



# NOAA Fleet Update

## MAY 2015

The following update provides the status of NOAA's fleet of ships and aircraft, which play a critical role in the collection of oceanographic, atmospheric, hydrographic, and fisheries data. NOAA's current fleet of 16 ships – the largest civilian research and survey fleet in the world – and nine aircraft, are operated, managed, and maintained by NOAA's Office of Marine and Aviation Operations ([OMAO](#)). OMAO includes civilians, mariners, and officers of the United States NOAA Commissioned Officer Corps ([NOAA Corps](#)), one of the nation's seven Uniformed Services.



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# Office of Marine and Aviation Operations (OMAO) and the NOAA Commissioned Officer Corps – In the News -



Below is a sampling of clips and web links to recent news items related to OMAO and the NOAA Corps.

## [Scientists descend on New Mexico to solve methane plume mystery](#)

-KRQE-TV (Albuquerque, NM)

It's a scientific mystery: Why is there a giant plume of methane hovering over the Four Corners region? Scientists from the National Oceanic and Atmospheric Administration (NOAA), NASA Jet Propulsion Laboratory (NASA JPL) and other agencies are spending the month in New Mexico and Southern Colorado to try to figure it out...In addition to NOAA, NASA JPL, and Cooperative Institute for Research in Environmental Sciences (CIRES), several other institutions are joining the efforts, including the University of Colorado, Boulder, and the University of Michigan, Ann Arbor and the University of California, Davis. Researchers will use very sensitive instruments on the ground and in the air to determine how much and where the methane is coming from. NASA JPL participants will spend a week flying aircraft equipped with spectrometers that will map the methane...

## [Discover the Puerto Rico Trench with America's Ocean Exploration Team](#)

-Scientific America (blog)

Every two years people around the world suddenly obsessively watch odd niche sports like ice dancing, biathlon, and rhythmic gymnastics. So I wish similar enthusiasm could be summoned for the exploration dives of the Deep Discoverer, NOAA's ROV aboard the research vessel *Okeanos Explorer* and vehicles like it, which are streamed live on the internet. Perhaps it would help if they got some catchy theme music by John Williams that played every time they fired up their feed, video interludes featuring the touching back stories of the scientists and engineers on board, or set pieces about the shenanigans that go on in the "scientists' village" aboard the ship? Are you listening, NBC? In any case, the *Okeanos Explorer* and Deep Discoverer begin their next series of 20 dives starting TODAY, April 10...

## [Future Focus: Q&A - Vice Admiral Michael S. Devany, NOAA](#)

-Military Officer

See page 58

## [Researchers Fly Over Shale Fields To Study Air Pollution](#)

-National Public Radio "All Things Considered"

Now the science of what's in our air - how to figure out what's polluting it. Capturing what comes out of the tailpipe or power plant is fairly straightforward. It gets more complicated with oil and gas fields. Well, this month, scientists from the National Oceanic and Atmospheric Administration or NOAA are flying an airborne research lab over states with these fields. Mose Buchele sent this report from member station KUT in Austin...

### [The Unseen Slaughter Under the Sea](#)

-TakePart

Ocean Defenders Alliance is on a mission to stop abandoned "ghost nets" from killing dolphins, sea turtles, and millions of other marine animals...NOAA's 244-foot research vessel, the *Oscar E. Sette*, last year recovered 57 tons of fishing nets and plastic garbage in the Northwestern Hawaiian Islands. The archipelago is home to the critically endangered Hawaiian monk seal, which has been found to be highly susceptible to entanglements with ghost gear...

### [Small drones prove up to hurricane tasks](#)

-Sun-Sentinel

They weigh only 13 pounds, have a five-foot wingspan and look rather frail. Yet these small drones, called Coyotes, are designed to penetrate the most violent quadrants of a hurricane and in the process glean crucial atmospheric information that should improve forecasts. The Coyote weighs about 13 pounds, has a five-foot wingspan and cruises at about 60 mph. "We're able to send data directly to the National Hurricane Center," said Joe Cione, lead scientist of the National Oceanic and Atmospheric Administration's Coyote program. After flying for the first time into a hurricane last year, and helping scientists assess its structure, the unmanned planes are to be flown into more storms this year. The 2015 version of the Coyote drones, however, has been upgraded with more sophisticated atmospheric sensors to obtain a more complete picture of a storm – and help the hurricane center improve intensity predictions...

### [VIDEO: LOOK INSIDE A HURRICANE HUNTER AIRCRAFT](#)

-WPVI-TV

If you've ever wondered how we learn about severe storms such as hurricanes, it takes a special team of pilots and planes to collect the data. One of five visits on the East Coast, The Hurricane Awareness Tour touched down in Atlantic City on Monday. The classroom was moved outside for more than 300 elementary students. The lesson: hurricane safety. From the outside the planes looked like your standard G4 jet or Air Force reserve plane. But inside these aircrafts are decked out with the latest technology. Weather scientists inside the plane collect data about a storm. Dr. Rick Knabb from the National Hurricane Center says, it's all in an effort to keep the public safe...

### [NOAA ship returns to Santa Cruz after exploring underwater volcano](#)

-KSBW-TV

A National Oceanographic and Atmospheric Administration research vessel came home Saturday following a five-day journey at sea. The team explored an underwater volcano called Davidson Seamount 80 miles off the coast of Monterey...After exploring the seamount, the researchers said it was even more spectacular than they expected...



# NOAA Corps - Basic Officer Training Class (BOTC) 125



On May 6, Representative Joe Courtney (D CT-2) joined NOAA's Assistant Secretary of Environmental Observation and Prediction and Deputy Administrator, Manson K. Brown; the Director of NOAA's Office of Marine and Aviation Operations and the NOAA Commissioned Officer Corps, Rear Admiral (two star) David A. Score; and officials from the United States Coast Guard at the 125<sup>th</sup> NOAA Corps Basic Officer Training Class (BOTC) graduation. The new NOAA Corps Officers graduated alongside the newest class of U.S. Coast Guard officer candidates at the Coast Guard Academy in New London, Connecticut. Representative Courtney provided the keynote address and Assistant Secretary Brown delivered the commencement address. This was the sixth BOTC class to graduate from the NOAA Corps Officer Training Center in New London, CT and the third class to share a joint graduation with the USCG Officer Candidate School program. Below is a glimpse into some of BOTC 125's training and graduation festivities.

The graduation ceremony was on livestream and is available at the following link:  
<http://livestream.com/CGA/events/4014490>

Representative Courtney is introduced at 00:43:28 and Assistant Secretary Brown is introduced at 01:06:00.



**Assistant Secretary Brown troops the line during the Honors Ceremony. BOTC 125 participates in the final drill down completion, alongside USCG Officer Candidates.**

[Photo: NOAA]



**ENS Efir receives his commission from the Representative Courtney (right) and Assistant Secretary Brown (left).**



**BOTC 125, with their USCG shipmates, at the graduation ceremony.**  
[Photo: NOAA]



# OMAO's Ships and Centers



OMAO's Ship Tracker - <http://shiptracker.noaa.gov> - (screen shot below) shows information about the location - present and past - of our fleet of research and survey ships. Please note: To access Ship Tracker you must create an account with a .gov or .mil email address. All other access is restricted.



OMAO's ships and related Marine Centers are listed below based on the geographical location of the vessels' homeports starting in the Northeast and ending in the Pacific.

## New Castle, NH

**NOAA Ship *Ferdinand R. Hassler***

**Commanding Officer:** CDR Marc Moser

**Primary Mission Category:** Hydrographic Surveys

**DEPART:** Baltimore, MD

**DEPART:** New Castle, NH

**ARRIVE:** New Castle, NH

**ARRIVE:** New Castle, NH

**Project 1:** Mapping Rhode Island Sound and Approaches

### **Objectives:**

To support safe navigation through the acquisition and processing of hydrographic survey data for updating nautical charts and by the identification and dissemination of dangers to navigation, as identified during the course of survey operations.



**NOAA Ship *Ferdinand R. Hassler* alongside U.S. Coast Guard Yard in Baltimore, MD.**

[Photo: NOAA]

## **Woods Hole, MA (currently docks in Newport, RI)**

**NOAA Ship *Henry B. Bigelow***

**Commanding Officer:** CDR G. Mark Miller

**Primary Mission Category:** Fisheries Research

**DEPART:** Newport, RI

**ARRIVE:** Newport, RI

**DEPART:** Newport, RI

**ARRIVE:** Newport, RI

### **Project 1: Spring Multispecies Bottom Trawl Survey**

#### **Objectives:**

1. Determine the spring distribution and relative abundance of fish and invertebrate species found on the continental shelf.
2. Test trawl gear, methods, and/or survey related equipment.
3. Collect oceanographic data - including Conductivity, Temperature and Depth casts and bongo tows.
4. Collect acoustic data along project track-lines with the EK-60 and ME-70 acoustic systems.

### **Project 2: Spring Ecosystem Monitoring Survey**

#### **Objectives:**

The principal objective of the survey is to assess the hydrographic, planktonic and pelagic components of the Northeast U.S. Continental Shelf Ecosystem. Specifically, they will quantify the spatial distribution of: water currents, water properties, phytoplankton, microzooplankton, mesozooplankton, sea turtles and marine mammals. The ecosystem monitoring surveys contribute to stock assessments, protected species assessments, ecosystem assessments and climate assessments.

# Davisville, RI

## NOAA Ship *Okeanos Explorer*

**Commanding Officer:** CDR Mark Wetzler

**Primary Mission Category:** Oceanographic Exploration and Research

**DEPART:** San Juan, PR

**ARRIVE:** Pearl Harbor, HI

**Project:** Tropical Exploration (Mapping) – Leg 1 & 2

### Objectives:

The entire expedition is a transit, with planned stops to recover two moorings. The transit through the Caribbean maximize time in waters with foreign clearances to collect data. The transit through the eastern Pacific will include time spent along the Clipperton Fracture Zone. Specific objectives include:

1. Collect deep water multi-beam bathymetry sonar data and ancillary sonar data with EK-60 single beam sonar and Knudsen sub-bottom profiler.
2. Conduct Conductivity, Temperature and Depth profiles and Expendable Bathymetric Thermograph operations.
3. Deploy ARGO floats.
4. Recover 2 PICO-Prawler moorings.
5. Tow Seasnake salinity instrument for supplementary project data collection.
6. Test new or modified mission hardware and software.
7. Maintain telepresence - single live stream video from ship to shore.



**NOAA Ship *Okeanos Explorer*'s dual-body remotely operated vehicle system being deployed from the aft-deck of the ship into the water, in preparation for conducting an exploration dive.**

[Photo: NOAA]

## Norfolk, VA

**NOAA Ship *Thomas Jefferson***

**Commanding Officer:** CAPT Shepard Smith

**Primary Mission Category:** Hydrographic Surveys

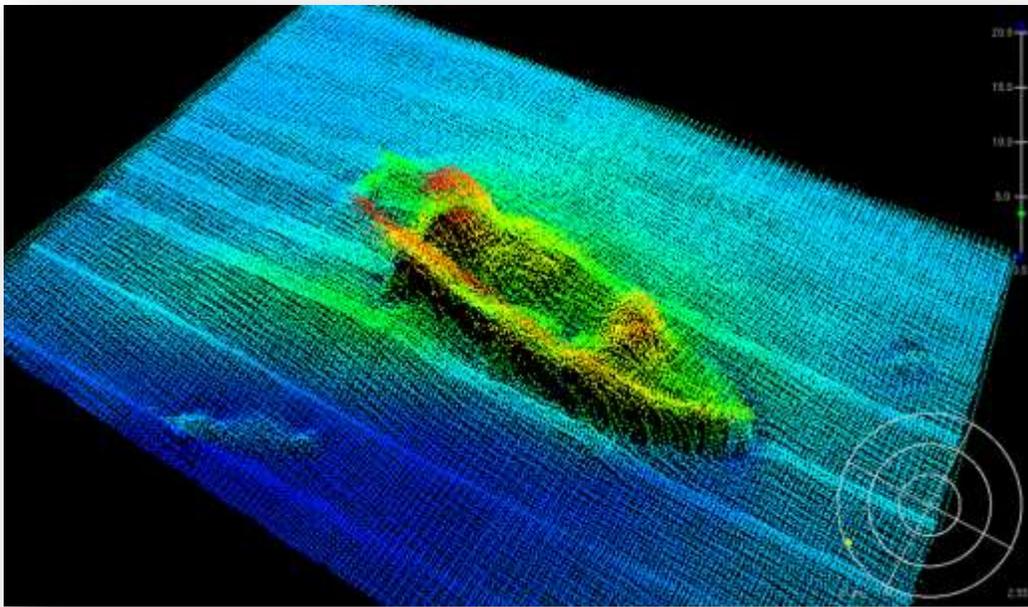
**DEPART:** Charleston, SC

**ARRIVE:** Charleston, SC

**Project:** Mapping Approaches to Charleston, SC

### **Objectives:**

To support safe navigation through the acquisition and processing of hydrographic survey data for updating nautical charts and by the identification and dissemination of dangers to navigation, as identified during the course of survey operations.



Check out this image of the wreck of the famed Civil War ironclad USS Monitor, generated on April 30, 2015 by [NOAA Ship Thomas Jefferson](#) using a multibeam echo sounder while operating in [Monitor National Marine Sanctuary](#), located off the coast of North Carolina.

Learn more at: <http://go.usa.gov/3BhPx>

[Photo: NOAA]

### **OMAO'S MARINE OPERATIONS CENTER – ATLANTIC (MOC-A)**

**CAPT Anne Lynch, Commanding Officer MOC-A**

MOC-A serves as a homeport for one NOAA ship, and manages the day-to-day operations and provides administrative, engineering, maintenance, and logistical support for the research and survey ships in NOAA's Atlantic fleet. Each year these ships conduct dozens of missions to assess fish and marine mammal stocks, conduct coral reef research, collect seafloor data to update nautical charts, and explore the ocean.

## Charleston, SC

### NOAA Ship *Nancy Foster*

**Commanding Officer:** LCDR Jeffrey Shoup

**Primary Mission Category:** Oceanographic Research, Environmental Assessment

**DEPART:** Charlotte Amalie, USVI

**ARRIVE:** Cozumel, Mexico

**DEPART:** Cozumel, Mexico

**ARRIVE:** Key West, FL

**Projects:** Coral Reef Ecosystem Research (CRER) and Bluefin Tuna Ecology

#### Objectives:

1. Collect physical and biological data.
2. Collect profiling reflectance radiometer data in the upper water column.
3. Collect sea surface flow-through data set for the entire cruise period.
4. Collect a complete and continuous 150 kHz hull-mounted Acoustic Current Doppler Profiler (ADCP) data set, interfaced with directional GPS heading input, for the entire cruise period.
5. Install a 300 kHz ADCP in the ship's moon pool and collect a complete and continuous hull-mounted ADCP data set from the instrument interfaced with directional GPS heading input.
6. Deploy ~10 satellite-tracked Lagrangian drifting buoys.
7. Collect a complete and continuous bathymetric time-series from the ship's Knudsen depth sounder for the entire cruise period (with time, position, and quality flag).
8. Conduct directed sampling targeting potential Atlantic Bluefin Tuna (*Thunnus thynnus*) and other tuna species spawning areas in the Caribbean Sea including Cuban and Mexican waters.
9. Assess the occurrence, abundance, and geographical distribution of the early life stages of spring spawning fishes, especially Atlantic Bluefin Tuna.
10. Measure the vertical distribution of fish larvae by sampling at discrete depths in the water column at selected locations using a 1 m Multiple Opening and Closing Net Environmental Sensing System.
11. Evaluate trophic pathways relative to the early life dynamic primarily of Atlantic Bluefin Tuna larvae with the use of stable isotope analysis of samples collected using a CALVET bongo net.

### NOAA Ship *Ronald H. Brown*

**Commanding Officer:** CAPT Robert Kamphaus

**Primary Mission Category:** Oceanographic Research, Environmental Assessment

**DEPART:** Papeete, Tahiti - French Polynesia

**ARRIVE:** Honolulu, HI

**Project:** P16N CLIVAR/CO2 Repeat Hydro – Leg 1& 2

#### Objectives:

This project will be a decadal reoccupation of repeat hydrography section P16N as part of the GO-SHIP (Global Ocean Ship-Based Hydrographic Investigation Program)/CO2/hydrography/tracer program. The goal of the effort is to occupy a set of hydrographic transects with full water column measurements over the global ocean to study physical and hydrographic changes over time and better assess changes in the ocean's biogeochemical cycle in response to natural and/or man-induced activity on the decadal time-scale. Near surface seawater (temperature, salinity, pCO<sub>2</sub>, ADCP, IOP, Fluorometry) and atmospheric measurements (CO<sub>2</sub>, CFCs, aerosols) will be made along the cruise track. More details on the GO-SHIP program can be found at: <http://ushydro.ucsd.edu/>

## Pascagoula, MS

### NOAA Ship *Oregon II*

**Commanding Officer:** Master Dave Nelson

**Primary Mission Category:** Fisheries Research

**DEPART:** Pascagoula, MS

**ARRIVE:** Pascagoula, MS

**Project:** Spring Southeast Area Monitoring and Assessment Program Ichthyoplankton Survey

#### Objectives:

1. Assess the occurrence, abundance and geographical distribution of the early life stages of spring spawning fishes, especially bluefin tuna (*Thunnus thynnus*), from mid-continental shelf to deep Gulf of Mexico waters using a bongo net, a neuston net, and a subsurface “Spanish” Neuston net at selected Southeast Area Monitoring and Assessment Program (SEAMAP) stations in support of annual stock assessments.
2. Describe the pelagic habitat of fish larvae through measurements of various physical and biological parameters:
  - a. Record profiles through the water column of temperature, salinity, fluorescence, dissolved oxygen, and turbidity.
  - b. Measure chlorophyll A in replicate water samples
  - c. Detect and measure frontal features along the survey cruise track using data from the ship’s Fluoro-thermosalinograph flow-through system.
3. Collect detailed observations of net-caught jellyfish and ctenophores.
4. Measure the vertical distribution of fish larvae by sampling at discrete depths in the water column at selected locations along the SEAMAP plankton survey grid using a Multiple Opening and Closing Net Environmental Sensing System.
5. Evaluate trophic pathways relative to the early life dynamics primarily of Atlantic bluefin tuna larvae with the use of stable isotope analysis of samples collected using 2 different bongo nets.

### NOAA Ship *Gordon Gunter*

**Commanding Officer:** Master Donn Pratt

**Primary Mission Category:** Fisheries Research

**DEPART:** Pascagoula, MS

**ARRIVE:** Newport, RI

**Project:** North Atlantic Right Whale Survey & Biology

#### Objectives:

1. Collect photo ID and biopsy samples of baleen whales, with the primary target species being: North Atlantic right whales.
2. Apply dermal tags to right and sei whales.
3. Conduct oceanographic sampling in proximity to tagged whales.
4. Conduct zooplankton sampling to examine prey sources.
5. Collect right whale fecal samples for hormone analysis.
6. Deployment of sonobuoys near aggregations of right and sei whales.
7. Retrieve acoustic mooring from Browns Bank.

### **NOAA Ship *Pisces***

**Commanding Officer:** CAPT Michael Hopkins  
**Primary Mission Category:** Fisheries Research  
**DEPART:** Pascagoula, MS

**ARRIVE:** Mayport, FL

**Project:** Southeast Area Monitoring and Assessment Program (SEAMAP) Reef Fish Survey

**Objectives:** Conduct a survey of reef fish on the U.S. continental shelf of the Gulf of Mexico using a custom built stereo/video camera system and bandit reels. The ship's ME70 multi-beam system and Simrad EK60 Echosounder will be used to map predetermined targeted areas on a nightly basis to improve or increase the reef fish sample universe

## **San Diego, CA**

### **NOAA Ship *Reuben Lasker***

**Commanding Officer:** LCDR John Crofts  
**Primary Mission Category:** Fisheries Research

**Ship Status:** The ship is alongside in San Diego, CA, due to voltage and harmonic issues within the propulsion motors and will remain alongside as solutions are developed.

## **Newport, OR**

### **NOAA Ship *Rainier***

**Commanding Officer:** CDR E.J. Van Den Ameele  
**Primary Mission Category:** Hydrographic Surveys  
**DEPART:** Newport, OR

**ARRIVE:** Juneau, AK

**Project:** Chatham Strait, AK

**Objectives:** To support safe navigation through the acquisition and processing of hydrographic survey data for updating nautical charts and by the identification and dissemination of dangers to navigation, as identified during the course of survey operations.

### **NOAA Ship *Bell M. Shimada***

**Commanding Officer:** CDR Brian Parker  
**Primary Mission Category:** Fisheries Research  
**DEPART:** San Francisco, CA  
**DEPART:** Newport, OR

**ARRIVE:** San Francisco, CA  
**ARRIVE:** Newport, OR

**Project 1:** Characterization of Monterey Bay National Marine Sanctuary (MBNMS): mammals, birds & mid-water fishes

#### **Objectives:**

1. Marine mammal and seabird survey above/adjacent to Davidson Seamount Management Zone (DSMZ).
2. PUMA unmanned aerial survey above and adjacent to DSMZ to observe marine mammals.

3. Deploy and retrieve hydrophone to record marine mammal and ocean noise (soundscape).
4. Collection of oceanographic data and water samples above and adjacent to DSMZ; water samples for environmental DNA analysis; and water samples for Fukushima radiation testing.
5. Mesopelagic fishes survey above and adjacent to DSMZ, and within Sanctuary Ecologically Significant Areas during transit to/from DSMZ.
6. Microplastics survey above and adjacent to DSMZ.

## **Project 2: Rockfish Recruitment and Ecosystem Assessment**

### **Objectives:**

1. Sample for pelagic juvenile rockfish (*Sebastes* spp.) and other epi-pelagic micronekton.
2. Characterize prevailing ocean conditions and examine prominent hydrographic features.
3. Collect acoustic data for mapping distribution of fish and krill.
4. Observe seabird and marine mammal distribution and abundance.
5. Conduct paired trawls with charter ship *Ocean Starr*.
6. Collect surface neuston and CUFES plankton samples.
7. Collections for stable and radio isotope analysis.
8. Bottom grab collections along the Oregon and Washington Coast.
9. Collect plankton and conduct conductivity, temperature and depth (CTD) casts to characterize ocean conditions off Oregon and Washington.



**NOAA Ship *Bell M. Shimada* crew deploying a CTD rosette in Monterey Bay National Marine Sanctuary.**

[Photo: Paul Chetirkin]

## **OMAO'S MARINE OPERATIONS**

### **CAPT Todd Bridgeman, Director of Marine Operations**

OMAO's Marine Operations oversees operations of the three regional Centers, including the Marine Operations Center-Pacific, Marine Operations Center-Atlantic, and Marine Operations Center-Pacific Islands.



**Bird's eye view of NOAA's Marine Operation Center – Pacific.**

[Photo: NOAA]

## **OMAO'S MARINE OPERATIONS CENTER – PACIFIC (MOC-P)**

### **CAPT Douglas Baird, Commanding Officer MOC-P**

MOC-P serves as a homeport for two NOAA ships, and manages the day-to-day operations and provides administrative, engineering, maintenance, and logistical support for the research and survey ships in NOAA's Pacific fleet. Each year these ships conduct dozens of missions to assess fish and marine mammal stocks, conduct coral reef research, collect seafloor data to update nautical charts, and explore the ocean.

## **Ketchikan, AK**

### **NOAA Ship *Fairweather***

**Commanding Officer:** CDR David Zezula

**Primary Mission Category:** Hydrographic Surveys

**DEPART:** Seattle, WA

**ARRIVE:** Kodiak, AK

**Project:** Shumagin Islands, AK

**Objectives:** To support safe navigation through the acquisition and processing of hydrographic survey data for updating nautical charts and by the identification and dissemination of dangers to navigation, as identified during the course of survey operations.

## Kodiak, AK

### NOAA Ship *Oscar Dyson*

**Commanding Officer:** CDR Arthur “Jesse” Stark

**Primary Mission Category:** Fisheries Research

**DEPART:** Kodiak, AK

**ARRIVE:** Dutch Harbor, AK

**DEPART:** Dutch Harbor, AK

**ARRIVE:** Dutch Harbor, AK

**Project 1:** Ecosystems & Fisheries-Oceanography Coordinated Investigations (EcoFOCI) Spring Moorings

#### **Objectives:**

Perform hydrographic and zooplankton studies in the Bering Sea, recover 7 moorings and redeploy two, and conduct sampling in tandem with an autonomous Saildrone.

**Project 2:** EcoFOCI Spring Ichthyoplankton Survey

#### **Objectives:**

To conduct an ichthyoplankton survey and process studies in the region between the Shumagin Islands and Shelikof Strait in order to estimate the abundance, transport and factors influencing the survival of young walleye pollock larvae, as well as other larval fish species. This effort will continue a 28-year time series of environmental and biological conditions in Shelikof Strait. Sampling will continue up through Shelikof Strait and progress along the Kenai Peninsula. In addition to this sampling, stations have been selected from the main grid for monitoring nutrients, salts and oxygen. A total of 4 satellite tracked drifter buoys may be released in areas of high larval walleye pollock abundance.

## Honolulu, HI

### NOAA Ship *Hi'ialakai*

**Commanding Officer:** CDR Daniel Simon

**Primary Mission Category:** Oceanographic Research, Environmental Assessment

**DEPART:** Pago Pago, AS

**ARRIVE:** Honolulu, HI

**DEPART:** Honolulu, HI

**ARRIVE:** Honolulu, HI

**Project:** American Samoa - Reef Assessment and Monitoring Program (RAMP)

#### **Objectives:**

1. Conduct ecosystem monitoring of the species composition, abundance, percent cover, size distribution, recruitment, and general health of the fishes, corals, other invertebrates, and algae of the shallow water (< 35 m) coral reef ecosystems of Johnston Atoll, the Phoenix Islands, the Territory of American Samoa, and the Line Islands.
2. Deploy, retrieve, and/or service an array of Subsurface Temperature Recorders, Sea Surface Temperature Buoys, Autonomous Reef Monitoring Structures, Calcification Accretion Units, Bioerosion Monitoring Units, Ecological Acoustic Recorders, moored Acoustic Doppler Current Profilers (ADCP), as well as anchored arrays consisting of a portable underwater collector, ADCP, a Conductivity, Temperature, Depth (CTD) recorder and a thermistor string to allow remote long-term monitoring of oceanographic and environmental conditions affecting the coral reef ecosystems of

Johnston Atoll, the Phoenix Islands, the Territory of American Samoa, and the Line Islands. This effort is in support of the Coral Reef Ecosystem Integrated Observing Systems.

3. Monitor near-shore physical and ecological factors associated with ocean acidification and general water quality, including analysis of seawater for nutrients, chlorophyll concentration, salinity, temperature, dissolved oxygen, transmissivity, total alkalinity, and dissolved inorganic carbon. These parameters will be measured via the collection of water in Niskin bottles CTD casts. Shallow-water CTDs will be conducted from small boats to a depth of ~30 m.
4. Collect shallow water coral cores to examine calcification/growth rates in recent decades and assess potential early impacts of ocean acidification. Coring operations will be conducted opportunistically (as a scientific dive).
5. Shipboard ADCP surveys around reef ecosystems to examine physical and biological linkages supporting and maintaining the island ecosystems.
6. Collect oceanographic data utilizing ship-based measurement systems ADCP, ThermoSalinoGraph, and the Scientific Computer System during all transits for the duration of the project.
7. Conduct investigations of marine microbial communities, including the collection of specimens via water sampling and benthic grab samples.
8. Determine the existence of threats to the health of these coral reef resources from anthropogenic sources, including marine debris.

## **Project 2: Hawaiian Monk Seal Population Assessment**

### **Objectives:**

1. Deploy Hawaiian monk seal camps at French Frigate Shoals, Laysan Island, Lisianski Island, Pearl and Hermes Reef and Kure Atoll.
2. Conduct monk seal surveys at Ni'i'hau, Midway Atoll, and opportunistically at Nihoa and Necker Islands.
3. Perform opportunistic health assessment and sampling of seals at all sites visited.
4. Translocate injured Hawaiian monk seals from Northwestern Hawaiian Islands' populations for rehabilitation at a facility in Kona, Hawaii.
5. Deliver supplies to Kure Atoll for the Department of Forestry and Wildlife, Department of Land and Natural Resources, State of Hawaii.
6. Set up a collaborative project with Sustainable Coastlines Hawaii for marine debris cleanup and monitoring during the field season.

### **NOAA Ship *Oscar Elton Sette***

**Commanding Officer:** LCDR Keith Golden

**Primary Mission Category:** Fisheries Research

**DEPART:** Honolulu, HI

**ARRIVE:** Saipan, Northern Mariana Islands

**Project:** Cetaceans of the Commonwealth of the Northern Mariana Islands and Mariana Trench Marine National Monument

### **Objectives:**

1. Recover and deploy a High-Frequency Acoustic Recording package at Wake Island during the transit to Guam.
2. Survey and sample cetacean species near each island area to understand connectivity of cetacean populations within the Mariana Archipelago. Visual survey will occur from small boat and sampling will consist of behavioral observations, photographs, biopsy sampling and satellite tagging. Acoustic monitoring will be conducted from the ship and will consist of a variety of array transects and tests,

including acoustic calibration of the towed array.

3. Collection of oceanographic data from routine conductivity-temperature-depth (CTD) and Expendable Bathythermograph casts, and thermosalinograph and echosounder measurements throughout the project. Active acoustics surveys and oceanographic surveys will help determine area productivity, and forage and water column profiles.

### **OMAO'S MARINE OPERATIONS CENTER – PACIFIC ISLANDS (MOC-PI)**

#### **CDR Matthew Wingate, Commanding Officer MOC-PI**

MOC-PI serves as a homeport for two NOAA ships, and manages the day-to-day operations and provides administrative, engineering, maintenance, and logistical support for the ships in NOAA's Pacific Islands' fleet.



# OMAO's Aircraft



## Tampa, Florida

### WP-3D (N42RF) – “Hurricane Hunter”

**Aircraft Commander:** N/A  
**Temporary Base:** Naval Air Station Jacksonville, FL  
**Current Mission:** Scheduled Maintenance - Until April 2016

The aircraft is at the Naval Air Station Jacksonville, Florida undergoing an extensive refurbishment period which will include replacing the wings and upgrading various components. This effort will extend the useful life of the aircraft for another 15-20 years.



One of NOAA's two Lockheed WP-3D Orion aircraft recently entered a long-term maintenance period at Naval Air Station, Jacksonville. The aircraft will receive new wings and significant additional upgrades as part of a service life extension program that will allow our WP-3D Orion aircraft to continue supporting all of NOAA's critical missions for years to come. The process will take approximately one year and once completed, NOAA's second WP-3D will enter its own re-winging and upgrade maintenance period in 2016.

[Photo: Victor Pitts, FRCSE Jacksonville]

**Gulfstream IV (N49RF) – “Hurricane Hunter”**

**Aircraft Commander:** LCDR Jason Mansour  
**Current Mission:** 2015 Hurricane Awareness Tour

The aircraft conducted the 2015 Hurricane Awareness Tour, along with the U.S. Air Force Reserve’s Hurricane Hunters. The tour took place the week of May 5, with stops in Halifax, Nova Scotia; Atlantic City, NJ; Hampton Roads, VA; Charleston, SC; Jacksonville, FL and Marathon, FL. The tour, attended by school groups, media, politicians and others, not only showed the capabilities of the Hurricane Hunter aircrafts but also had the goal of raising awareness about hurricane season preparedness. The aircraft was also on hand for the Governors’ Hurricane Conference in Orlando, FL on May 14.



**2015 East Coast Hurricane Awareness Tour, with both NOAA Hurricane Hunters and USAF-Reserve Hurricane Hunters.**

[Photo: NOAA]

**Jet Prop Commander (N45RF)**

**Aircraft Commander:** N/A  
**Current Mission:** Scheduled paint work. Until mid-June

The aircraft will be undergoing a scheduled repaint of the airframe. This work will continue until mid-June, when it will resume its Snow Survey mission.

### **Twin Otter (N46RF)**

**Aircraft Commander:** TBD  
**Current Mission:** Snow Survey Calibration

Aircraft is at NOAA's Aircraft Operations Center for system integration and calibration. This work will integrate the Snow Survey equipment from the Jet Prop (N45RF) into a second Twin Otter to allow for full continuity of operations in the event that the Jet Prop is down during a significant snow event. The aircraft will also be used for some flight training during the integration. The week of May 25-29, it will be on hand at the opening of the new National Water Center in Tuscaloosa, Alabama.

### **Twin Otter (N48RF)**

**Aircraft Commander:** LT Ron Moyers  
**Temporary Base:** Boulder, CO  
**Current Mission:** Fugitive Emissions Project – San Juan Basin, NM

Aircraft is conducting the Fugitive Emissions project for the Chemical Sciences Division of NOAA's Earth System Research Laboratory. This study aims to understand the atmospheric impact of rapidly expanding oil and gas operations. Measurements of key atmospheric trace gases (CO<sub>2</sub>, CO, CH<sub>4</sub>, C<sub>2</sub>H<sub>6</sub>, O<sub>3</sub>, and many more) along with black carbon will be made from the NOAA Twin Otter. The primary area of operation will be in the San Juan basin in New Mexico. The project will also include researchers from the University of Colorado, and University of Michigan.

### **Twin Otter (N56RF)**

**Aircraft Commander:** LT Michael Marino  
**Temporary Base:** San Juan, Puerto Rico  
**Current Mission:** Coastal Mapping LiDAR (AMAPPS)/Coastal Mapping

Aircraft is conducting a Coastal Mapping mission for the Remote Sensing Division of the National Geodetic Survey. This effort will utilize a Light Detecting and Ranging (LiDAR) system to scan the coastlines. The system can determine both the height of terrain on the beach and the depth of the near-shore waters. This data will aid in producing a digital database of our national shoreline. Working areas will be around Puerto Rico for the month.

### **Twin Otter (N57RF)**

**Aircraft Commander:** LT John Rossi  
**Temporary Base:** US Coast Guard Air Station Cape Cod, MA  
**Current Mission:** Northeast Right Whale Survey - New England waters

This survey will: 1) provide locations of North Atlantic Right whales to mariners, 2) provide description of Right whale distribution to support the implementation of seasonal and dynamic area management, 3) provide annual photo-identification records on Right whales, as well as detailed vertical photogrammetry in selected periods, 4) provide information on the distribution and abundance of marine mammals and marine turtles in the winter, spring, summer and fall seasons, 5) provide sightings of dead whales, 6) provide information on the distribution of shipping and fishing gear, and 7) census seal populations along the New England coast.



**NOAA DHC-6 Twin Otter (N46RF) on the ramp in Regina, Saskatchewan, Canada, while on a snow survey mission earlier this spring.**

[Photo: ENS Bonner, NOAA]

**King Air (N68RF)**

**Aircraft Commander:**

LT Tanner Sims

**Current Mission:**

Various Locations – Continuous Coastal Mapping

King Air is conducting Coastal Mapping mission flights in various locations. The Coastal Mapping work is an on-going mission, run by the Remote Sensing Division of the National Geodetic Survey (NGS), with the goal of providing a regularly-updated national shoreline for supporting marine navigation, defining territorial limits, and managing coastal resources. Stereo photogrammetry and a Light Detecting and Ranging System (LiDAR) are used to produce a digital database for a national shoreline.

**OMAO'S AIRCRAFT OPERATIONS CENTER (AOC)**

**CAPT Harris Halverson, Commanding Officer AOC**

The AOC, located at MacDill Air Force Base, serves as the main base for OMAO's fleet of nine aircraft and provides capable, mission-ready aircraft and professional crews to the scientific community. Whether studying global climate change or acid rain, assessing marine mammal populations, surveying coastal erosion, investigating oil spills, flight checking aeronautical charts, or improving hurricane prediction models, the AOC flight crews continue to operate in some of the world's most demanding flight regimes.



# Unmanned Systems Support



## NASA Global Hawk

**Location:** Edwards Air Force Base (AFB), CA

**Mission:** Multiple Flight Test Activities

NASA's Global Hawk Unmanned Aircraft System (UAS) has now been geared for multiple flight test activities in May and June. This test period will be followed by hurricane surveillance instrumentation in July for the Sensing Hazards with Operational Unmanned Technology (SHOUT) project. The SHOUT project is a NOAA funded hurricane surveillance and research activity that is scheduled to operate from the NASA Wallops Flight Facility in August and September. NOAA Corps officer, LCDR Neuhaus, is supporting Global Hawk as a project manager and instructor pilot.

## APH-22 Hexacopter

**Location:** San Simeon, CA

**Mission:** Piedras Blancas Grey Whale

The objective of this study is to assess the body condition and nutritional status of reproductive female gray whales based on measurements of length and width from vertical aerial photographs collected using an unmanned aircraft system (UAS). Estimates of length will inform long-term growth trends and minimum size at sexual maturity for this population. Widths will be used to infer current nutritional status and to establish a baseline of condition for reproductive females within this population. In addition to the size and shape data captured in these vertical images, this will be the first attempt to identify individual gray whales from the air. Whales photographed from the air will be photographed concurrently from shore to test the feasibility of comparing vertical to oblique images. Because most photo-identification images of gray whales are oblique images of the dorsal flank taken from small boats or from shore, this feasibility experiment is important for ground truthing purposes. If proven to be feasible, vertical images can be integrated with photo-identification catalogues of gray whales from both the eastern and western North Pacific.

## APH-22 Hexacopter

**Location:** Cape Cod, MA

**Mission:** Atlantic Bluefin Tuna Population Assessment

The objective of this project is to obtain an estimate of juvenile Atlantic Bluefin Tuna abundance for the western population. Integrated aerial and acoustic sampling has the potential to reduce perception bias as well as availability biases associated with tuna at depth obscured by surface individuals. The APH-22 hexacopter will be used to obtain high resolution aerial images from a platform that will not interfere the functioning of attitude sensors. The improved low altitude/high resolution images taken from the APH-22 will help us develop automated target recognition of Atlantic Bluefin Tuna. Studies have demonstrated feasibility for shark and leatherback turtles, but insufficient image quality has been obtained for smaller juvenile Atlantic Bluefin Tuna from photographs taken via a spotter plane. This project will bridge these gaps and assist the development of a detection algorithm.

### **Manta UAS**

**Location:** Svalbard, Norway

**Mission:** Manta Air-Sea-Ice and Biogeochemistry Experiment

The objective of this mission is to further understand the distribution of black carbon in the Arctic atmosphere and the deposition of black carbon on snow and ice surfaces. Two Mantas will be flown in tandem as well as a UAS owned by the Norwegian Northern Research Institute. The Manta is planned to be equipped with several payloads to include an Aerosol Payload, Visual and Infrared Imaging Payload, Hyperspectral Imaging Payload, Laser Altimeter and Meteorological Payload, Broadband Long-Wave and Solar Radiation Payload, and a Dropsonde-MicroBuoy payload.

### **Puma UAS**

**Location:** Monterey Bay National Marine Sanctuary, CA

**Mission:** Living Marine Resources Surveys

This project is a living marine resource (LMR) survey conducted at the Davidson Seamount, within the Monterey Bay National Marine Sanctuary (MBNMS). Operations will be conducted from the NOAA Ship *Bell M. Shimada* during the first leg of a scheduled two-leg cruise. Puma operations will be conducted as part of the 6-day cruise operating within the Davidson Seamount Management Zone (DSMZ) within MBNMS. Operations will be conducted in uncontrolled international airspace within the waters above and adjacent to the Davidson Seamount over 50 miles offshore. The Puma Electro-Optical and Infrared Payload will be used to conduct Living Marine Resources survey in conjunction with ship survey lines.

### **DJI S-1000**

**Location:** Oak Ridge, TN

**Mission:** Convective Initiation

This project is an initiative from OAR's Atmospheric Turbulence and Diffusion Division (ATDD) to measure the conditions that lead to Convective Initiation (CI) in the lower boundary layer. A DJI S-1000 rotor-based UAS system will be operated by NOAA/ATDD and will be used to measure the dynamics of land-atmosphere interactions in the lower boundary layer. The goal is to measure the scale and extent of the temperature and moisture fields in the lower boundary layer adjacent to fixed towers on the surface. A field experiment is planned for the summer of 2015 using this UAS in Northern Alabama to help accomplish this mission.



# OMAO Partnerships



## United States Senate Committee on Commerce, Science, and Transportation – Chair, Senator John Thune (R-SD)

**Location:** Washington, DC

**Detail:** LCDR Wendy Lewis, NOAA Commissioned Officer Corps

LCDR Lewis is currently on detail to the Committee where she is assisting on activities pertaining to oceans, atmosphere, and fisheries policy, as well as other matters within the Committee's jurisdiction.

## National Science Foundation

**Location:** Antarctica

**Mission:** LTJG Jesse Milton, NOAA Commissioned Officer Corps

Members of the [NOAA Commissioned Officer Corps](#) carry out NOAA's mission in remote locations across the globe. LTJG Milton is assigned to Antarctica where he serves as the Station Chief for NOAA's Atmospheric Research Observatory (ARO) at the Amundsen-Scott South Pole Station. The ARO at the Amundsen-Scott South Pole Station is a National Science Foundation facility used in support of scientific research related to atmospheric phenomena.

## Department of Defense - U.S. Pacific Command (USPACOM)

**Location:** Honolulu, HI

**Embedded Liaison:** CAPT Barry Choy, NOAA Commissioned Officer Corps

The U.S. Pacific Command (USPACOM) area of responsibility encompasses approximately half the earth's surface and more than half of its population. The 36 nations that comprise the Asia-Pacific include: two of the three largest economies and nine of the ten smallest; the most populous nation; the largest democracy; the largest Muslim-majority nation; and the smallest republic in the world. The region is a vital driver of the global economy and includes the world's busiest international sea lanes and nine of the ten largest ports. By any meaningful measure, the Asia-Pacific is also the most militarized region in the world, with seven of the world's ten largest standing militaries and five of the world's declared nuclear nations. Under these circumstances, the strategic complexity facing the region is unique. CAPT Choy is linked closely with the activities within the region allowing for identification of opportunities and cooperation between USPACOM and NOAA, and better overall government function situational awareness in the region.

## Department of Defense - U.S. Northern Command (USNORTHCOM)

**Location:** Boulder, CO

**Embedded Liaison:** CAPT Mark Moran, NOAA Commissioned Officer Corps

U.S. Northern Command (USNORTHCOM) partners to conduct homeland defense, civil support, and security cooperation to defend and secure the United States and its interests. NORTHCOM's area of responsibility includes air, land, and sea approaches and encompasses the continental United States, Alaska, Canada, Mexico, and the surrounding water out to approximately 500 nautical miles. It also includes the Gulf of Mexico, the Straits of Florida, and portions of the Caribbean region that include The Bahamas, Puerto Rico, and the U.S. Virgin Islands. CAPT Moran serves as the liaison for the NOAA Corps, helping to plan, organize, and execute homeland defense and civil support missions.

### **Department of Defense - U.S. Navy**

**Location:** Washington, DC

**Embedded Liaison:** CDR Christiaan van Westendorp, NOAA Commissioned Officer Corps  
CDR van Westendorp serves as NOAA liaison to the Oceanographer of the Navy and is an important interface between the U.S. Navy and other U.S. Federal Agencies, including NOAA. As NOAA Liaison, CDR van Westendorp serves as the Head of the Interagency Policy Branch of the International and Interagency Policy Division, Office of the Oceanographer of the Navy, located at the U.S. Naval Observatory. The mission of this Division is to coordinate and execute the Oceanographer of the Navy functions related to policy and programs involving international and/or interagency oceanography. Oceanography includes meteorology, oceanography, mapping, charting and geodesy, astronomy, and precise time and time interval.

### **Department of Defense - U.S. Navy**

**Location:** Stennis Space Center, MS

**Embedded Liaison:** LT Jonathan French, NOAA Commissioned Officer Corps  
Embedded in the Navy's Naval Oceanography Mine Warfare Center, LT French works side by side with Navy officers operating Unmanned Underwater Vehicles worldwide and is currently deployed to the Arabian Gulf. This collaboration will provide knowledge and experience that will keep NOAA on the cutting edge of this emerging technology as well as strengthen the partnership between NOAA and the Navy.

### **Department of Defense and NOAA's Office of Coast Survey**

**Location:** Silver Spring, MD

**Embedded Liaison:** LT Russell Quintero, NOAA Commissioned Officer Corps  
NOAA's National Ocean Service Office of Coast Survey (OCS) is the lead federal provider of nautical charts and hydrographic survey data of the U.S. Exclusive Economic Zone. Meeting this responsibility requires active cooperation and coordination with federal partners in the Departments of Defense and Homeland Security with which NOAA shares responsibility for U.S. navigational products and services. LT Quintero tracks, coordinates, and adds value to existing activities involving OCS subject matter experts and partners, seeks and develops additional opportunities for collaboration, and increases visibility and access to these activities and partnerships for OCS leadership.

### **Department of Homeland Security - U.S. Coast Guard**

**Location:** Washington, DC

**Embedded Liaison:** CAPT Jeremy Adams, NOAA Commissioned Officer Corps  
As the NOAA liaison to the United States Coast Guard (USCG), CAPT Adams maintains a current and comprehensive knowledge of interagency activities and policies related to the USCG and NOAA. He identifies potential conflicts or benefits issues for analysis and evaluation, conducts appropriate assessments and studies, and serves as the interface between NOAA and the USCG. CAPT Adams initiates, designs, and implements strategies through federal agency liaison and coordination that results in cooperative arrangements for maritime security, oceanographic research, hazardous materials spill response, and many other activities.



# Teacher At Sea Program



The mission of the Teacher at Sea (TAS) program is to give teachers a clearer insight into our ocean planet, a greater understanding of maritime work and studies, and to increase their level of environmental literacy by fostering an interdisciplinary research experience. The program provides a unique environment for learning and teaching by sending kindergarten through college-level teachers to sea aboard NOAA research and survey ships to work under the tutelage of scientists and crew. Then, armed with new understanding and experience, teachers bring this knowledge back to their classrooms. Since its inception in 1990, the program has enabled more than 600 teachers to gain first-hand experience of science and life at sea. By participating in this program, teachers enrich their classroom curricula with knowledge that can only be gained by living and working side-by-side, day and night, with those who contribute to the world's body of oceanic and atmospheric scientific knowledge. Below is a list of the NOAA Teachers at Sea for the current monthly update for the 2015 Field Season. Once they have embarked on their cruise, you can gain access to their blogs which document their missions at sea and offer a wealth of information about the research being conducted as well as personal stories. More info: <http://teacheratsea.noaa.gov>

2015 Season Stats: 22 teachers will be sailing on different projects

## **NOAA Ship Oregon II**

**Name:** Ms. June Teisan

**School:** NOAA Office of Education – Washington, DC

**Cruise:** SEAMAP Spring Plankton Survey, May 01, 2015 – May 15, 2015

**Blog:** [http://teacheratsea.noaa.gov/#/2015/June\\*Teisan/blogs](http://teacheratsea.noaa.gov/#/2015/June*Teisan/blogs)

## **NOAA Ship Gordon Gunter**

**Name:** Ms. Kelly Dilliard

**School:** Wayne State College – Wayne, NE

**Cruise:** Northern Right Whale Survey, May 15, 2015 – May 26, 2015

**Blog:** [http://teacheratsea.noaa.gov/#/2015/Kelly\\*Dilliard/blogs](http://teacheratsea.noaa.gov/#/2015/Kelly*Dilliard/blogs)

## **NOAA Ship Henry B. Bigelow**

**Name:** Ms. Dieuwertje (DJ) Kast

**School:** University of Southern California – Los Angeles, CA

**Cruise:** Ecosystem Monitoring, May 19, 2015 – June 03, 2015

**Blog:** [http://teacheratsea.noaa.gov/#/2015/DJ\\*Kast/blogs](http://teacheratsea.noaa.gov/#/2015/DJ*Kast/blogs)

## **NOAA Ship Pisces**

**Name:** Ms. Heidi Wigman

**School:** Saint Matthew School – Hillsboro, OR

**Cruise:** SEAMAP Reef Fish, May 22, 2015 – June 10, 2015

**Blog:** [http://teacheratsea.noaa.gov/#/2015/Heidi\\*Wigman/blogs](http://teacheratsea.noaa.gov/#/2015/Heidi*Wigman/blogs)

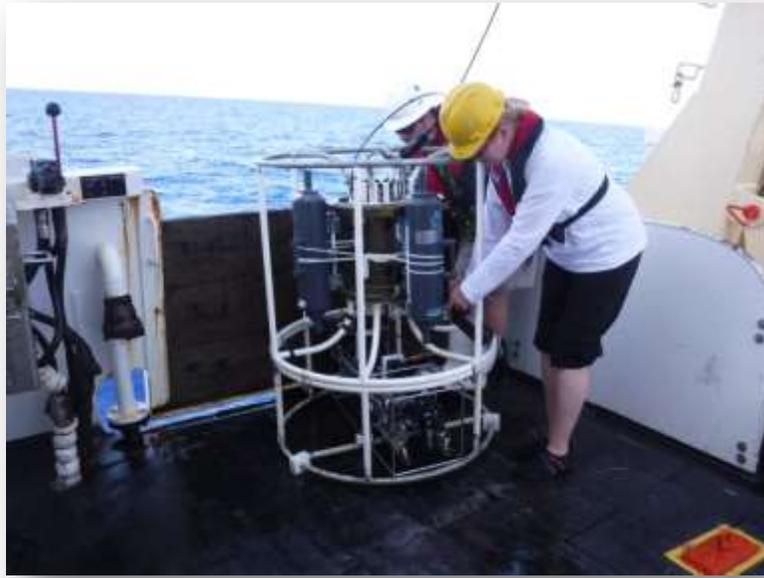
## **NOAA Ship Bell M. Shimada**

**Name:** Ms. Alexandra Miller

**School:** Village Leadership Academy – Chicago, IL

**Cruise:** Juvenile Rockfish Survey, May 27, 2015 – June 10, 2015

**Blog:** [http://teacheratsea.noaa.gov/#/2015/Alexandra\\*Miller/blogs](http://teacheratsea.noaa.gov/#/2015/Alexandra*Miller/blogs)



**Teacher At Sea (TAS) June Teisan, aboard NOAA Ship *Oregon II*, collecting water samples from Niskin-bottles secured to a rosette.**

[Photo: NOAA]



## OMAO - NOAA Dive Program



OMAO manages and implements NOAA's Dive Program (NDP), which trains and certifies scientists, engineers, and technicians from federal, state, tribal governments, and the private sector to perform the variety of tasks carried out underwater to support NOAA's mission. NDP also has cooperative diving agreements with over 100 government agencies and academic institutions. NOAA has more than 400 divers who perform over 14,000 dives per year. The NDP is headquartered at the NOAA Diving Center at the NOAA Western Regional Center in Seattle, Washington. [http://www.ndc.noaa.gov/gi\\_program.html](http://www.ndc.noaa.gov/gi_program.html).



**The NOAA Diving Control and Safety Board (NDCSB) recently voted to install National Ocean Service's Line Office Diving Officer, Kim Roberson, as the next Chairperson of the Board.**

[Photo: NOAA]



# OMAO - NOAA Small Boat Program



OMAO sets policy and provides safety inspections for almost 400 small boats operated by the various Line and program offices throughout NOAA, which support fisheries laboratories, dive support, nautical charting, ocean and Great Lakes research, and more. More info: <http://www.sbp.noaa.gov/>



**NOAA small boats support many diverse operations across the country.**

[Photos: NOAA]



# Office of Marine and Aviation Operations



Providing environmental intelligence for a dynamic world

The personnel, ships, and aircraft of NOAA play a critical role in gathering environmental data vital to the nation's economic security, the safety of its citizens, and the understanding, protection, and management of our natural resources. The NOAA fleet of ships and aircraft is managed and operated by the Office of Marine and Aviation Operations (OMAO), an office comprising civilians, mariners, and officers of the NOAA Commissioned Officer Corps, one of the seven uniformed services of the United States. NOAA's roots trace back to 1807, when President Thomas Jefferson ordered the first comprehensive coastal surveys. Those early surveys ensured safe passage of ship-borne cargo for a young nation. As the needs of the nation have grown, so too have OMAO's responsibilities. Today, OMAO civilians and NOAA Corps officers operate, manage, and maintain NOAA's active fleet of 16 research and survey ships and nine specialized aircraft. Together, OMAO and the NOAA Corps support nearly all of NOAA's missions.

NOAA has the largest fleet of federal research and survey ships in the nation. The fleet ranges from large oceanographic ships capable of exploring and charting the world's deepest ocean, to smaller vessels responsible for surveying the shallow bays and inlets of the United States. The fleet supports a wide range of marine activities including fisheries surveys, nautical charting, and ocean and climate studies. Based throughout the continental United States, Alaska, and Hawaii, the ships operate in all regions of the nation and around the world.

NOAA's aircraft provide a wide range of airborne capabilities. Our highly specialized Lockheed WP-3D "Hurricane Hunter" aircraft are equipped with an unprecedented variety of scientific instrumentation, radars, and recording systems for both in situ and remote sensing measurements of the atmosphere, the Earth, and its environment. Equipped with both C-band weather radar and X-band tail Doppler radar systems, the WP-3Ds have the unique ability to conduct tropical cyclone research in addition to storm reconnaissance. Together with NOAA's Gulfstream IV-SP hurricane surveillance jet, these aircraft greatly improve our physical understanding of hurricanes and enhance the accuracy of tropical cyclone forecasts. NOAA's light aircraft also play a vital role in monitoring our environment. Our King Air, Commander and Twin Otter aircraft support marine mammal population studies, shoreline change assessments, oil spill investigations, and water resource/snowpack surveys for spring flood forecasts.

The NOAA fleet provides immediate response capabilities for unpredictable events. For example, in November 2014, our aircraft flew missions over upstate New York after the record snow falls of up to seven feet and conducted airborne Snow Water Equivalent (SWE) and soil moisture measurements. Airborne SWE measurements are used by NOAA's National Weather Service when issuing river and flood forecasts, water supply forecasts, and spring flood outlooks.

After Hurricane Sandy in 2012, NOAA ships *Thomas Jefferson* and *Ferdinand R. Hassler* conducted emergency bathymetric surveys to locate possible submerged navigational hazards in the ports of New York and Virginia. These surveys enabled the ports to reopen quickly. Aerial images of storm-stricken regions, taken by NOAA aircraft, helped residents and emergency workers to quickly assess the condition of houses, bridges, and vital infrastructure. In 2010, the NOAA fleet and the NOAA Corps played a major role in the response to the BP Deepwater Horizon oil spill. NOAA's entire Atlantic fleet and over a quarter of the total strength of the NOAA Corps were deployed to the Gulf following the spill, developing mission plans and assisting response efforts.

While manned aircraft and sea-going vessels have been, and will continue to be, a primary source of environmental data, new technology will have a significant role to play in the future NOAA fleet. OMAO, in coordination with other NOAA offices and federal agencies, is evaluating and deploying remotely piloted underwater and aircraft systems that could significantly contribute to environmental observations. OMAO's ongoing challenge is to meet the growing demand for *in situ* scientific data while providing the highest level of service. To better serve the needs of the nation, NOAA is examining the composition of the fleet through an exhaustive and critical review of at-sea science and observation requirements. Our objective is to develop a clear, cost-efficient path forward to ensure that the NOAA fleet can continue to conduct at-sea surveys and research vital to fisheries management, updating nautical charts, responding to natural and manmade disasters, and understanding coastal and marine systems more fully. Meeting these requirements is essential to developing sustainable, science-based management and conservation plans that protect the health and resiliency of these resources over the long-term.

We continue our efforts to build a civilian and NOAA Corps officer work force that is uniquely qualified to gather critical environmental intelligence and be adaptive and responsive to a changing world and work to expand our partnerships with other federal agencies. For example, NOAA Corps officers are currently assigned to work in the Department of Defense, National Science Foundation, and the U.S. Senate among others where they lend their expertise and service. We also continue to strengthen our partnership with the U.S. Coast Guard. Our basic NOAA Corps officer training class is held at the U.S. Coast Guard Academy, where newly commissioned officers train alongside Coast Guard officer candidates, developing skills and professional relationships that will benefit both services, especially during challenging times. Active collaboration among the Federal family is critical to ensuring the long-term capability and success of the federal ocean infrastructure. Our partners' success is our success. The men and women of OMAO and the NOAA Corps provide environmental intelligence for a dynamic world as they serve our nation every day from the farthest seas to the highest skies.



# NOAA Commissioned Officer Corps



– Honor, Respect, Commitment –

The NOAA Commissioned Officer Corps (NOAA Corps) is one of the nation's seven uniformed services and serve with the 'special trust and confidence' of the President. NOAA Corps officers are an integral part of the National Oceanic and Atmospheric Administration (NOAA), an agency of the U.S. Department of Commerce. With 321 officers, the NOAA Corps serves throughout the agency's line and staff offices to support nearly all of NOAA's programs and missions. The combination of commissioned service and scientific expertise makes these officers uniquely capable of leading some of NOAA's most important initiatives.

The NOAA Corps is part of NOAA's Office of Marine and Aviation Operations (OMAO) and traces its roots back to the former U.S. Coast and Geodetic Survey, which dates back to 1807 and President Thomas Jefferson. In 1970, NOAA was created to develop a coordinated approach to oceanographic and atmospheric research and subsequent legislation converted the commissioned officer corps to the NOAA Corps. The NOAA Corps today provides a cadre of professionals trained in engineering, earth sciences, oceanography, meteorology, fisheries science, and other related disciplines. Corps officers operate NOAA's ships, fly aircraft, manage research projects, conduct diving operations, and serve in staff positions throughout NOAA.

## **Benefits of the NOAA Corps to the Nation**

The combination of commissioned service with scientific and operational expertise, allows the NOAA Corps to provide a unique and indispensable service to the nation. NOAA Corps officers enable NOAA to fulfill mission requirements, meet changing environmental concerns, take advantage of emerging technologies, and serve as environmental first responders. For example:

- In November 2014, our aircraft flew missions over upstate New York after the record snow falls of up to seven feet and conducted airborne Snow Water Equivalent (SWE) and soil moisture measurements. Airborne SWE measurements are used by NOAA's National Weather Service when issuing river and flood forecasts, water supply forecasts, and spring flood outlooks.
- After Hurricane Sandy in 2012, NOAA ships *Thomas Jefferson* and *Ferdinand R. Hassler* conducted emergency bathymetric surveys to locate possible submerged navigational hazards in the ports of New York and Virginia. These surveys enabled the ports to reopen quickly. Aerial images of storm-stricken regions, taken by NOAA aircraft, helped residents and emergency workers to quickly assess the condition of houses, bridges, and vital infrastructure.
- After Hurricane Irene in 2011, the NOAA Ship *Ferdinand Hassler* and team completed 300 lineal nautical miles of survey work in less than 48 hours providing a Damage Assessment that enabled the U.S. Coast Guard to re-open ports and restore more than \$5M per hour in maritime commerce less than three days after the storm.
- In 2010, the NOAA fleet and the NOAA Corps played a major role in the response to the BP Deepwater Horizon oil spill. NOAA's entire Atlantic fleet and over a quarter of the total strength of the NOAA Corps were deployed to the Gulf following the spill, developing mission plans and assisting response efforts.

Find out more about the NOAA Corps, its mission and history at <http://www.noaacorps.noaa.gov/>.