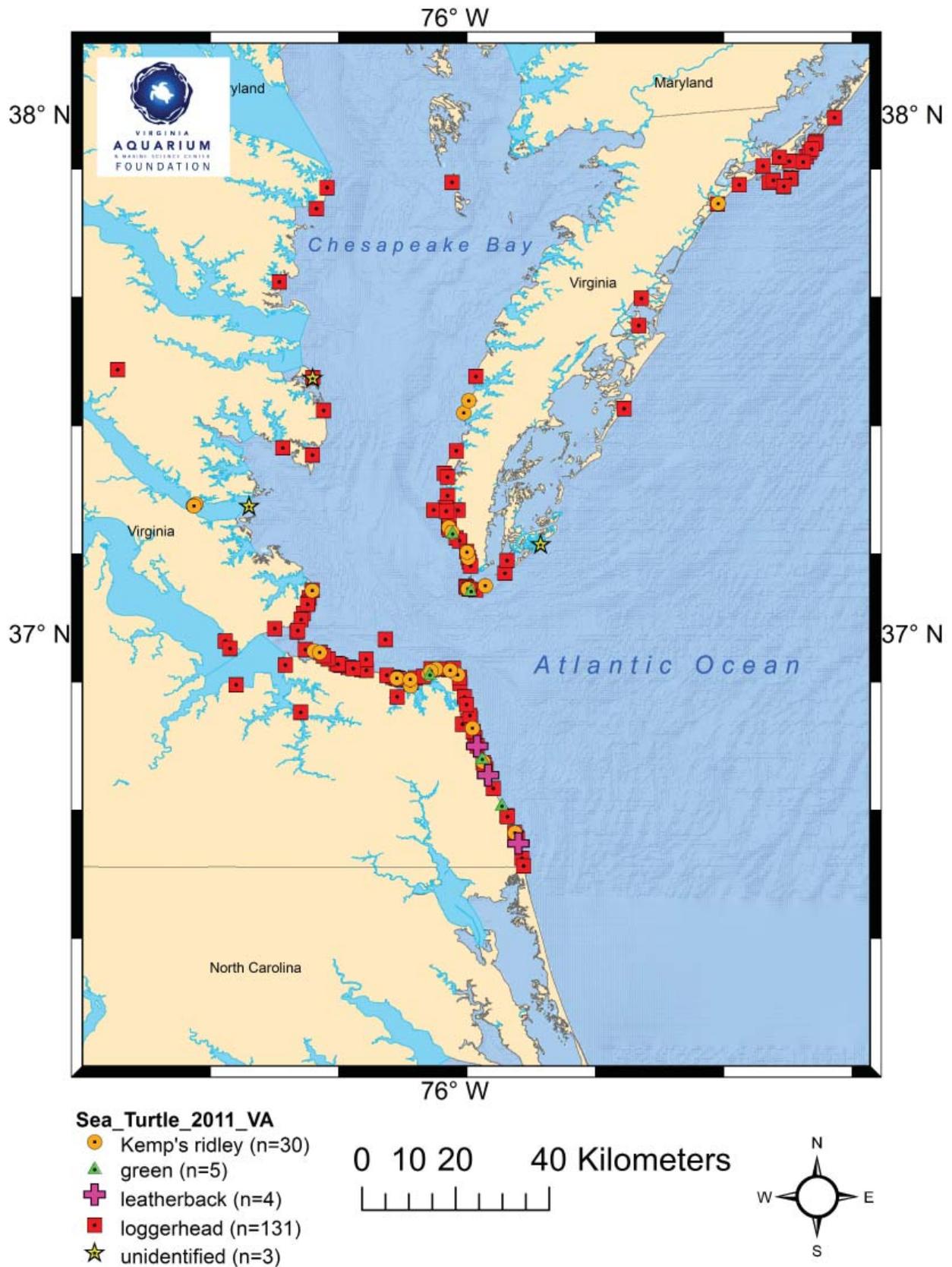


Figure 9: Location of Virginia sea turtle strandings from 2011.

Appendix I: Professional and Education Activities

Educational Activities

<u>Event</u>	<u>Date</u>	<u>Attendance</u>
<u>Outreach Opportunities</u>		
Winter Wildlife Festival	1/29/11	1000
Marine Mammal Day at NC Natural History Museum, Raleigh, NC	1/29/11	250+
Reptile Weekend at the VLM-outreach	2/19-2/20	4000
Beach Pet Hospital Open House	4/10/11	100
Earth Day	5/1/11	10,000
Old Beach Farmers Market	6/18/11	500
VAQS Annual Dolphin Count	7/30/11	75
Canon Virginia Environmental Fair	9/1/11	100
Eastern Shore Birding Festival	10/8/11	hundreds
<u>Public Presentations</u>		
Bottle Cap Talk, Princess Anne Library	1/4/11	35
Boy Scout Troop Talk	3/7/11	20
Virginia Beach Education Association Talk	3/16/11	20
VBSPCA Kids Camp	4/21/11	14
Seatack Elementary	4/28/11	15
Barrier Island Center Turtle Talk	6/18/11	20
Virginia Zoo Docent Talk	9/28/11	35
Suffolk Clean Community Commission	12/6/11	14
<u>Stranding Center Tours & Group Presentations</u>		
Knee Deep in the Chesapeake Tour and Talk	4/10/11	20
Lynnhaven Middle School Environmental Club	5/13/11	25
National Aquarium in Baltimore Volunteer Tour	9/20/11	4
VA Aquarium Board Meeting	9/28/11	40
Knee Deep in the Chesapeake Tour and Talk	11/29/11	20
<u>Virginia Aquarium Talks and Events</u>		
Mentoring Young Scientists - Bottle Cap Talk	1/7/11	20
Volunteer Recruitment at VAQ	1/18/11	90
Linkhorn Park Elementary Math and Science Academy	2/7/11	50
Mentoring Young Scientists - Stranding Response & Research	2/18/11	20

Appendix I: Professional and Education Activities *cont.***Virginia Aquarium Talks and Events**

<u>Name</u>	<u>Date</u>	<u>Attendance</u>
Volunteer Recruitment at VAQ	3/11/11	25
SWAT Camp	7/12/11	15
SWAT CAMP	7/26/11	15
Bottlenose Dolphin Lecture for NC Aquarium at Fort Fisher/NC Museum of Natural Sciences Marine Mammal Institute	8/10/11	20
Dolphin Watch and Necropsy for Teachers: NC Aquarium at Fort Fisher/NC Museum of Natural Sciences Marine Mammal Institute	8/11/11	20
SWAT Camp	8/12/11	15
Cape Henry Collegiate Presentation	9/21/11	30
Volunteer Recruitment at VAQ	9/28/11	25
Volunteer Recruitment at VAQ	10/4/11	25
Mentoring Young Scientists - Stranding Response & Research	11/12/11	25
Linkhorn Park Elementary Math and Science Academy	12/5/11	52

Training Opportunities**Name****Stranding Response Team and Cooperator Trainings**

Live Seal Make up Training	1/20-1/22/11	11
Husbandry Training	2/7-2/12/11	59
Northern NC Stranding Partners Meeting & training	3/16/11	25
Marine Mammal Natural History Training	3/30/11	52
Sea Turtle Hands on Training	5/14-5/21/11	60
Sea Turtle Natural History Training	5/14/11	40
Sea Turtle Natural History Training	5/24/11	40
Stranding Response Training	5/14/21	60
ESVNWR Stranding Response Training	5/10/11	5
CNWR Stranding Response Training	5/26/11	28
BBNWR Stranding Response Training	6/6/11	10
Beach driving Training	7/13 & 7/16/11	22
VAQS Annual Dolphin Count Training	7/28/11	60
US Coast Guard Level 1 Disentanglement Training	10/20/11	40

Appendix I: Professional and Education Activities *cont.*

<u>Name</u>	<u>Date</u>	<u>Attendance</u>
<u>Staff Training</u>		
Staff Husbandry Training	2/2/11	7
Sea Turtle Tangle Net Training	2/16/11	2
Sea Turtle Tangle Net Training	3/16/11	2
Tursiops Life History Training with HSWRI	3/14-3/15/11	2
Sea Turtle Trawl Training	5/22-5/28/11	11
NOAA Loggerhead Health Assessments	6/1-6/10	1
Tursiops Life History Training with NOS	6/23/11	1
City of Virginia Beach Fork Lift Training	8/4/11	50
Sea Turtle GI Contents Training	10/4-10/6/11	2
Sea Turtle Tangle Net Training	11/2/11	2
<u>Other</u>		
Seal Release	1/27/11	50
Stranding Response Team Annual Business Meeting and Volunteer Recognition Event	2/26/11	32
Sea Turtle Release	6/2/11	100
Sea Turtle Boat Release	6/29/11	30
Sea Turtle Release	7/20/11	30
Sea Turtle Boat Release	8/1/11	30
International Coastal Cleanup Fisherman Island	10/2/11	30
Sea Turtle Release (Big Boy)	10/18/11	100
Sea Turtle and Hatchling Release from offshore NC	11/21/11	8

Appendix I: Professional and Education Activities *cont.***Scientific Conferences, Professional Meetings and Workshops**

- North American Veterinary Conference, January 14-20, Orlando, FL
- Atlantic States Marine Fisheries Commission – Atlantic Coastal Cooperative Statistics Program, Bycatch Prioritization Committee (conference call and webinar), January 27
- Virginia Sea Grant Project Participants' Symposium, February 2, Richmond, VA
- CMAST/North Carolina State University Euthanasia Training, February 2, Manteo, NC
- Virginia Dept of Game and Inland Fisheries State Grants Meeting, March 8, Richmond, VA
- North Carolina Outer Banks Stranding Network Meeting, March 16-17, Manteo, NC
- Northeast Region Stranding Network Conference, March 22-27, Virginia Beach, VA
- Southeast and Mid-Atlantic Marine Mammal Symposium, April 1-3, Coastal Carolina University, SC
- NMFS Atlantic Bottlenose Dolphin Take Reduction Team Meeting, April 5-8, Baltimore, MD
- Alliance of Marine Mammal Parks and Aquariums Annual Meeting, April 9-12, Alexandria, VA
- International Symposium on Sea Turtle Biology and Conservation, April 11-15, San Diego, CA
- Virginia Offshore Wind Conference, June 22, Virginia Beach, VA
- NMFS Large Whale Take Reduction Plan Scoping Meeting, July 27, Virginia Beach, VA
- Bureau of Ocean Energy Management (BOEM) Virginia Task Force Meeting, August 17, Norfolk, VA
- Prescott Cetacean Euthanasia Project Workshop, October 12-14, Virginia Beach, VA
- North Atlantic Right Whale Consortium Annual Meeting, November 2-3, New Bedford, MA
- Stranded Marine Mammal Veterinary Care Workshop, November 8, Mystic, CT
- Marine Wildlife and Wind Energy Workshop, November 9, Portland, ME
- 19th Biennial Conference on the Biology of Marine Mammals, November 27 - December 2, Tampa, FL
- Prescott Stranding Grant Program Peer Review Panel, December 12-16, San Diego, CA

Scientific Publications and Presentations

- Barco, Susan G., Lynott, Margaret C., Swingle, W. Mark. 2011. Seasonality of net gear interactions with stranded bottlenose dolphins (*Tursiops truncatus*) in Virginia, USA. Poster presentation at the 19th Biennial Conference on the Biology of Marine Mammals, November 27 – December 2, Tampa, FL.
- Barco, S.G., Trapani, C.M., Mallette, S.D. 2011. Eastern Shore of Virginia Sea Turtle Stranding Surveys. Final Report to NOAA Fisheries Service, Contract # EA133F-09-SE-41555 and in Partial Fulfillment of Contract # EA133F-10-SE-2181. VAQF Scientific Report 2011-02. Virginia Beach, VA. 12pp.
- Bort, J.E., Todd, S., Stevick, P., Van Parijs, S., Summers, E. 2011. North Atlantic Right Whale (*Eubalaena glacialis*) Acoustic Activity on a Wintering Ground in the Central Gulf of Maine. Talk at the North Atlantic Right Whale Consortium Annual Meeting, November 2-3, New Bedford, MA

Appendix I: Professional and Education Activities *cont.***Scientific Publications and Presentations, Cont.**

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Appendix II: Highlights of the year - Marine Mammals



In 2011, VAQS responded to nine live marine mammals. The majority of these strandings happened within the first four months of the year and consisted mostly of seals. On January 4, VAQS responded to a live dwarf sperm whale in Virginia Beach. The animal's prognosis was very poor and it was humanely euthanized. By the beginning of March there was an influx of adult harp seal sightings and strandings (photo top left). Due to limited pinned rehabilitation space and resources, VAQS was not able to admit any adult harp seals to the Marine Animal Care Center (MACC). One gray seal and one harbor seal were admitted to the MACC. The gray seal was transferred to the National Aquarium in Baltimore and was subsequently released from Ocean City, MD on June 24, 2011. The harbor seal was kept at the MACC for long term rehabilitation. Unfortunately, the harbor seal suffered from a severe case of seal pox and died on March 23rd. Another noteworthy live response by VAQS was a report of a live pygmy sperm whale on the night of April 15 on a mud flat in Folley's Creek on the eastern shore (photo top right). Unfortunately, the animal's prognosis was very poor and the animal was humanely euthanized that night.



The Stranding Response Team recorded three large whale strandings in 2011. One large whale was a live entangled humpback whale that was entangled in gill net (photo left). It had been sighted from the beach in Virginia Beach but due to weather and time of day,

an immediate disentanglement could not be performed. Once the winds decreased, responders tried to relocate the animal, but only found the gear that it had been entangled in. That animal's final disposition remains unknown. Interestingly, the other two whales recorded were atypical for the Team. One was the rarely seen sei whale, the second recorded in Virginia (photo below). This animal had stranded in Sandbridge in late March and showed evidence of a ship strike. Finally, a never before recorded (in the VAQS database) sperm whale was reported on the eastern shore's Smith Island in late October. However, due to logistical challenges, the animal washed out to sea before a necropsy could be performed.



Appendix III: Highlights of the year - Sea Turtles



On May 12th, VAQS responded to an entangled loggerhead sea turtle near the Chesapeake Bay Bridge Tunnel. With the assistance of the Virginia Beach Marine Police, VAQS rescued and disentangled the animal (photo left) from crab pot line with attached pot. The turtle was admitted to the Marine Animal Care Center (MACC) for further treatment and released six weeks later. On May 22nd VAQS responded to another entangled loggerhead sea turtle. With the assistance of the USCG, VAQS retrieved and disentangled the 128 kg adult male loggerhead sea turtle from crab pot line. The turtle sustained a traumatic injury to the left front flipper due to the entanglement which resulted in a surgical amputation of the affected flipper.

The animal underwent a challenging recovery and was fitted with a satellite transmitter and released on October 18th from Virginia Beach (photo right). The adult loggerhead was not the only amputee patient cared for at the MACC. On August 29, the Marine Mammal Stranding Center (MMSC) of Brigantine, NJ responded to a juvenile sea turtle that had sustained shark bites to the right front flipper and associated carapace lacerations. MMSC transferred the animal to the MACC for long term rehabilitation. The injury to the right front flipper was so extensive that surgical amputation was again required. The surgery and recovery was a success. The animal was fitted with a satellite tag and released on November 21st, off the NC coast just west of the Gulf Stream. The majority of sea turtles admitted to the MACC prove to be challenging, but resilient. As we entered 2012, two sea turtles are still in rehab undergoing treatments.



One of the most notable events this year was Hurricane Irene and what she left in her wake. Irene hit our shoreline on August 27th with winds reaching 80 mph. In the five days following Irene, the Team responded to 12 (dead) sea turtles one of which was recovered during the storm by Virginia Aquarium fish staff keeping tabs on the storm's damage. Out of the 12 dead turtles recorded, four were reported as boat strikes. Furthermore, three of the four boat strikes were leatherbacks (photo left), including a leatherback that had been tagged while nesting in Florida in 2009.

VAQS also responded to six washback loggerhead hatchlings (photo right) in the days following the hurricane. All six animals were transported to North Carolina where they joined several other hatchlings for a trip out to the Gulf Stream.



Appendix IV: Stranding Network Datasheets

A: Marine Mammal Level A Datasheet

MARINE MAMMAL STRANDING REPORT - LEVEL A DATA

FIELD #: VAQS2012 NMFS REGIONAL #: _____ NATIONAL DATABASE#: _____
(NMFS USE) (NMFS USE)

COMMON NAME: _____ GENUS: _____ SPECIES: _____

EXAMINER Name: _____ Affiliation: Virginia Aquarium Stranding

Address: 717 General Booth Blvd, Virginia Beach, VA 23451 Phone: 757-385-7575

Stranding Agreement or Authority: Virginia Aquarium Stranding

<p>LOCATION OF INITIAL OBSERVATION</p> <p>State: _____ County: _____</p> <p>City: _____</p> <p>Body of Water: _____</p> <p>Locality Details: _____</p> <p>Lat (DD): _____ N Long (DD): _____ W</p> <p><input type="checkbox"/> Actual <input type="checkbox"/> Estimated</p> <p>How Determined: (check ONE)</p> <p><input type="checkbox"/> GPS <input type="checkbox"/> Map <input type="checkbox"/> Internet/Software</p>	<p>OCURENCE DETAILS <input type="checkbox"/> Restrand GE# _____</p> <p>Group Event: <input type="checkbox"/> YES <input type="checkbox"/> NO (NMFS Use)</p> <p>If Yes, Type: <input type="checkbox"/> Cow/Calf Pair <input type="checkbox"/> Mass Stranding # Animals: _____ <input type="checkbox"/> Actual <input type="checkbox"/> Estimated</p> <p>Findings of Human Interaction: <input type="checkbox"/> YES <input type="checkbox"/> NO <input type="checkbox"/> Could Not Be Determined (CBD)</p> <p>If Yes, Choose one or more: <input type="checkbox"/> 1. Boat Collision <input type="checkbox"/> 2. Shot <input type="checkbox"/> 3. Fishery Interaction</p> <p><input type="checkbox"/> 4. Other Human Interaction: _____</p> <p>How Determined (Check one or more): <input type="checkbox"/> External Exam <input type="checkbox"/> Internal Exam <input type="checkbox"/> Necropsy</p> <p><input type="checkbox"/> Other: _____</p> <p>Gear Collected? <input type="checkbox"/> YES <input type="checkbox"/> NO Gear Disposition: _____</p> <p>Other Findings Upon Level A: <input type="checkbox"/> YES <input type="checkbox"/> NO <input type="checkbox"/> Could Not Be Determined (CBD)</p> <p>If Yes, Choose one or more: <input type="checkbox"/> 1. Illness <input type="checkbox"/> 2. Injury <input type="checkbox"/> 3. Pregnant <input type="checkbox"/> 4. Other: _____</p> <p>How Determined (Check one or more): <input type="checkbox"/> External Exam <input type="checkbox"/> Internal Exam <input type="checkbox"/> Necropsy</p> <p><input type="checkbox"/> Other: _____</p>																								
<p>INITIAL OBSERVATION</p> <p>Date: Year: <u>2012</u> Month: _____ Day: _____</p> <p>First Observed: <input type="checkbox"/> Beach or Land <input type="checkbox"/> Floating <input type="checkbox"/> Swimming</p> <p>CONDITION AT INITIAL OBSERVATION (Check ONE)</p> <p><input type="checkbox"/> 1. Alive <input type="checkbox"/> 4. Advanced Decomposition</p> <p><input type="checkbox"/> 2. Fresh dead <input type="checkbox"/> 5. Mummified/Skeletal</p> <p><input type="checkbox"/> 3. Moderate decomposition <input type="checkbox"/> 6. Condition Unknown</p>	<p>LEVEL A EXAMINATION <input type="checkbox"/> Not Able to Examine</p> <p>Date: Year: <u>2012</u> Month: _____ Day: _____</p> <p>CONDITION AT EXAMINATION (Check ONE)</p> <p><input type="checkbox"/> 1. Alive <input type="checkbox"/> 4. Advanced Decomposition</p> <p><input type="checkbox"/> 2. Fresh dead <input type="checkbox"/> 5. Mummified/Skeletal</p> <p><input type="checkbox"/> 3. Moderate decomposition <input type="checkbox"/> 6. Unknown</p>																								
<p>INITIAL LIVE ANIMAL DISPOSITION (Check one or more)</p> <p><input type="checkbox"/> 1. Left at Site <input type="checkbox"/> 6. Euthanized at Site</p> <p><input type="checkbox"/> 2. Immediate Release at Site <input type="checkbox"/> 7. Transferred to Rehabilitation:</p> <p><input type="checkbox"/> 3. Relocated Date: Year: _____ Month: _____ Day: _____</p> <p>Facility: _____</p> <p><input type="checkbox"/> 4. Disentangled <input type="checkbox"/> 8. Died during Transport</p> <p><input type="checkbox"/> 5. Died at Site <input type="checkbox"/> 9. Euthanized during Transport</p> <p><input type="checkbox"/> 10. Other: _____</p> <p>CONDITION/DETERMINATION (Check one or more)</p> <p><input type="checkbox"/> 1. Sick <input type="checkbox"/> 7. Location Hazardous</p> <p><input type="checkbox"/> 2. Injured <input type="checkbox"/> a. To animal</p> <p><input type="checkbox"/> 3. Out of Habitat <input type="checkbox"/> b. To public</p> <p><input type="checkbox"/> 4. Deemed Releasable <input type="checkbox"/> 8. Unknown/CBD</p> <p><input type="checkbox"/> 5. Abandoned/Orphaned <input type="checkbox"/> 9. Other: _____</p> <p><input type="checkbox"/> 6. Inaccessible _____</p>	<p>MORPHOLOGICAL DATA</p> <p>SEX (Check ONE) AGE CLASS (Check ONE)</p> <p><input type="checkbox"/> 1. Male <input type="checkbox"/> 1. Adult <input type="checkbox"/> 4. Pup/Calf</p> <p><input type="checkbox"/> 2. Female <input type="checkbox"/> 2. Subadult <input type="checkbox"/> 5. Unknown</p> <p><input type="checkbox"/> 3. Unknown <input type="checkbox"/> 3. Yearling</p> <p><input type="checkbox"/> Whole Carcass <input type="checkbox"/> Partial Carcass</p> <p>Straight length: _____ <input type="checkbox"/> cm <input type="checkbox"/> in <input type="checkbox"/> actual <input type="checkbox"/> estimated</p> <p>Weight: _____ <input type="checkbox"/> kg <input type="checkbox"/> lb <input type="checkbox"/> actual <input type="checkbox"/> estimated</p> <p>PHOTOS/VIDEOS TAKEN: <input type="checkbox"/> YES <input type="checkbox"/> NO</p> <p>Photo/Video Disposition: _____</p>																								
<p>TAG DATA Tags Were:</p> <p>Present at Time of Stranding (Pre-existing): <input type="checkbox"/> YES <input type="checkbox"/> NO</p> <p>Applied during Stranding Response: <input type="checkbox"/> YES <input type="checkbox"/> NO</p> <table border="1" style="width:100%; border-collapse: collapse;"> <thead> <tr> <th>ID#</th> <th>Color</th> <th>Type</th> <th>Placement* (Circle ONE)</th> <th>Applied</th> <th>Present</th> </tr> </thead> <tbody> <tr> <td>_____</td> <td>_____</td> <td>_____</td> <td>D DF L LF LR RF RR</td> <td style="text-align:center"><input type="checkbox"/></td> <td style="text-align:center"><input type="checkbox"/></td> </tr> <tr> <td>_____</td> <td>_____</td> <td>_____</td> <td>D DF L LF LR RF RR</td> <td style="text-align:center"><input type="checkbox"/></td> <td style="text-align:center"><input type="checkbox"/></td> </tr> <tr> <td>_____</td> <td>_____</td> <td>_____</td> <td>D DF L LF LR RF RR</td> <td style="text-align:center"><input type="checkbox"/></td> <td style="text-align:center"><input type="checkbox"/></td> </tr> </tbody> </table> <p><small>* D= Dorsal; DF= Dorsal Fin; L= Lateral Body LF= Left Front; LR= Left Rear; RF= Right Front; RR= Right Rear</small></p>	ID#	Color	Type	Placement* (Circle ONE)	Applied	Present	_____	_____	_____	D DF L LF LR RF RR	<input type="checkbox"/>	<input type="checkbox"/>	_____	_____	_____	D DF L LF LR RF RR	<input type="checkbox"/>	<input type="checkbox"/>	_____	_____	_____	D DF L LF LR RF RR	<input type="checkbox"/>	<input type="checkbox"/>	<p>CARCASS STATUS (Check one or more)</p> <p><input type="checkbox"/> 1. Left at Site <input type="checkbox"/> 4. Towed: Lat _____ Long _____ <input type="checkbox"/> 7. Landfill</p> <p><input type="checkbox"/> 2. Buried <input type="checkbox"/> 5. Sunk: Lat _____ Long _____ <input type="checkbox"/> 8. Unknown</p> <p><input type="checkbox"/> 3. Rendered <input type="checkbox"/> 6. Frozen for Later Examination <input type="checkbox"/> 9. Other: _____</p> <p>SPECIMEN DISPOSITION (Check one or more)</p> <p><input type="checkbox"/> 1. Scientific collection <input type="checkbox"/> 2. Educational collection</p> <p><input type="checkbox"/> 3. Other: _____</p> <p>Comments: _____</p> <p>NECROPSIED <input type="checkbox"/> NO <input type="checkbox"/> YES <input type="checkbox"/> Limited <input type="checkbox"/> Complete</p> <p><input type="checkbox"/> Carcass Fresh <input type="checkbox"/> Carcass Frozen/Thawed</p> <p>NECROPSIED BY: _____</p> <p>Date: Year: _____ Month: _____ Day: _____</p>
ID#	Color	Type	Placement* (Circle ONE)	Applied	Present																				
_____	_____	_____	D DF L LF LR RF RR	<input type="checkbox"/>	<input type="checkbox"/>																				
_____	_____	_____	D DF L LF LR RF RR	<input type="checkbox"/>	<input type="checkbox"/>																				
_____	_____	_____	D DF L LF LR RF RR	<input type="checkbox"/>	<input type="checkbox"/>																				

B: Sea Turtle Level A Datasheet

SEA TURTLE STRANDING AND SALVAGE NETWORK – STRANDING REPORT

OBSERVER'S NAME / ADDRESS / PHONE: First _____ M.I. _____ Last _____ Affiliation: Virginia Aquarium Stranding Response Program Address: 717 General Booth Blvd. Virginia Beach, VA 23451 vaqstranding@verizon.net Area code/Phone number: 757-385-7575	STRANDING DATE: Year 20__ __ Month __ __ Day __ __ Turtle number by day __ __ VAQS20 _____ -State coordinator must be notified within 24 hrs; this was done by <input type="checkbox"/> phone (757)385-7575 <input type="checkbox"/> email <input type="checkbox"/> fax (757)437-4933
--	---

SPECIES: (check one)

CC = Loggerhead
 CM = Green
 DC = Leatherback
 EI = Hawksbill
 LK = Kemp's Ridley
 LO = Olive Ridley
 UN = Unidentified
Check Unidentified if not positive. Do Not Guess.

Carcass necropsied? Yes No
 Necropsied By _____
 Necropsy Date _____
 Photos taken? Yes No
 Species verified by state coordinator?
 Yes No Initial _____

SEX:

Undetermined
 Female Male
 Does tail extend beyond carapace?
 Yes; how far? _____ cm / in
 No
 How was sex determined?
 Necropsy
 Tail length (adult only)

STRANDING LOCATION: Offshore (Atlantic or Gulf beach) Inshore (bay, river, sound, inlet, etc)
 State _____ County _____
 Descriptive location (be specific) _____

 Latitude _____ Longitude _____

CONDITION: (check one)

0 = Alive
 1 = Fresh dead
 2 = Moderately decomposed
 3 = Severely decomposed
 4 = Dried carcass
 5 = Skeleton, bones only

FINAL DISPOSITION: (check)

1 = Left on beach where found; painted? Yes* No(5)
 2 = Buried: on beach / off beach;
 carcass painted before buried? Yes* No
 3 = Salvaged: all / part(s), what/why? _____

 4 = Pulled up on beach/dune; painted? Yes* No
 6 = Alive, released
 7 = Alive, taken to rehab. facility, where? _____

 8 = Left floating, not recovered; painted? Yes* No
 9 = Disposition unknown, explain _____

**If painted, what color? _____*

TAGS: Contact state coordinator before disposing of any tagged animal!!
 Checked for flipper tags? Yes No
Check all 4 flippers. If found, record tag number(s) / tag location / return address

PIT tag scan? Yes No
 If found, record number / tag location

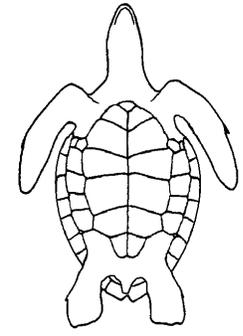
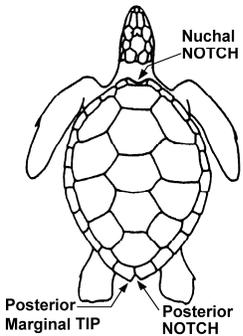
Coded wire tag scan? Yes No
 If positive response, record location (flipper)

Checked for living tag? Yes No
 If found, record location (scute number & side)

CARAPACE MEASUREMENTS: (see drawing)

Using calipers Circle unit
 Straight length (NOTCH-TIP) _____ cm / in
 Minimum length (NOTCH-NOTCH) _____ cm / in
 Straight width (Widest Point) _____ cm / in
Using non-metal measuring tape Circle unit
 Curved length (NOTCH-TIP) _____ cm / in
 Minimum length (NOTCH-NOTCH) _____ cm / in
 Curved width (Widest Point) _____ cm / in

Weight actual / est. _____ kg / lb



Mark wounds / abnormalities on diagrams at left and describe below (note tar or oil, gear or debris entanglement, propeller damage, epibiota, papillomas, emaciation, etc.). **Please note if no wounds / abnormalities are found.**

Genetics sent _____ Flipper(s) sent _____ Release Date _____