

### In This Issue:

2018 Whale Tagging	p. 2
Fish and Ships	p. 4
Volunteer of the Year	p. 6
Space to Sea Photo Project	p. 7
Student Marine Art	p. 8
Following Shearwaters	p.11
Rec Fishing Awards	p.12

EDITOR: Anne Smrcina

To receive notices about new issues or to provide feedback on this publication, contact us at [stellwagen@noaa.gov](mailto:stellwagen@noaa.gov) or 781-545-8026 and provide your e-mail address. This information will be held securely and not released to any outside organization or individual.

**SPECIAL 25<sup>TH</sup> ANNIVERSARY EDITION**  
25 Year Timeline – pages 14-15

# 27 Tags Deployed during 2018 Whale Research Cruise

## Twelve-day mission brings back exciting and novel findings



Photo: NOAA/SBNMS

In some years, weather and whales seem to be at odds with the research plan; in other years, everything meshes like a well-oiled machine. This year, the whale tagging cruise fell into the latter category. Researchers deployed a total of 27 tags, 26 on humpbacks (23 different animals, 3 were tagged twice) and one on a fin whale during the late June-early July mission.

Using two different types of tags (one collecting movement data with GPS and audio – Dtags and the other collecting movement and video -- CATS), the team archived more than 200 hours of whale behavior data. Highlights included a deployment that lasted 42 hours and the project's first use of GPS-enabled tags to record nighttime positions.

A priority this year was the collection of data from humpback mother-calf pairs and juvenile whales to examine vocal development in this species and testing of modifications to Dtags for improved holding power of the suction cups and a more hydrodynamic housing. The use of the CATS video recording tags provided the first-ever views of humpback whales team feeding on sand lance fish along the seabed.

Dr. David Wiley, sanctuary research coordinator, and Michael Thompson, sanctuary GIS analyst and expert tagger, led the 20-member multi-organization team during the 12-day-long mission

The team conducted all work, including the use of Unmanned Autonomous Vehicles (drones) for photogrammetry, under Research Permit #18059, authorized by NOAA Fisheries. Researchers represented the following institutions: Stanford University, UC-Santa Cruz, Syracuse University, Woods Hole Oceanographic Institution, Center for Coastal Studies, Whale Center of New England and Ocean Alliance. In addition to the sanctuary's R/V *Auk*, which served as the base of operations, assistance was provided by Whale Center of New England's M/V *Pinball* and Ocean Alliance's M/V *Catchalot*.

### WHALES TAGGED IN 2018

BANGLE 14 CALF  
 BOLIDE (tagged twice)  
 BOMBAY (tagged twice)  
 CAMPGROUND  
 DUSKY 16 CALF  
 CRISSCROSS  
 DEUCE  
 GANESH 14 CALF  
 GOM-1206  
 GOM-1552  
 GOM-1587  
 GOM-1753  
 JABIRU 18 CALF  
 LUTRIS  
 MILKWEED  
 PISCES  
 SHORELINE (tagged twice)  
 SPRINGBOARD 15 CALF  
 SPRINKLES  
 URSA  
 VENTISCA  
 XYLEM  
 8087 (North Atlantic whale)  
 One fin whale

## Head of NOAA visits sanctuary offices



Rear Admiral Timothy Gallaudet, U.S. Navy (Ret.) Acting Under Secretary of Commerce for Oceans and Atmosphere and NOAA Administrator (bottom row, fourth from right) traveled to Scituate on September 28 to learn more about ongoing programs and meet staff. (Top row, left to right): Postdoctoral Fellow Dr. Tammy Silva, Research Technician Peter Hong, Research Coordinator Dr. Dave Wiley, Program Support Assistant Bibi Stokes, Marine Ecologist Dr. Leila Hatch, Co-op Intern Jaxine Wolfe, Contracting Specialist Sue Henderson (NMFS), Education Coordinator Anne Smrcina, and Enforcement Officer Tim Wilmarth (OLE). (Bottom row, left to right): Geographer Mike Thompson, Deputy Superintendent Ben Haskell, Volunteer and SAC Coordinator Anne-Marie Runfola, ONMS Acting Director Rebecca Holyoke, SBNMS Superintendent Pete DeCola, NOAA Administrator Admiral Tim Gallaudet, NOAA Corps Lt. Scott Broo (aide to the Admiral), Sr. Geospatial Analyst Dan Martin (OCM) and South Shore Coordinator Jason Burtner (MA CZM). Missing Staff Members: Program Support Specialist Alan Collette, Operations Coordinator Dave Slocum, Boat Captain Amy Meloski, Marine Ecologist Alice Stratton, Postdoctoral Fellow Jenni Stanley and Technical Assistant Caitlyn Fitzmaurice. (Photo: NOAA)

### Pete DeCola named sanctuary superintendent

NOAA's Office of National Marine Sanctuaries named Peter DeCola as the new superintendent of Stellwagen Bank National Marine Sanctuary. He succeeds Craig MacDonald, who retired in 2017.

DeCola is a retired U.S. Coast Guard Captain with 26 years of experience overseeing federal government programs and four years working in the private sector for a marine environmental consulting firm. He has a strong background in living marine resource management, developing teamwork and collaboration initiatives, and partnering with local, state, federal, tribal, and international organizations. From 2009 to 2014, he served as a member of the Sanctuary Advisory Council as well as the New England Regional Fishery Management Council. His work at the Coast Guard included Chief, Maritime Law Enforcement Branch; Executive Officer, Integrated Support Command, Boston; and Chief, Performance Consulting Division, which involved directing training specialists to address workforce problems and opportunities.



Pete DeCola (Photo: NOAA)

Pete received a master's in education from the University of Massachusetts, a master's in marine affairs from the University of Rhode Island, and his Bachelor of Science from the U.S. Coast Guard Academy.

## Fish and Ships: Vessel traffic reduces communication ranges for cod and haddock

NOAA's Northeast Fisheries Science Center released the following story in December 2017. A prominent member of the research team was Dr. Leila Hatch, the sanctuary's marine ecologist and bioacoustician; much of the data comes from hydrophones located within Stellwagen Bank National Marine Sanctuary.

NOAA scientists studying sounds made by Atlantic cod and haddock at spawning sites in the Gulf of Maine have found that vessel traffic noise is reducing the distance over which these animals can communicate with each other. As a result, daily behavior, feeding, mating, and socializing during critical biological periods for these commercially and ecologically important fish may be altered, according to a study published in *Nature Scientific Reports*.

Over the course of three months, researchers monitored two sites inside Stellwagen Bank National Marine Sanctuary and one location in Massachusetts Bay south of Cape Ann. Bottom-mounted instruments at each site recorded vocalizations, such as Atlantic cod grunts and haddock knocks, during spawning in winter and spring.

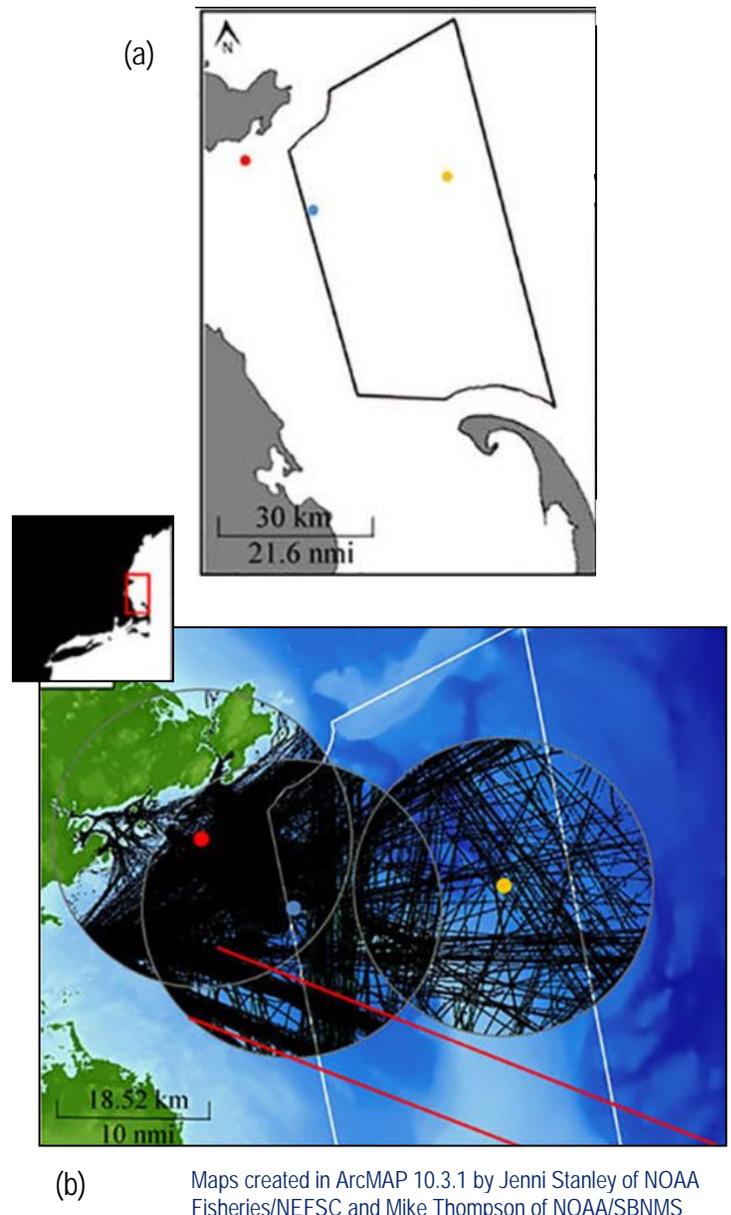
"We looked at the hourly variation in ambient sound pressure levels and then estimated effective vocalization ranges at all three sites known to support spawning activity for Gulf of Maine cod and haddock stocks," said Jenni Stanley, lead author of the study, who serves as a marine research scientist in the passive acoustics group at NOAA's Northeast Fisheries Science Center in Woods Hole. Jenni also holds a postdoctoral research position with the sanctuary. "Both fluctuated dramatically during the study. The sound levels appear to be largely driven by large vessel activity, and we found a significant positive correlation with the number of Automatic Identification System (AIS) tracked vessels at two of the three sites."

AIS is an automatic tracking system, used on ships and by vessel traffic services. It provides information on a vessel, such as its unique identification number, position, course and speed, which can be displayed on a shipboard radar or electronic chart display.

Ambient sounds - those in the surrounding environment - include animals vocalizing, physical sounds such as wind and water movement or geological activity, and human-produced sound from ships and marine construction. Many marine animals

Maps showing (a) locations of the three recording sites within Massachusetts Bay and Stellwagen Bank National Marine Sanctuary north of Cape Cod in relation to the adjacent coast of Massachusetts, (b) AIS vessel tracks over the three-month recording period for both the Atlantic cod winter spawning site and the haddock winter spawning site within a 10 nautical mile radius. White lines mark the boundaries of Stellwagen Bank National Marine Sanctuary.

- Location of the Spring Cod Conservation Zone, the site of the Atlantic cod spring spawning recording location.
- Location of the Atlantic cod winter spawning recording location.
- Location of the haddock winter spawning recording location.
- Port of Boston traffic separation scheme.



(b) Maps created in ArcMAP 10.3.1 by Jenni Stanley of NOAA Fisheries/NEFSC and Mike Thompson of NOAA/SBNSMS

continued on next page

## Fish and Ships *continued from previous page*

use ambient sound to navigate, to choose where to settle, or to modify their daily behaviors including breeding, feeding and socializing.

Cod grunts were present for 100 percent of the spring days and 83 percent of the winter days. Haddock knocks were present for 62 percent of the winter days within the three-month sampling period. However, ambient sound levels differed widely at the three sites, both on an hourly and daily time scale. The Atlantic cod winter spawning site, nearest the Boston shipping lanes, had the highest sound levels, while the Atlantic cod spring spawning site inshore south of Gloucester, Mass. had the lowest. Sound levels in the haddock winter spawning site, further offshore in the sanctuary, were in the middle of the range detected in the study.

Study data were also used to calculate the estimated distance a fish vocalization would be heard at each of the spawning sites. The effective radius ranged widely, from roughly 4 to 70 feet, and was largely dependent on the number of tracked vessels within a 10 nautical mile radius of the recording sites.

Lower-level, chronic exposure to increased ambient sound from human activities is one of the most widespread, yet poorly understood, factors that could be changing fish behavior. If they cannot hear as well as they need to, then sound signals from other fish can be lost, compromised, or misinterpreted in ways that can cause a change in behavior. Since Atlantic cod, for example, vocalize to attract mates and listen for predators, not hearing those signals could potentially reduce reproductive success and survival.

“Anthropogenic sound in certain ocean regions has increased considerably in recent decades due to various human activities such as global shipping, construction, sonar, and recreational boating,” Stanley said. “As ocean sound increases, so does the concern for its effects on populations of acoustic signalers, which range from invertebrates to marine mammals. We don’t know if or to what extent specific species can adapt or adjust their acoustic signals to compete in this environment.”

In addition to Stanley, other researchers involved in the study were Sofie Van Parijs at the NEFSC’s Woods Hole Laboratory and Leila Hatch at Stellwagen Bank National Marine Sanctuary. Funding was provided by NOAA’s Northeast Fisheries Science Center (NEFSC) and Regional Fisheries Office, NOAA’s Office of National Marine Sanctuaries, the National Oceanographic Partnership Program, and the Massachusetts Environmental Trust.

The paper can be found at

<https://www.nature.com/articles/s41598-017-14743-9>

Sound clips of cod grunts, haddock knocks and vessel movement can be heard at

[https://www.nefsc.noaa.gov/press\\_release/pr2017/scispot/ss1711/](https://www.nefsc.noaa.gov/press_release/pr2017/scispot/ss1711/)



Atlantic Cod (Photo: NOAA)

Photos: Acoustic studies may provide answers about Atlantic cod (pictured at left) numbers and distribution. Scientists report that male cod make distinctive grunts, especially prevalent in their winter spawning grounds. The haddock (pictured below) another member of the gadid (cod) family produces sounds that scientists term “knocks.” Increased human-produced noise may mask these fish vocalizations, thereby making it more difficult for them to attract mates or listen for predators.



Haddock (Photo: NURTEC, UConn)

## Rachel Mehmel awarded 2018 Stellwagen Bank Volunteer of the Year

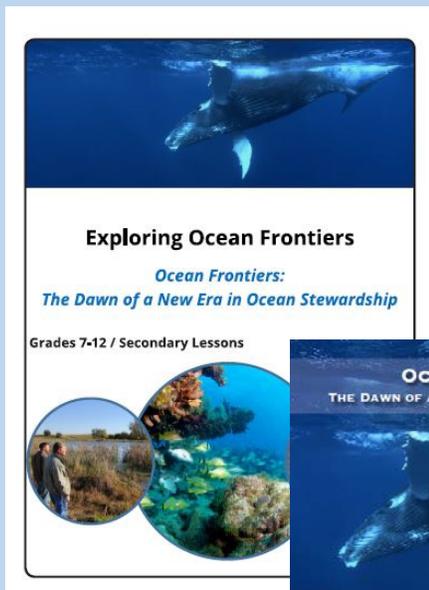
Rachel Mehmel, Stellwagen Bank National Marine Sanctuary's 2018 Volunteer of the Year (center) receives her award from National Marine Sanctuary Foundation President and CEO Kris Sarri and Office of National Marine Sanctuaries Director John Armor. (Photo NOAA)



Some people shyly test the water before committing to a course of action; others dive right in. A determined plunge was the case with Rachel Mehmel. This recent graduate of Bridgewater State University had shifted her focus from a career in business to one in environmental education and outreach. Having grown up on Cape Cod, she already held a deep connection to the ocean and Salt, the sanctuary's inflatable whale, drew her to the sanctuary. Over the first six months of volunteering, she took on the responsibilities of lead educator for the sanctuary's signature Salt program. During the 2017 Get Into Your Sanctuary event (held at the Boston GreenFest on City Hall Plaza), she offered non-stop tours in 90 degree heat. She had to be coaxed out of the whale to take a break and hydrate. Since then, Rachel and Salt have visited numerous sites across the state, allowing students and adults alike to learn about whales and the sanctuary" without getting wet."

In addition to signing up for numerous sanctuary events, Rachel has worked at a nature center and takes online courses at the University of Leeds for a certificate in environmental challenges. One of her personal interests is how climate change affects children. And, in her spare time, Rachel has an artistic bent – baking elaborate cakes for friends, family and a local caterer. Congratulations, Rachel and thank you for all of your work to protect the ocean.

### Sanctuary case study in *Ocean Frontiers* education package

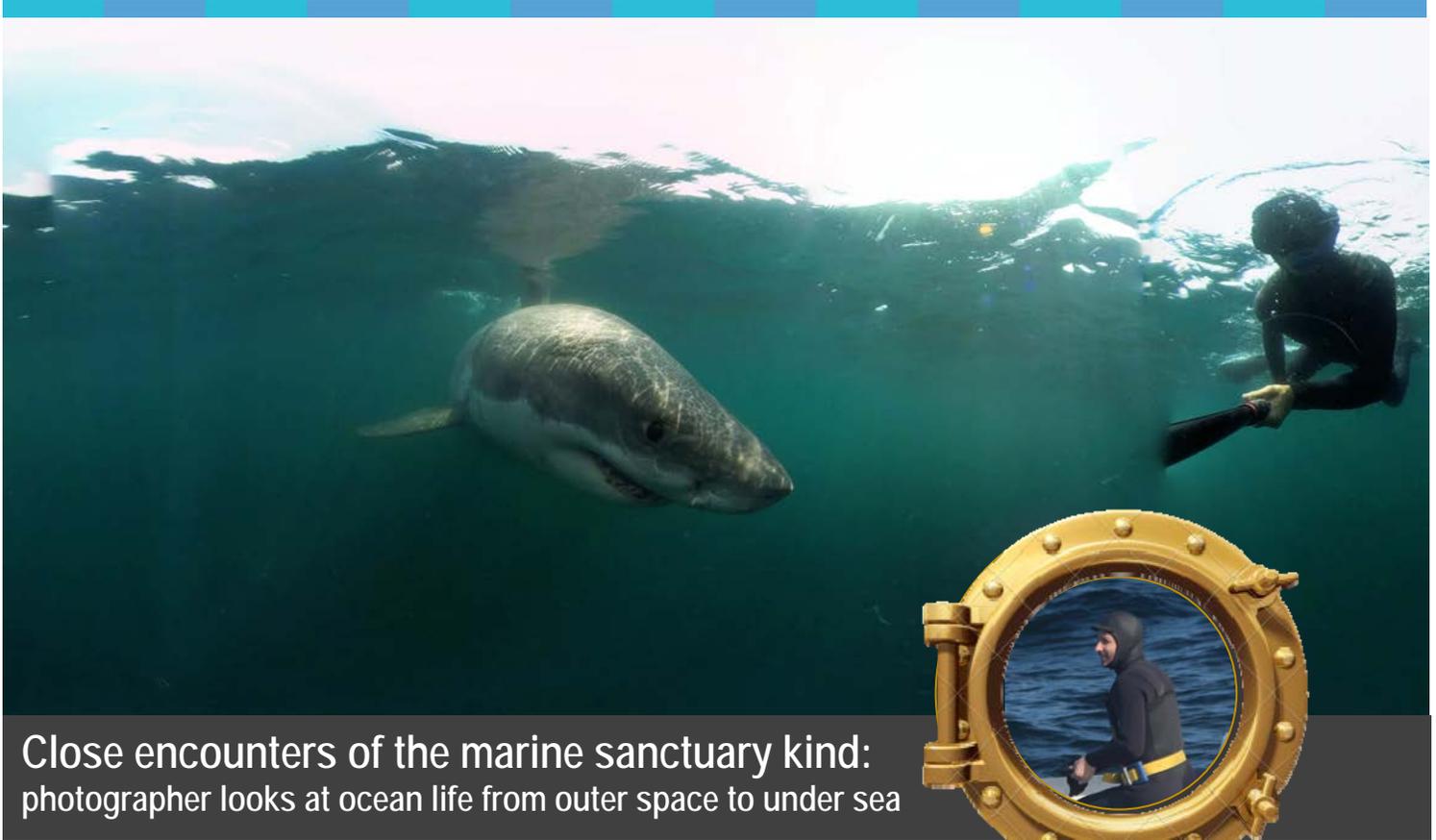


In 2011, the sanctuary's efforts to help shift the Boston shipping lanes to protect whales served as a central story in the award-winning film *Ocean Frontiers*. Now, after three *Ocean Frontiers* programs and *The Great Bear Sea*, Green Fire Productions has released educator resource packages for grades 7-12 and post-secondary teachers. The Stellwagen Bank project provides the basis for a lesson on using GIS data for informed decision-making. The post-secondary guide uses the Stellwagen case study to advance discussion on the topics of ocean planning and the difficulties of managing competing uses



Materials available to educators include free DVDs (until November 30), video downloads, and PDFs of the *Exploring Ocean Frontiers* secondary lessons and the *Ocean Frontiers* post-secondary discussion guide.

For more information, visit <https://ocean-frontiers.org>

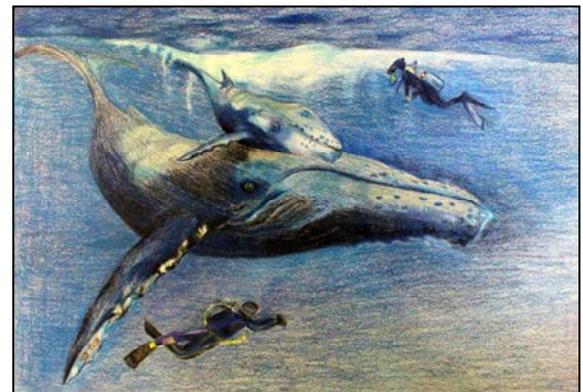


## Close encounters of the marine sanctuary kind: photographer looks at ocean life from outer space to under sea

You may have caught the video clip on the evening news or read about it the next day in your daily newspaper. It was an account of a very close approach by a great white shark to an underwater photographer. It happened in the sanctuary on August 17, and that indomitable photographer is Keith Ellenbogen, who is undertaking a multi-year effort to document the sanctuary's biodiversity from the smallest plankton to the greatest whales. For the project, labeled *Space to Sea – A Journey into Stellwagen Bank*, NOAA Fisheries accorded Keith the first, and still only, permit to dive and/or swim/snorkel with marine mammals here in the northeast United States.

In relating the story of the great white shark, Ellenbogen admits that it was a case of mistaken identity. Based on the dorsal fin shape and animal's movements, the initial identification was basking shark. Keith slipped into the water and started moving slowly towards his photo subject. Appearing out of the murky waters was a different sort of shark – some 16-feet of great white. Keeping his pole-mounted 360-degree virtual reality camera well in front of him, Keith held his ground. He made sure to avoid bumping the fish with his camera, but as the shark cruised by, he realized it was close enough to touch. For Keith's account of his encounter with the shark, later identified as Large Marge, visit <https://blog.nationalgeographic.org/2018/09/17/360°-vr-encounter-with-great-white-shark-in-stellwagen-bank-national-marine-sanctuary/>.

Although whales avoided close-up photo sessions this year, a dolphin pod did not seem to be as reticent. They investigated and eventually swam off, their curiosity assuaged. Other first year models included jellies, ocean sunfish (*Mola mola*), and a large school of mackerel. Keith will be working with MIT and will use a variety of photographic techniques, including microscopy and satellite imagery. The National Marine Sanctuary Foundation awarded Keith a Hollings Ocean Awareness Grant for this project.

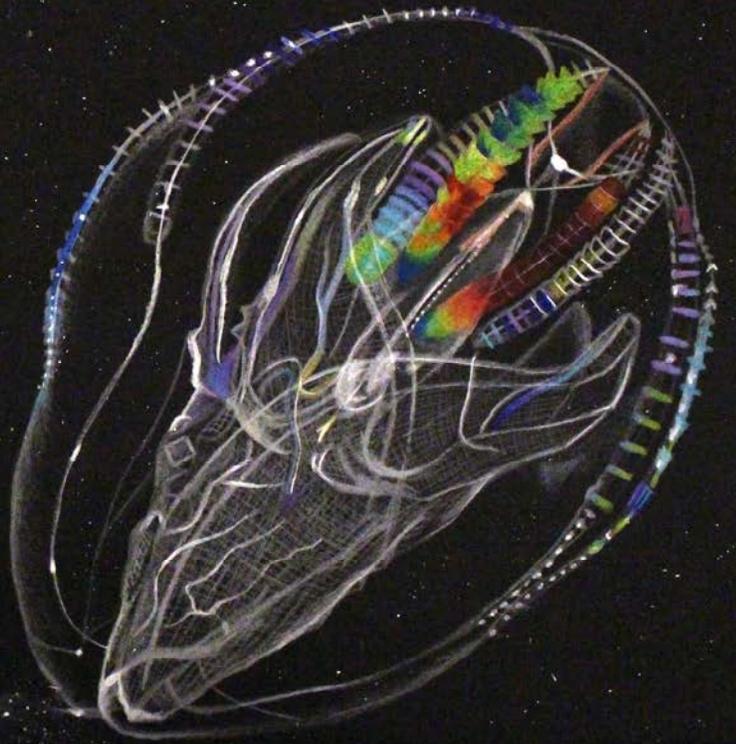


(Top): Still capture from 360-degree video by Keith Ellenbogen of his shark encounter. (Circle) Keith searches for possible photo targets. (Photo: NOAA); (Middle) Keith swims with dolphins under a NMFS permit. (Photo: NOAA); (Bottom) *Humpback Whale & Divers* by Cindy T., gr. 6, 6<sup>th</sup> place in the annual marine art contest—the drawing provides a timely illustration for the marine life photography project.

# STEM to STEAM – studies of sanctuary species

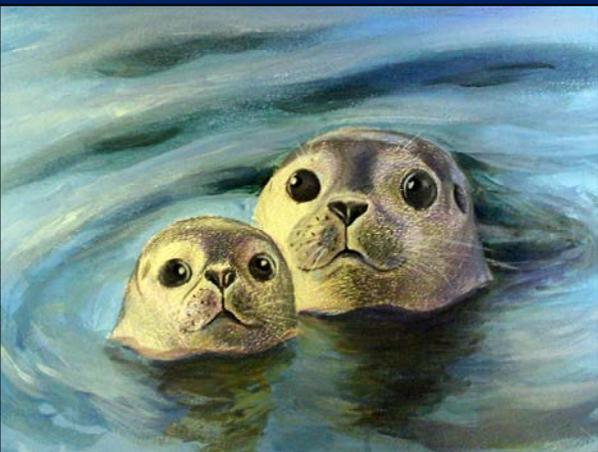
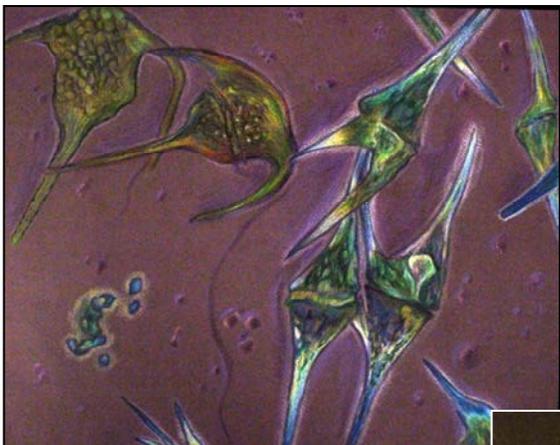
## Winners of 2018 Massachusetts Marine Educators Annual Art Contest Announced

STEM – Science, Technology, Engineering, Math  
STEAM – STEM plus Art



Each year, Stellwagen Bank National Marine Sanctuary and Massachusetts Marine Educators co-sponsor an annual marine art contest with the assistance and support of four other organizations. Once again, an impressive array of artwork filled the sanctuary's mailbox at deadline time (April 27). The panel of judges, including Woods Hole artist Sandra Faxon, designer Dennis Huston, Catherine Rockett (a college student undertaking art studies who won 3<sup>rd</sup> place as a kindergartner), and members of the sponsoring institutions, were hard-pressed to select the winners from among the nearly 750 entries. These pages show a sampling of the winning art. A traveling exhibit of these and other pieces will begin touring federal buildings, national parks, nature centers and other locations starting in the fall. (Art credits for pages 9-11 can be found on page 11.)







**ART CREDITS :** Divisions are High School (HS) – grades 9-12; Middle School (MS) – grades 5-8; Elementary School (ES) – grades K-4; Scientific Illustration (SI) – all grades; Computer Graphics (CG) – all grades.

(Page 8, clockwise from top): *Krill & Comb Jelly* by Linda Palominos, gr. 12, Rio Hondo HS, 1<sup>st</sup> Place HS; *Mackerel and Seafloor Life* by Yulia L., gr. 4, Attic Art Studio, Shrewsbury, 4<sup>th</sup> ES; *Humpback Mother & Calf* by Aayan Patel, gr. 9, Davidson Academy, Reno, NV, 3<sup>rd</sup> HS; *Two Atlantic Puffins* by Joya W., gr. 4, Hillside ES, Needham, 2<sup>nd</sup> ES; *Northern Gannet* by Carly LaCasse, gr. 12, Bourne HS, 6<sup>th</sup> HS.

(Page 9, clockwise from top right): *Naked Sea Butterflies* by Amy Wang, gr. 9, Winchester HS, 1<sup>st</sup> SI; *Striped Bass* by Gabrielle Gu, gr. 10, Westborough HS, 2<sup>nd</sup> HS; *Common Loon* by Michela G., gr. 8, Marshall Simonds MS, Burlington, 1<sup>st</sup> MS; *Harbor Seals* by Donna X., gr. 5, Li Mao Art Studio, Houston, TX, 2<sup>nd</sup> MS; *Black Sea Bass* by Shawn Jablecki, gr. 11, Falmouth HS, 5<sup>th</sup> SI; *Common Tern* by Caroline Delinks, gr. 11, Falmouth HS, 2<sup>nd</sup> SI; *Comb Jellies* by Jasmine W., gr. 4, Lexington, 1<sup>st</sup> ES; *Dinoflagellates* by Walter Shen, gr. 10, Luckie Art Studio, Lexington, 3<sup>rd</sup> SI.

(Page 10, top to bottom): *Humpback Whale* by Carrie Wang, gr. 9, Mr. Gao Art Studio, Boston, 1<sup>st</sup> CG; *Red-Gilled Nudibranch* by Lillian Hudanich, gr. 9, Norwell HS, 2<sup>nd</sup> CG; *Horseshoe Crab & Marine Debris* by Christian Hudanich, gr. 9, Norwell HS, 3<sup>rd</sup> CG.



Massachusetts Marine Educators



## 2019 Marine Art Contest

Grades K-12  
Deadline: April 26, 2019




**THEME: Revealing the Biodiversity of Stellwagen Bank National Marine Sanctuary**

*From enormous whales to microscopic plankton; from birds in the air to fish in the sea*

**Sponsors:** Massachusetts Marine Educators, Stellwagen Bank National Marine Sanctuary, New England Aquarium, Center for Coastal Studies, Ocean Genome Legacy Center/Northeastern, Whale and Dolphin Conservation

For more information:  
<http://www.ma.marine-ed.org> or  
<https://stellwagen.noaa.gov>  
 email [anne.smrcina@noaa.gov](mailto:anne.smrcina@noaa.gov)  
 phone: 781-546-6007

Send entries to:  
 MME Marine Art Contest  
 c/o Stellwagen Bank National Marine Sanctuary  
 175 Edward Foster Road  
 Scituate, MA 02066

Massachusetts Marine Educators and co-sponsors invite students in grades K-12 to participate in the 2019 Marine Art Contest. The theme is "Revealing the Biodiversity of Stellwagen Bank National Marine Sanctuary."

#### REQUIREMENTS:

- ❖ Artwork must depict species that are found in Stellwagen Bank National Marine Sanctuary located in the Gulf of Maine just off the Massachusetts coast. The art can focus on a single species, a predator-prey relationship or a group of animals in a sanctuary habitat.
- ❖ Entries should be no smaller than 5"x 7" and no larger than 18"x 24".
- ❖ White, non-glossy paper is recommended — please do NOT laminate and try to keep artwork flat. Do not fold, if possible.
- ❖ Label each entry on the back with student's name, age, grade, school, school address, school phone number, teacher's name and teacher's email address or use the official entry form. On a separate line, write the name(s) of the animal(s) in the artwork.
- ❖ For individual entries (not associated with a school program) include home address, email of parent or guardian, and phone number for correspondence purposes and art return.

**DEADLINE — Friday, April 26, 2019**  
 Deliver in person or via delivery service or postal service (1st class mail) postmarked by deadline date to: MME Marine Art Contest, c/o Stellwagen Bank National Marine Sanctuary, 175 Edward Foster Road, Scituate, MA 02066

#### RETURN OF ART

Organizers of the contest will return packages of art from schools before the end of the school year. Due to the large number of individual entries, contest staff ask that, if possible, entrants include a self-addressed stamped envelope to expedite returns; but, all art will be returned to its owners.

## 2019 MARINE ART CONTEST

Theme: Revealing the Biodiversity of Stellwagen Bank National Marine Sanctuary

**DEADLINE: April 26, 2019**

#### DIVISIONS:

- ❖ Elementary School — Grades K-4
- ❖ Middle School — Grades 5-8
- ❖ High School — Grades 9-12
- ❖ Scientific Illustration — All Grades
- ❖ Computer Graphics & Photography — All Grades

#### PRIZES:

- 1<sup>st</sup> Place: \$50 cash award, 4 NE Aquarium passes, certificate.
- 2<sup>nd</sup> Place: \$30 cash award, 2 NE Aquarium passes, certificate.
- 3<sup>rd</sup> Place: \$15 cash award, 2 NE Aquarium passes, certificate.
- 4<sup>th</sup>-6<sup>th</sup> Places: certificate.

#### SPECIAL AWARDS (\$20 each):

- MME/Joseph McQuade Memorial Award for Seabird Art
- Whale and Dolphin Conservation Award for Marine Mammal Art
- New England Aquarium Award for Fish Art
- Center for Coastal Studies Award for Sea Turtle, Invertebrate or Plankton Art
- Stellwagen Bank National Marine Sanctuary Award for Invertebrate Art
- Ocean Genome Project Award for Invertebrate or Plankton Art

Free admission passes for winning artists have also been donated by the Harvard Museum of Natural History and the South Shore Natural Science Center. Additional prizes may be available.

Contest sponsors retain the right to use artwork submitted to this contest for educational, outreach and promotional non-commercial use.

Cover Art: Northern Gannet by Carly LaCasse, gr. 12, Bourne HS; Humpback Mother & Calf by Aayan Patel, gr. 9, Davidson Academy of Nevada, Reno, NV; Dinoflagellates by Walter Shen, gr. 10, Luckie Art Studio, Lexington; Striped Bass by Gabrielle Gu, gr. 10, Westborough HS; (Page 2) Marine Biodiversity with Blue Whale by Roger C., gr. 2, Li Mao Art Studio, Houston, TX.

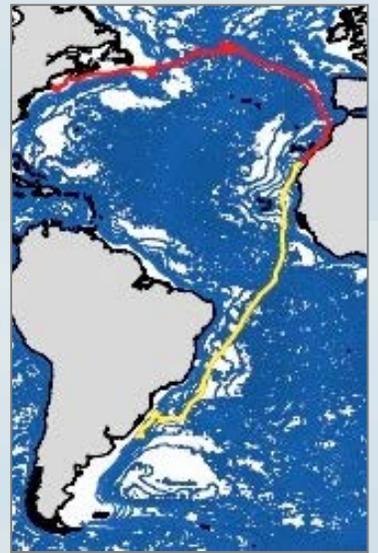
Read about the MME/SBNMS art contest in an article entitled "Sea-riously impressive: Marine art contest leads the way for the future of marine conservation" at <https://sanctuaries.noaa.gov/news/sep18/seariously-impressive-marine-art-leads-way-for-marine-conservation.html>

## Shearwater researchers tag 10 birds; new curriculum uses tracking data

A multi-institution research team, led by sanctuary scientists, tagged ten shearwaters in July – nine great shearwaters and one sooty shearwater. Satellite tags allow the scientists to follow the birds as they hunt their prey in and near the Gulf of Maine and then undertake their winter migration to the South Atlantic. This year, the team has set up a Twitter site that offers updates on the birds' locations and provides additional information about the project (visit @TrackSeabirds to view the reports). Links to tracking information are also available via <https://stellwagen.noaa.gov>.

As a resource for schools, the sanctuary has produced a seabird curriculum that focuses on the great shearwater with particular emphasis on adaptations, feeding behaviors, and migration. Activities include analysis of tracking data. The sanctuary also offers two 24"x36" maps for use in the classroom. Call 781-546-6007 or email [anne.smrcina@noaa.gov](mailto:anne.smrcina@noaa.gov) to obtain copies.

Melinda Forist, a science teacher at Monomoy Middle School serves as the curriculum author along with Anne Smrcina, the sanctuary's education coordinator. This year, the research team named the great shearwaters after Cape Cod schools interested in using the new curriculum. Other schools interested in tracking seabirds and having a bird named after them in next year's tagging project should contact the sanctuary at [stellwagen@noaa.gov](mailto:stellwagen@noaa.gov).



Background photo: Melissa Forist, a teacher at Monomoy Middle School and an author of the sanctuary's shearwater curriculum, holds a tagged great shearwater ready for release.

Top photo: Sanctuary volunteer and expert bird photographer Peter Flood captured an image of one of the tagged birds off Race Point. SBNMS Map: C.C.Lighthouse, named after Cape Cod Lighthouse Charter School, was the first of the tagged birds to undertake the long migration. On October 15, its signal came from an area off Uruguay on the Patagonian Shelf.

Two maps – one of the Gulf of Maine and one of the Atlantic Ocean are available free of charge to teachers interested in tracking the tagged shearwaters with their students.





## Recreational fishing funding awarded by National Marine Sanctuary Foundation and sanctuary

It's a small, first step in funding but an important leap in bringing recreational fishermen and the sanctuary together for the good of the environment.

Under a new pilot program sponsored by the National Marine Sanctuary Foundation and Stellwagen Bank National Marine Sanctuary, local groups will be working to address conservation issues, such as bycatch, barotrauma and interactions with whales, or develop education programs to heighten awareness of the sanctuary and sustainable recreational fishing practices.

Funding permitting, the sponsoring organizations plan on offering this program annually with an expected announcement for 2019 funds in late fall. Project awards in 2018 ranged from \$300 to \$1,000 each. The projects must be completed within one calendar year.

"We are very excited about this new program, which allows us to partner with an important constituency – the recreational fishing public," said sanctuary Deputy Superintendent Ben Haskell.

"Fishing has been happening on Stellwagen Bank for hundreds of years," noted Anne-Marie Runfola, the sanctuary's fishing liaison and Sanctuary Advisory Council Coordinator. "Getting the recreational community involved in developing educational programs is key to building sanctuary stewardship." Contact [anne-marie.runfola@noaa.gov](mailto:anne-marie.runfola@noaa.gov) for more information on 2019 funding for recreational fishing projects.

In early July, the National Marine Sanctuary Foundation announced the initial four awards for 2018. They are:

*continued on next page*

Tuna is one of the prized catches in Stellwagen Bank National Marine Sanctuary. (Photo courtesy of On the Water Media Group)

## Recreational fishing mini-grants

*continued from page 12*

**1) Educational Outreach about Best Practices to Minimize Mortality from Recreational Discards in the Stellwagen Bank National Marine Sanctuary:** a program to promote sustainable fishing by *On the Water Media*. A project partner is the Massachusetts Division of Marine Fisheries

**Summary:** Increasing public awareness about best practices for handling or avoiding recreationally important species could reduce mortality from recreational discards and enhance future recreational fishing opportunities in Stellwagen Bank National Marine Sanctuary. Combining the digital design experience and wide-reaching communication capability of *On the Water* with the scientific expertise and policy influence of the Massachusetts Division of Marine Fisheries, we propose a digital educational outreach campaign to promote best practices for fish handling and avoidance to enhance recreational opportunities and promote conservation of important species.

**2) 15<sup>th</sup> Annual Brockton High School Deep Sea Fishing Trip:** a program to bring students out on the water to increase awareness of the sanctuary and knowledge about the diversity of species in these waters by Brockton Public Schools.

**Summary:** Each spring, 45 students and five teacher chaperones travel to Stellwagen Bank National Marine Sanctuary and fish aboard a commercial recreational fishing vessel (aka fishing party boat). This grant allows for the continuation and expansion of the project. The trip allows the students of Brockton, a low income, urban district, to experience recreational fishing, an activity they may never have had the chance to undertake. This trip allows them to appreciate an activity that has engaged many enthusiasts and to witness some of the amazing animals that inhabit this domain.

**3) At the Helm of Conservation:** a program to promote safe boating around whales from Whale and Dolphin Conservation. Project partners are NOAA Fisheries Greater Atlantic Regional Office and Stellwagen Bank National Marine Sanctuary

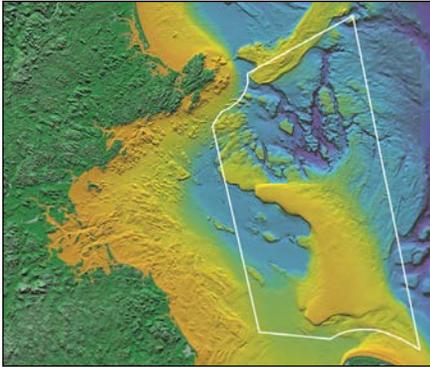
**Summary:** WDC is a founding partner on a number of collaborative boater education programs, including See A Spout, Watch out! (SAS). The goal of SAS is to inform boaters on safe interactions with whales and other marine life as well as encourage boaters to take an active part in conservation by reporting live right whale sightings and whales in distress, including entanglements. Direct conversations with fishers and recreational boaters will enhance existing messages conveyed electronically via web pages and social media. WDC will use innovative and interactive displays at a series of boater outreach events to share information critical to the safety of whales and boaters alike. Additionally, boaters will be empowered to take action by reducing harmful fishing interactions, cleaning up marine debris, and helping to notify authorities of whale sightings and whales in distress.

**4) Use the Pail, Not the Rail:** a program to minimize and reduce recreational marine debris by the Lobster Foundation of Massachusetts.

**Summary:** The foundation believes that education is the first step in reducing marine debris in our oceans. The Lobster Foundation of Massachusetts and Massachusetts Lobstermen's Association are uniquely situated to reach a vast fishing audience with their participation at such events as the Working Water Front in New Bedford, Wellfleet Oyster Festival, Heritage Days in Scituate, Lobster Day at the State House, and Massachusetts Seafood Day at the State House. In addition, attendance at Stellwagen Charter Boat Association meetings and many blessings of the fleet offer chances for further interactions. This program will allow the lobstermen to educate recreational fishermen and fisherwomen and the general public alike on the importance of keeping our oceans clean from marine debris. Reducing marine debris will have a lasting and positive impact collectively on recreational boating and fishing, beach tourism and the fishing industry while benefiting the entire ecosystem. Education is the first step in reducing marine debris in our oceans.

# Highlights from the First 25 Years

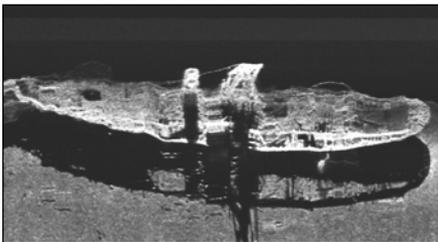
On November 4, 2017, the sanctuary celebrated its 25<sup>th</sup> anniversary, and over the past year has maintained and enhanced its active science, education and resource protection programs. Here are some highlights from the first quarter century of sanctuary operations.



Multibeam mapping by USGS in last years of 20<sup>th</sup> century lead to the production of a variety of maps detailing bathymetry and/or habitats. (Map: USGS)



Dr. Sylvia Earle, noted explorer and conservationist, visited Stellwagen Bank sanctuary in 1999 during the Sustainable Sea Expedition with National Geographic Society. (Photo: NGS)



Coordinates for the wreck of the Steamship *Portland*, given to the sanctuary by a shipwreck search group in 2002, were confirmed by side scan sonar and video imaging. The follow year, The Science Channel produced a documentary about the ship's final sailing in 1892 and its discovery. (Photo: NOAA/SBNMS and NURTEC-UConn)



A multi-institution team under sanctuary direction has come together every year since 2004 to study humpback whale behaviors using non-invasive, suction-cup equipped tags. (Photo: NOAA)

- 1992 **Reauthorization of the National Marine Sanctuaries Act** (November 4) Legislation includes the designation of Stellwagen Bank.
- 1993 **Dedication ceremony in Plymouth** (June)  
First Stellwagen Bank National Marine Sanctuary Management Plan released (July)
- 1994 **Opening of first sanctuary office in Plymouth** (14 Union Street)
- 1996 **First of three annual MIMI Fests in Plymouth**  
Educational programs based on "The Voyage of the *Mimi*" curriculum, include visit by sailing vessel *Mimi* and Captain Granville (aka Peter Marston)
- **Seafloor Mapping Project (U.S. Geological Survey with NOAA) begins**  
Multibeam sonar mapping, measuring bathymetry and sediment characterization
- 1997 **Congress officially renames sanctuary** to honor Massachusetts Congressman Gerry E. Studds upon his retirement
- 1998 **Seafloor Habitat Recovery Monitoring Project (SHRMP) begins**  
Uses study sites inside and outside the Western Gulf of Maine Closure Area (all within SBNMS) to look at recovery rates from seafloor disturbances, including fishing
- 1999 **Sanctuary offices move to Scituate** (175 Edward Foster Road)
- **Sustainable Seas Expedition comes to Stellwagen Bank National Marine Sanctuary**  
Sylvia Earle, DeepWorker submersible, NOAA ship *Ferrel*, National Geographic, and sanctuary researchers study fish communities and habitats using novel one-person submersible.
- 2000 **Economic Valuation of Whale Watching** (ONMS Conservation Series Report)
- 2001 **USGS Seafloor Maps published**  
**Fiber optic telecommunications cable laid** across NW part of sanctuary – mitigation funds provide continued support for SHRMP
- 2002 **Coastal Steamship *Portland* wreck confirmed in the sanctuary;** Mission to wreck site illustrates the importance of maritime heritage to the sanctuary program
- 2003 **Sanctuary begins co-sponsorship of annual Marine Art Contest** with Massachusetts Marine Educators; theme focuses on diversity of sanctuary species
- 2004 **Humpback Whale Tagging project begins;** researchers study whale feeding behaviors as a means to develop better protection strategies; tagging or data analysis scheduled every year since.



R/V *Auk*, which arrived in 2006, can support a variety of missions from seabird surveys and diving missions to equipment recovery. (Photo: NOAA)



The critically endangered North Atlantic right whale is a regular visitor to waters in and near the sanctuary and the focus of several sanctuary research, education and resource protection programs. (Photo: NOAA, taken under NOAA Permit #633-1763-01)



Free app for Apple and Android phones and tablets provides one-place for all info on right whales; project expanded to other whales and locations beyond the sanctuary. (Photo: NOAA)



The last surviving wooden whaleship *Charles W. Morgan* visited the sanctuary to raise awareness of whales and their historic relationship to the region. (Photo: Mystic Seaport)



A life-sized inflatable humpback whale has become an important ambassador for the sanctuary. (Photo: NOAA)

- 2004 Renovations completed on Administrative Offices and Meeting Annex in Scituate
- 2005 *Portland* shipwreck added to National Register of Historic Places
- 2006 Research Vessel *Auk* delivered to SBNMS as first purpose-built vessel  
Dominican Republic signs first Sister Sanctuary agreement  
*Frank A. Palmer & Louise B. Crary* named to National Register of Historic Places  
*Paul Palmer* listed on National Register of Historic Places
- 2007 Shipping lanes to Boston moved; marine spatial planning project gains national fame  
First SBNMS Condition Report released  
10 Great Places to Catch a Whale of a Sighting, USA Today poll, lists SBNMS  
Acoustic buoy network installed in SBNMS (a three-year study)
- 2008 Right Whale listening network installed (from mitigation funds for offshore LNG terminals just outside sanctuary)
- 2009 *Joffre* (transitional Eastern Rig Dragger) added to National Register of Historic Places  
First standardized track Christmas Bird Count at SBNMS with MassAudubon
- 2010 SB Marine Historical Ecology Report released (ONMS Conservation Series)  
SHRMP Report released (ONMS Conservation Series)  
SBNMS 2010 Management Plan released  
Stellwagen Sanctuary Seabird Stewards (S4) and Volunteer Programs begin
- 2011 French Antilles joins Sister Sanctuary network  
*Edna G* (purpose-built eastern rig dragger) added to National Register of Historic Places
- 2012 Bermuda joins Sister Sanctuary network  
Shearwater seabird tagging project begins  
Whale Alert 1.0 released  
20<sup>th</sup> anniversary celebration in Woods Hole with award to Graham Nash  
*Lamartine* (granite schooner) added to National Register of Historic Places
- 2013 Northern sand lance study begins
- 2014 *Charles W. Morgan* whaleship visits SBNMS on 38<sup>th</sup> voyage  
Long-term NOAA ocean listening post (1 of 11) installed at SBNMS
- 2015 Inflatable life-sized humpback whale (Salt) outreach programs begin
- 2016 First SBNMS *Get Into Your Sanctuary* celebration on Boston Greenway  
SBNMS Best Place to View Aquatic Life, USA Today, Readers' Choice poll  
Dutch Caribbean joins Sister Sanctuary network  
Report Cards for Ships from SBNMS and IFAW on right whale rule compliance (for 2015 transits, report cards also issued in 2017 for 2016 transits and 2018 for 2017 transits)  
Boater Outreach for Whale Watching (BOWW) outreach program begins
- 2017 SBNMS listed as a Top 10 Attraction in MA, USA Today, Readers' Choice poll  
SBNMS celebrates 25<sup>th</sup> anniversary; produces new poster using Tom Freeman art  
SBNMS staff and partners continue work on sand lance, shearwater tagging, humpback whale tagging, Seabird Stewards, marine art, ship report cards, BOWW and other programs
- 2018 and Beyond SBNMS staff eagerly look forward to the next 25 years

## READ (AND HEAR) ALL ABOUT US

Mass Audubon named Stellwagen Bank National Marine Sanctuary a "Hero" for work in building a better understanding of seabirds and the dynamic ecological system in the region in its *State of the Birds 2017* report.

[https://www.massaudubon.org/content/download/21633/30482/1/file/mass-audubon\\_state-of-the-birds-2017-report.pdf](https://www.massaudubon.org/content/download/21633/30482/1/file/mass-audubon_state-of-the-birds-2017-report.pdf)

*National Wildlife* magazine describes the sanctuary's humpback whale and sand lance research programs in the August-September 2018 issue. Author Cheryl Lyn Dybas's article is entitled "Circle of Life."

View "*Protecting Stellwagen Bank: A History of the Sanctuary –25 Years and Moving Forward*," presentations by Ben Haskell, sanctuary acting superintendent, and Richard Delaney, president and CEO of the Center for Coastal Studies, at the New England Aquarium (part of the aquarium's *2017 Lecture Series*). <http://www.neaq.org/learn/lectures/aquarium-lecture-series-archive/>

The Office of National Marine Sanctuaries' official magazine *Earth is Blue* included a special pullout section about the *Paul Palmer* shipwreck in the June 2017 issue. Viewers can also find a photo story about the Stellwagen Sanctuary Seabird Stewards (S4) program. Read the issue online or download it from <https://sanctuaries.noaa.gov/magazine/2/>

Sign up to be notified about new issues of *Stellwagen Bank E-Notes* with articles on sand lance, shearwater, and humpback whale research, education, outreach, volunteer and resource protection projects. Email: [stellwagen@noaa.gov](mailto:stellwagen@noaa.gov)



**25th Anniversary Poster Available** – This 24"x24" poster showcasing Tom W. Freeman's painting dedicated to Stellwagen Bank National Marine Sanctuary is now available from the sanctuary office or at one of our education partners – Maritime Gloucester; New England Aquarium Teacher Resource Center; Center for Coastal Studies in Provincetown or the National Marine Life Center in Buzzards Bay. Posters are free, but must be picked up in person.

National Oceanic and Atmospheric Administration  
National Ocean Service  
Office of National Marine Sanctuaries  
Stellwagen Bank National Marine Sanctuary

## NATIONAL MARINE SANCTUARY SYSTEM



The Office of National Marine Sanctuaries serves as the trustee for a network of underwater parks encompassing more than 600,000 square miles of marine and Great Lakes waters from Washington state to the Florida Keys, and from Lake Huron to American Samoa. The network includes a system of 13 national marine sanctuaries and Papahānaumokuākea and Rose Atoll marine national monuments. For more information on the National Marine Sanctuary System, visit: <http://sanctuaries.noaa.gov>



<https://stellwagen.noaa.gov/>