

## 2017 Accomplishments

### Year-long 25<sup>th</sup> Anniversary Events

#### Gala Celebration

In partnership with National Marine Sanctuary Foundation (NMSF), MBNMS held a gala at the Monterey Bay Aquarium celebrating 25 years since designation in 1992. The evening honored sanctuary champions Leon Panetta and Sam Farr for their pivotal roles helping to establish the sanctuary. Speakers reflected on the sanctuary's significance to the region's economy and identity, and focused on actions needed to ensure future protection. Over 250 guests enjoyed an intimate dinner among world-class exhibits. The NMSF announced the creation of a local chapter, Monterey Bay National Marine Sanctuary Foundation, which will aid in local fundraising.



Gala presenters and local chapter founding members.

#### Science Speaker Series

MBNMS launched an 8-part speaker series with local science experts entitled "Sea Below the Surface" that featured the status and trends of key sanctuary species found in estuarine, nearshore, offshore and seamount environments. This series helped inform the public on the health of sanctuary ecosystems, reflecting on 25 years in ocean protection.

#### Coastal Discovery Fair

At the Coastal Discovery Center, MBNMS celebrated in the sanctuary's southern region by bringing together partners in resource protection along the Central Coast. Exhibitors educated the public through activities, while local government officials spoke about the value MBNMS brings to the region's coastal economy and in protection of natural and cultural ocean resources.

### Imaging Sensitive Habitats

To image ecologically sensitive areas in the sanctuary, MBNMS and NOAA Fisheries conducted dive surveys aboard the Research Vessel *Fulmar* using an autonomous underwater vehicle (AUV). The project focused on collecting baseline and comparative data on the distribution, abundance, and condition of deep sea corals, sponge communities, demersal fish, and basic geological habitat categories. Imaging was completed for seven sites that were selected from a joint proposal among local commercial fishermen, conservation groups, and MBNMS to increase seafloor protections and fishing opportunities in the sanctuary, including two Voluntary Management Areas and five proposed Essential Fish Habitat conservation areas. The areas also overlapped with four Sanctuary Ecologically Significant Areas (SESAs).

### Sanctuary Exploration Center Reaches 250,000 Visitors

The Sanctuary Exploration Center in Santa Cruz reached a milestone in visitation numbers, reaching a quarter of a million people since opening in July 2012. From international tourists to local community members, people from over 16 countries have come through the doors to learn about sanctuary wildlife and habitats. The Center hosts year-round public engagements, such as First Friday art events, film festivals, ocean conferences, science lectures, family programs, and school field trips to educate and inspire visitors to protect and conserve the health of sanctuary ecosystems.



Sanctuary Exploration Center in Santa Cruz.



NOAA scientist deploying a Tucker net during ACCESS.

### ACCESS Expands to Monterey Bay

MBNMS, Point Blue Conservation Science and Greater Farallones National Marine Sanctuary expanded a partnership to implement ACCESS (Applied California Current Ecosystem Studies) surveys in Monterey Bay to gather whale and crab gear density data to better understanding areas of co-occurrence. ACCESS is a partnership that supports marine wildlife conservation and healthy marine ecosystems in northern and central California by conducting ocean research to inform resource managers, policy makers and conservation partners. Members of the Dungeness Crab Fishing Gear Working Group were able to participate in the Monterey Bay cruise to learn how the data is collected. The preliminary findings gathered from these vessel surveys were provided to the Working Group to help inform future considerations to minimize whale entanglements due to fishing gear.

### Fisherman in the Classroom

Through grants from Ca. Coastal Commission and Ca. Department of Fish and Wildlife, MBNMS partnered with local sustainable seafood supplier Real Good Fish to relaunch "Fisherman in the Classroom" to connect students to local fishermen. Initiated in 2008, the education program provides a tangible experience relating seafood to a fisherman earning a living and to better understand where seafood comes from. MBNMS educators and fishermen presented to 10 schools and more than 630 students in Monterey and Santa Cruz counties.

## Beach COMBERS 20-year Milestone

2017 marks 20 years of monitoring of Beach COMBERS, a collaboration among Moss Landing Marine Labs, MBNMS, U.S. Geological Survey, U.S. Fish and Wildlife Service, Ca. Department of Fish and Wildlife, and Save The Earth. Since 1997, trained volunteers have conducted monthly beach surveys for deceased marine birds and mammals throughout the Monterey Bay shoreline as an indicator of sanctuary health. Long-term monitoring has enabled resource managers to determine trends in deposition to better identify significant events affecting wildlife. Several detected events were of regional significance, including the 1998 domoic acid bloom, 2003 Fulmar die-off, and the *S/S Luckenbach* oil spill. During the last 20 years, approximately 185 volunteers participated, contributing more than 31,000 hours.



Beach COMBERS volunteers, Barbara Schwefel and Andrew DeVogelaere, examine a Harbor seal carcass.

## Sanctuaries' MBON Team Recognized for Excellence

Monterey Bay and Florida Keys national marine sanctuaries are sentinel sites for characterizing and tracking changes in biodiversity for the sanctuaries' Marine Biodiversity Observation Network (MBON). In 2017, the National Oceanographic Partnership Program (NOPP) Excellence in Partnering Award was presented to the sanctuaries' MBON team for their work on integrating data from a variety of long-term observing programs and developing new observing methods to improve understanding of changes in and connections between marine biodiversity and ecosystem functions. The project was found to best exemplify NOPP's partnership objectives including diversity in partners, level of effort of partners, and impact on ocean research and education.



Taking a sample of bubblegum coral for transplantation experiments at Sur Ridge. (Image courtesy of MBARI)

## Sur Ridge Explored and Field Guide Published

For the fourth year, MBNMS and Monterey Bay Aquarium Research Institute (MBARI) scientists continued to survey Sur Ridge, a large rocky feature located 28 miles offshore from Point Sur aboard the *R/V Western Flyer*. The team explored communities of deep-sea corals, revisited coral transplant experiments, collected animals for bioluminescence studies, sampled water for environmental DNA and microplastics analyses, and several other projects. As part of this on-going research, MBNMS, in collaboration with MBARI, published *Sur Ridge Field Guide: Monterey Bay National Marine Sanctuary* to provide a baseline taxonomic characterization and inventory of benthic and midwater organisms, from at least 261 taxa with associated imagery, observed at Sur Ridge since 2013.

## Draft EIR/EIS for Monterey Peninsula Water Supply Project

MBNMS and the California Public Utilities Commission (CPUC) released a jointly prepared Draft Environmental Impact Report/ Environmental Impact Statement (DEIR/EIS) in January 2017 for the Monterey Peninsula Water Supply Project (MPWSP). The MPWSP includes various proposed facilities and improvements including: a subsurface water intake system; a 9.6-million-gallons-per-day reverse osmosis desalination plant; desalinated water storage and conveyance facilities; and expanded Aquifer Storage and Recovery facilities. Federal, state and local agencies will use the final EIR/EIS to consider related permits or other approvals. MBNMS and CPUC held multiple public hearings on the DEIR/EIS report for a 75-day review and comment period and will be releasing the Final EIR/EIS in March of 2018.

## Management Plan Review

MBNMS continued to revise and update the 2008 Management Plan. High priority issues identified by the public were wildlife disturbance (marine mammal harassment and whale entanglement), desalination, regional monitoring, sediment management and beach loss. Staff have drafted outlines of new and revised action plans, with recommendations from the Advisory Council on all priority issues through a series of workshops and working group presentations. MBNMS staff will present the remaining draft action plans to the council early in 2018, and the draft management plan and environmental documents will be undergoing ONMS review in the spring and then released for public comment later in 2018.

## Plankton Monitoring Program

MBNMS launched Plankton Monitoring Program for trained citizen scientist to monitor plankton and oceanic conditions along the coastline to better understanding sanctuary health and help inform about important environmental issues like harmful algal blooms. The data is submitted to the National Centers for Coastal Ocean Science (NCCOS) phytoplankton database and contributes to a regional long-term plankton monitoring available to scientists and the public.

## Shore Whaling Exhibit Unveiled

In collaboration with California State Parks, MBNMS completed a new shore whaling exhibit at the Coastal Discovery Center in San Simeon. The outdoor exhibit features three panels and a blubber melting pot, with information about historic shore whaling locations along the California coast that captured whales, processed carcasses, and shipped oil from 1854-1904. The exhibit includes 20<sup>th</sup> century conservation efforts to help protect whales, as well as educating about current threats to whales from ship strikes.



Shoreline Whaling Exhibit at Coastal Discovery Center.

## 18th Annual Snapshot Day

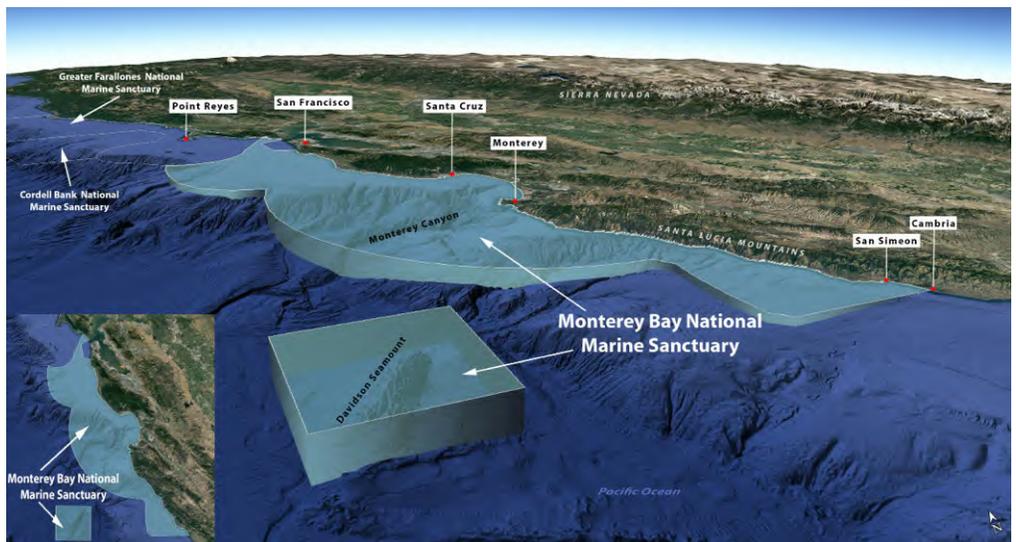
First held in 2000, the 18th annual Snapshot Day event utilized trained volunteers to collect water samples from waterways flowing into the sanctuary to measure temperature, dissolved oxygen, turbidity, pH, and conductivity, while samples were collected for nitrate and bacteria testing. Volunteers play a key role as stewards of local watersheds by contributing to a robust data set used to inform MBNMS, and other resource agencies to help protect and improve the health of local streams. With coordination among many partners, including the Coastal Watershed Council and Resource Conservation District of San Mateo County, 179 volunteers collected water samples from 146 sites in streams from Half Moon Bay to Morro Bay.



First Flush volunteers collect water quality samples at storm drain outfalls during the first major rainstorm.

## 18th Annual First Flush

For the latest in the year on record, Monterey County received enough rainfall (>0.1 inch) within the jurisdictions of the Monterey Regional Storm Water Management Program (MRSWMP) on November 16 to activate First Flush volunteers. Trained volunteers mobilized and collected water quality samples at 15 storm drain outfalls and two receiving water (ocean) sample sites. Volunteer teams collected two sets of samples 30 minutes apart as part of the protocols for First Flush. The data gathered is valuable to the sanctuary and to local stormwater managers both to understand and better manage the water quality running off of urban areas, and helps cities in determining which watersheds require source tracking or best management practice implementation. This is the 18th consecutive sampling year, and data collected will be added to the robust data set that stormwater programs are utilizing to prioritize their efforts for improving water quality entering into the sanctuary.



Monterey Bay National Marine Sanctuary encompasses 6,094 statute  $\text{mi}^2$  of ocean and 276 shoreline miles, extending an average distance of 30 miles from shore. The deepest point, found in the Davidson Seamount, reaches 12,743 feet from the surface.

## Get Into Your Sanctuary Day

MBNMS hosted the 4th annual Get into Your Sanctuary (GIYS) day celebration to raise awareness about the value of sanctuaries as iconic destinations for ocean recreation while promoting responsible wildlife viewing etiquette. The Exploration Center engaged students from the Boys and Girls Club of Santa Cruz through kayaking, plankton viewing, and a live Ship-to-Shore video conference with scientists aboard the E/V *Nautilus* to discuss exciting underwater research taking place in sanctuaries. Local on-the-water businesses, including whale watching and kayak outfitters, helped promote GIYS day and raise sanctuary awareness while engaging in ocean recreational activities with their customers.

## Whale Entanglement Team Responds

The California Whale Entanglement Team (WET) responded to a humpback whale entangled in Dungeness crab gear aboard the NOAA R/V *Fulmar*. The response team was able to safely cut away the crab gear and free the whale. Whale entanglements have increased in recent years, but 2017 revealed a reduction in reported entanglements within sanctuaries. As part of an on-going response team, MBNMS participate and train with NOAA Marine Mammal Stranding Network, ONMS West Coast Regional Office, WET Responders, and the U.S. Coast Guard in the effort to better understand and reduce this threat to whale populations.

## Black Abalone Translocation Project at Mud Creek Slide

On May 20, 2017, the Mud Creek landslide reshaped the Big Sur coastline, creating 15 acres of new land and extending 600 feet into the sanctuary. The rocky intertidal buried by the slide was designated in 2011 as critical habitat for the federally endangered black abalone and the spread of sediments and the subsequent conversion of rocky intertidal into sandy beach posed an ongoing threat to black abalone and their habitat. Scientists from multiple agencies and institutions, including MBNMS, National Marine Fisheries Service, Ca. Department of Fish and Wildlife, CalTrans, Tenera Environmental, and UC Santa Cruz created an action plan to collect, tag, translocate and monitor black abalone in imminent danger of being buried by encroaching sediments from slide debris.



Partners working to translocate rescued endangered black abalone from Mud Creek slide in Big Sur.

## Leatherback Turtle Spotlight Events

MBNMS collaborated with Moss Landing Marine Labs (MLML), NOAA's Southwest Fisheries Science Center, and The Ocean Foundation for two days of partner events to highlight Pacific leatherback turtles as a NOAA Fisheries "Species in the Spotlight." Fifty stakeholders (scientists, resource managers, fishermen, conservationist, educators and politicians) joined to share current research and status of leatherback turtles, with the goal of forming research, conservation and education collaborations. The Sanctuary Exploration Center (SEC) hosted a public "Leatherback Turtle Day" with a partner tabling event that included MLML, NOAA Fisheries, Save the Whales, Oceania, and FishWise. A leatherback turtle science lecture was given that evening, and the premiere of a new film on leatherback turtle research and conservation was shown in the SEC theater.



Partners celebrating Leatherback Turtle Day at the SEC.

## Ed Ricketts Memorial Award and Lecture

Since 1986, this annual award is given to people who have exhibited exemplary work throughout their career and advanced the status of knowledge in the field of marine science in the sanctuary. The 2017 award recipient was Dr. Fiorenza Micheli, professor from Stanford University's Hopkins Marine Station, whose research focuses on the processes shaping marine communities and incorporating this understanding in the management and conservation of marine ecosystems. The award presentation was followed by a lecture by Dr. Micheli about the vulnerability and resilience of coastal systems of the California current. Distinguished recipients are selected by the Monterey Bay National Marine Sanctuary Research Activity Panel (RAP).

## Supporting Ocean Recreation Events

MBNMS joined the 4<sup>th</sup> annual Monterey Beach Sportsfest in a community celebration and to promote recreational ocean sports. The event included a series of athletic competitions, such as beach volleyball, distance ocean swims, kayak and outrigger canoe races, and stand up paddle boarding, as well as featured a tabling expo with fitness exhibitors and marine education partners. MBNMS sponsored a 25<sup>th</sup> anniversary "sanctuary community swim" and a movie night on the beach screening of the film "Disney Nature Oceans" to over 350 community members.

## Agriculture Water Quality Alliance Helps Growers

Through a regional partnership, Agriculture Water Quality Alliance (AWQA) brings together farmers, ranchers, technical service providers, and resource conservation agencies to improve water quality while maintaining the productivity of Central Coast farmlands through a voluntary stewardship approach. MBNMS led a workshop for growers in the Salinas Valley to better understand current reporting requirements and pending changes in water quality regulations through the Irrigated Lands Regulatory Program. Growers learned how to do on-farm monitoring, including computations for total nitrogen applied, soil nitrate testing, management practices reporting, and other helpful tools. MBNMS also lead a workshop with technical service providers and researchers to review most commonly adopted best practices and gain input on how to increase adoption. By helping growers adopt the best practices, these efforts improve the water quality in agricultural runoff entering into sanctuary watersheds.

## New Science Reports Published

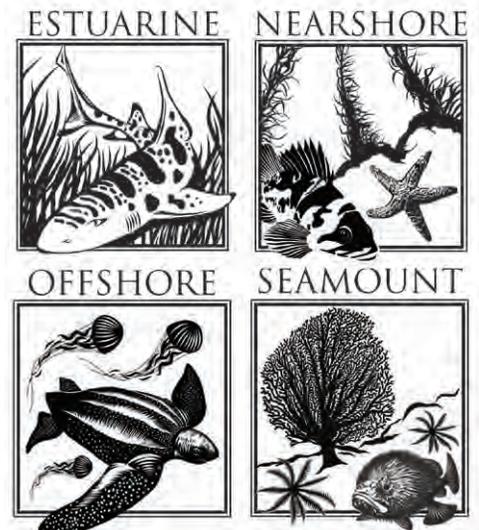
In collaboration with CSU Monterey Bay and Institute for Applied Marine Ecology, MBNMS published a Conservation Series report on *The Spatio-Temporal Mosaic of Scientific Research: A Case Study from Monterey Bay National Marine Sanctuary*. This document summarized the most commonly studied regions, habitats, and species within MBNMS, providing scientific context critical for successful decision-making. The report concluded that much of the research was isolated to particular locations and/or habitats, and spatio-temporal variation in scientific research needs to be considered when implementing spatial management decisions across areas where information may be limited.

## Dungeness Crab Fishing Gear Working Group

In an ongoing partnership, MBNMS collaborated with the Ca. Department of Fish and Wildlife, the Ocean Protection Council, NOAA Fisheries, fishermen and NGOs to address an increase in large whale entanglements from Dungeness crab fishing gear. In 2017, a number of collaborative projects were implemented by the group, including a Best Fishing Practices Fishing Guide and a pilot Risk Assessment and Mitigation Program. MBNMS contributed data from ACCESS research cruises that focuses on whale densities in an effort to better assess and understand their co-occurrence with crab gear set in the sanctuary.

## Advisory Council Meetings Continue

In 2017, MBNMS' Advisory Council largely focused on the Management Plan Review by reviewing and approving recommendations from the Motorized Personal Water Craft Subcommittee, the Overflight Working Group, the Wildlife Disturbance Working Groups on whale approach distance and ocean noise, and the Conservation Working Group for marine debris. The Council also adopted recommendations on the Agriculture Water Quality Alliance's strategies in the proposed Water Quality Action Plan and voted to support the draft Research and Monitoring Action Plan. The Advisory Council also supported the Ca. Coastal Commission's settlement agreement with CEMEX and delivered public comment on the President's Executive Order evaluating national marine sanctuary expansions after 2007.



25<sup>th</sup> anniversary artwork by artist Nicholas Ingram.