

# NOAA Fleet Update

## February 2020

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 15 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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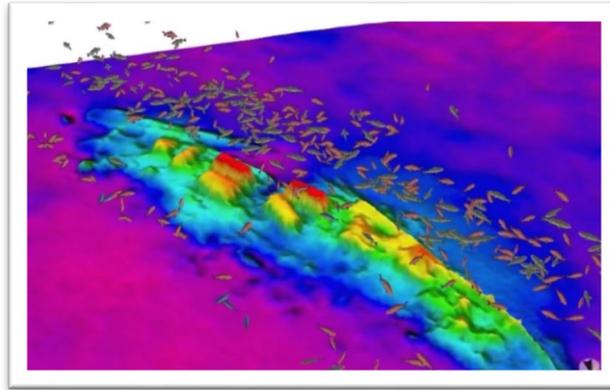
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# OMAO in the News



[NOAA Researchers Study How Fish Use Artificial Reefs](#), January 8, 2020; Maritime Executive. Researches aboard NOAA Ship *Nancy Foster* studied shipwrecks off the North Carolina coast in the fall of 2019, to better understand how artificial reefs function as habitat for commercially and recreationally important fish species.



Acoustic imagery showing size and location of fish over a wreck.

[Photo Credit: NOAA]

[Work Conducted Aboard NOAA Ship \*Reuben Lasker\* Contributing to eDNA Research](#), January 9, 2020; 7th Space. Recently published research highlights the value of environmental DNA (eDNA) collected by NOAA Fisheries scientists aboard NOAA Ship *Reuben Lasker* in recent years. Solely by sampling biological material in the water column, the presence of 80 fish and marine mammal species was determined, as compared to only 11 species of fish from trawling.

[NOAA Ship \*Oscar Elton Sette\* Conducts Important Cetacean Research in the Hawaiian Islands](#), January 21, 2020; Saving Seafood. NOAA researchers from the Pacific Island Fisheries Science Center embarked on NOAA Ship *Oscar Elton Sette* for the Winter Hawaiian Islands Cetacean and Ecosystem Assessment Survey (WHICEAS). They are studying cetaceans and seabirds around the Main Hawaiian Islands from now through March, a period of the year they previously have not studied.



A humpback whale calf breaches in the waters off Hawaii.

[Photo Credit: Marie Hill/NOAA Fisheries]

[NOAA Assets Contributing to Improved Weather and Climate Predictions](#), January 25, 2020; Barbados Today. NOAA Ship *Ronald H. Brown* and a NOAA P-3 Orion Hurricane Hunter aircraft are participating in a multi-national project to better understand the relationship between the formation of clouds over the ocean, and the affect they have on weather and climate. Barbados is an integral partner for NOAA every hurricane season, as it represents the easternmost airfield from which to forward deploy its Hurricane Hunter crews.



Assistant Secretary Rear Admiral Gallaudet (center) and other NOAA representatives participate in a public outreach event at NOAA Ship *Ronald H. Brown* while the ship was in Bridgetown, Barbados for ATOMIC.

[Photo Credit: NOAA]

[Two New Oceanographic Vessels Will Join The NOAA Fleet](#) - On February 11, 2020, NOAA announced it is in the process of acquiring two new oceanographic ships as part of the agency's fleet rebuilding effort. Once in service, the new ships will support a wide variety of missions, ranging from generic oceanographic research and exploration to marine life, climate and ocean ecosystem studies. The first ship, to be named *Oceanographer*, will be homeported in Honolulu, Hawaii. The second ship, to be named *Discoverer*, will be assigned a homeport at a future date. Both ships will continue the legacies of their namesakes, the first *Oceanographer* having served in the agency's fleet from 1966 to 1996, and her sister ship, *Discoverer*, from 1967 to 1996. Designs of the vessels are currently underway and NOAA expects to award contracts for the construction of the ships by the end of the year. Both will be built in the United States and construction timelines and target launch dates for the vessels will be determined after the shipbuilding contracts have been awarded.



# NOAA Commissioned Officer Corps Recruitment



OMAO and the NOAA Corps are an integral part of NOAA and our officers operate OMAO's research and survey fleet of 15 ships and 9 aircraft. Mission areas can range from launching a weather balloon at the South Pole, conducting hydrographic or fishery surveys in Alaska, maintaining buoys in the tropical Pacific, flying snow surveys over the Midwest, or flying our "Hurricane Hunter" aircraft into, or above, hurricanes.

## Selection Boards and Application Process

The NOAA Corps Recruiting Office has finished accepting applications for BOTC 136, and a selection board will convene in March. BOTC 136 is scheduled to begin in July 2020. Interested applicants for BOTC 137 may find additional information on the [NOAA Corps website](#). Prospective BOTC applicants are encouraged to start the application process, utilizing the online NOAA Corps E-Recruit System ([NOAA Corps E-Recruit](#)).

## Recruiting Events

The NOAA Corps recruiting team wrapped up the recent recruiting cycle in December, and will be attending career fairs again in the spring of 2020.



Basic Officer Training Class 134 poses in front of NOAA Ship *Henry B. Bigelow* in September, 2019.

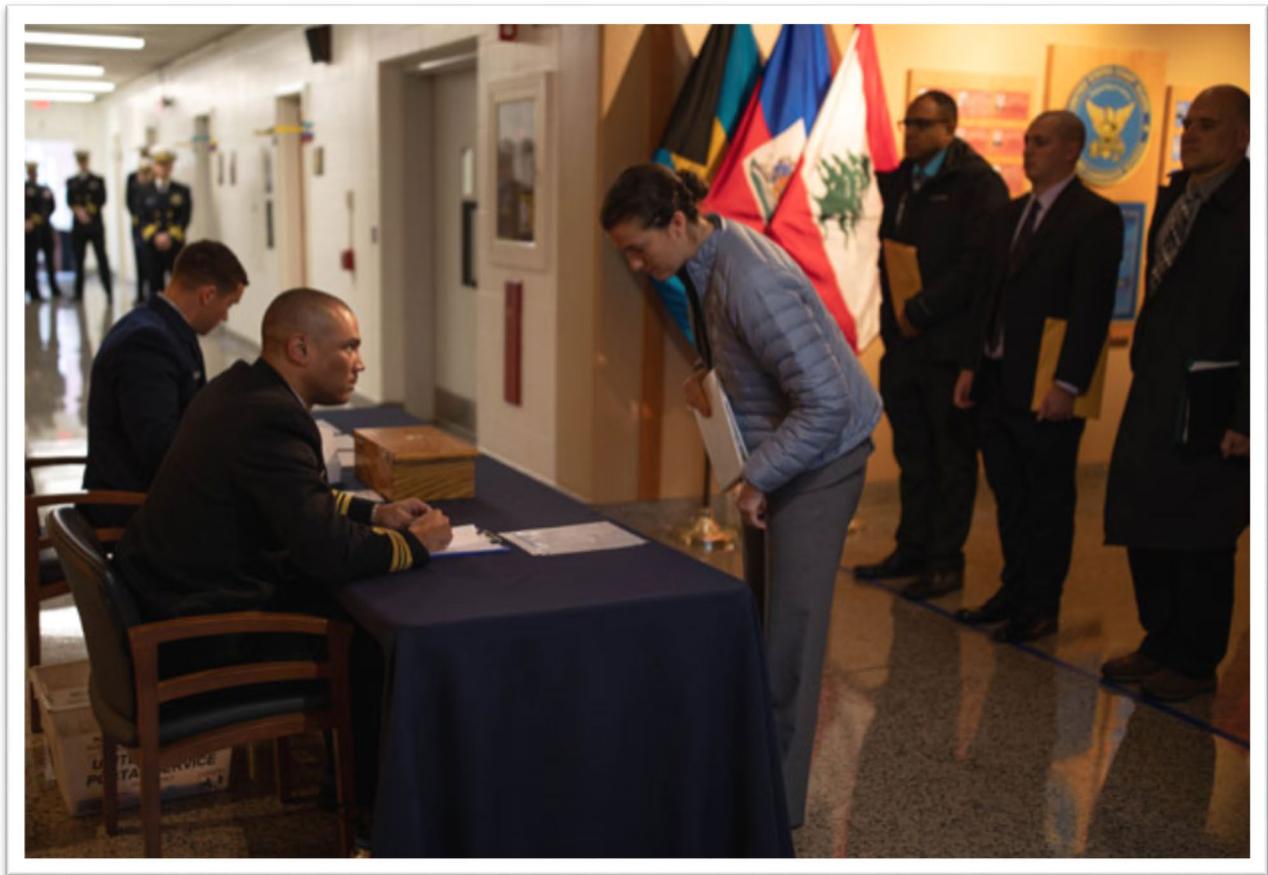
[Photo Credit: NOAA]



## Basic Officer Training Class 135



BOTC 135 is now approximately four weeks through their 17-week training program at the U.S. Coast Guard in conjunction with the Coast Guard Officer Candidate School. They have moved from the Indoctrination Phase into Junior Status. They have completed classes in Basic Seamanship, Compass and Aids to Navigation, Chart Plotting, and their first public speaking assignment as part of the Leadership in Writing curriculum. They will now begin classes in Basic Safety and in the Coast Guard's Leadership and Management school, as well as Advanced Firefighting and Damage Control at NAVSTA Newport and RADAR at USMRC in Middletown, RI. These classes will help to prepare the class as they embark on the USCGC *Eagle* for a two week training mission beginning on March 8.



A NOAA Corps Officer Candidate checks in at the NOAA Corps Officer Training Center at the US Coast Guard Academy in New London, Connecticut last month.

[Photo Credit: NOAA]

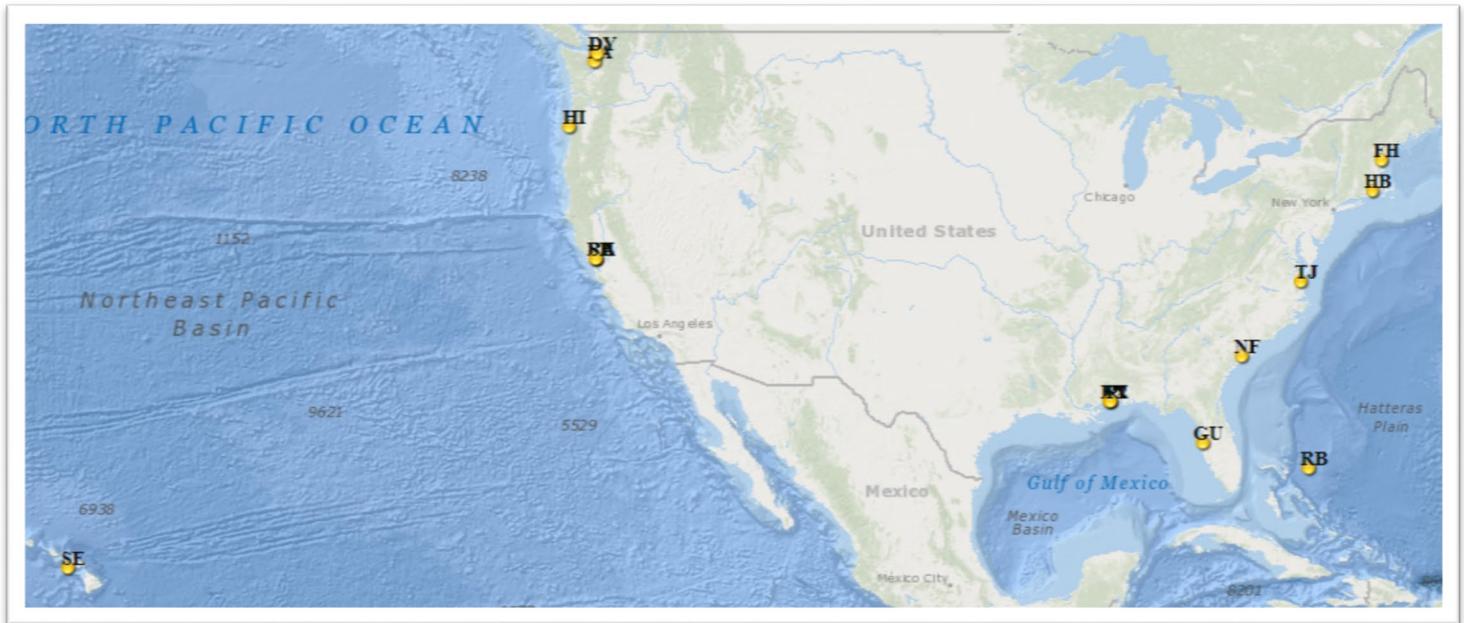


# OMAO's Ships and Centers



OMAO's [Ship Tracker](#) shows information about the present location of our fleet of research and survey ships. Please note: To access Ship Tracker you must have 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.



NOAA Ship locations at the start of February, 2020.

[Photo Credit: NOAA]

## National

### OMAO'S MARINE OPERATIONS

**Director of Marine Operations:** Mr. Troy Frost

OMAO's Marine Operations oversees the operations of OMAO's ships and the three regional Centers, including the Marine Operations Center-Pacific, Marine Operations Center-Atlantic, and Marine Operations Center-Pacific Islands. Employees of Marine Operations are stationed nationwide to provide strategic, administrative, engineering, maintenance, electronic, budgetary, and personnel support to the OMAO 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.

## [New Castle, New Hampshire](#)

### [NOAA Ship \*Ferdinand R. Hassler\*](#)

**Commanding Officer:** Commander Mark Blankenship

**Primary Mission Category:** Hydrographic Surveys

**Depart:** New Castle, New Hampshire

**Arrive:** New Castle, New Hampshire

**Ship Status:** Alongside for scheduled repairs in New Castle, New Hampshire. Planned departure for Operational Readiness Training in late February 2020.

## [Newport, Rhode Island](#)

### [NOAA Ship \*Henry B. Bigelow\*](#)

**Commanding Officer:** Captain William Mowitt

**Primary Mission Category:** Fisheries Research

**Depart:** Newport, Rhode Island

**Arrive:** Newport, Rhode Island

**Ship Status:** Alongside for scheduled repairs in Newport, Rhode Island. Planned departure for Operational Readiness Training and Gear Trials in late February 2020.

## [North Kingstown \(Davisville\), Rhode Island](#)

### [NOAA Ship \*Okeanos Explorer\*](#)

**Commanding Officer:** Commander Nicole Manning

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

**Depart:** Pascagoula, Mississippi

**Arrive:** Pascagoula, Mississippi

**Ship Status:** Alongside for scheduled repairs in Pascagoula, Mississippi. Planned departure for Sea Trials and Operational Readiness Training in early March 2020.

## [Norfolk, Virginia](#)

### [NOAA Ship \*Thomas Jefferson\*](#)

**Commanding Officer:** Commander Briana Hillstrom

**Primary Mission Category:** Hydrographic Surveys

**Depart:** Norfolk, Virginia

**Arrive:** Norfolk, Virginia

**Ship Status:** Alongside for scheduled repairs in Norfolk, Virginia. Planned departure for Sea Trials in late February 2020.

## [OMAO'S MARINE OPERATIONS CENTER – ATLANTIC \(MOC-A\)](#)

**Commanding Officer:** Captain David Zezula

MOC-A serves as homeport for NOAA Ship *Thomas Jefferson*. Its personnel provide administrative and logistical support and manage the day-to-day operations for the research and survey ships in NOAA's Atlantic and Gulf of Mexico fleet of

nine vessels. Each year, these ships conduct dozens of missions, to assess marine ecosystems including fish and marine mammal stocks, coral reef research, collect seafloor data to update nautical charts, and explore the ocean.

## **Charleston, South Carolina**

### **NOAA Ship *Nancy Foster***

**Commanding Officer:** Commander James Brinkley

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

**Depart:** Charleston, South Carolina

**Arrive:** Charleston, South Carolina

**Ship Status:** Alongside for scheduled repairs in Charleston, South Carolina. Planned departures for Sea Trials and Operational Readiness Training in February 2020.

### **NOAA Ship *Ronald H. Brown***

**Commanding Officer:** Commander Jeffrey Shoup

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

**Depart:** Bridgetown, Barbados

**Arrive:** Bridgetown, Barbados

**Ship Status:** Underway on ATOMIC (Atlantic Tradewind Ocean-Atmosphere Mesoscale Interaction Campaign) + NTAS (Northwest Tropical Atlantic Station) project for NOAA's Office of Oceanic and Atmospheric Research (OAR). Planned arrival at Bridgetown, Barbados in mid-February, and departure for GO-SHIP (the Global Ocean Ship-Based Hydrographic Investigations Program) in late February. The ship will conclude that mission in mid-March at Capetown, South Africa.



NOAA Ship *Ronald H. Brown* and NOAA P-3 “N43RF” participate in ATOMIC, near Barbados, in January.

[Photo Credit: NOAA]

## [Pascagoula, Mississippi](#)

### [NOAA Ship Pisces](#)

**Commanding Officer:** Commander Patrick Murphy

**Primary Mission Category:** Fisheries Research

**Depart:** Pascagoula, Mississippi

**Arrive:** Pascagoula, Mississippi

**Ship Status:** Alongside for scheduled repairs in Pascagoula, Mississippi. Planned departure for Sea Trials in late February 2020.

### [NOAA Ship Oregon II](#)

**Commanding Officer:** Master David Nelson

**Primary Mission Category:** Fisheries Research

**In Port:** Pascagoula, Mississippi

**Ship Status:** Dry docked for scheduled repairs in Pascagoula, Mississippi. Planned departure for Sea Trials in late March 2020.

### [NOAA Ship Gordon Gunter](#)

**Commanding Officer:** Lieutenant Commander Christopher Skapin

**Primary Mission Category:** Fisheries Research

**Depart:** Tampa, Florida

**Arrive:** Pascagoula, Mississippi

**Ship Status:** Alongside for scheduled repairs in Tampa, Florida. Planned departure for Sea Trials in February 2020.

## [San Diego, California](#)

### [NOAA Ship Reuben Lasker](#)

**Commanding Officer:** Captain Chad Cary

**Primary Mission Category:** Fisheries Research

**In Port:** Vallejo, California

**Ship Status:** The ship completed the California Cooperative Oceanic Fisheries Investigations (CalCOFI) on January 27. This annual project is a partnership of the California Department of Fish & Wildlife, NOAA Fisheries Service and Scripps Institution of Oceanography. The study focuses on the marine environment off the coast of California, the management of its living resources, and monitoring the indicators of El Nino. The ship then transited through San Pablo Bay to Mare Island Ship Yard, where the crew will perform various ship repairs, maintenance, and training until mid-April.



NOAA Ship *Reuben Lasker* (right), R/V *Rachel Carson* (left) and R/V *Western Flyer* (center) in Monterey Bay in January.  
[Photo Credit: Lieutenant David Wang/NOAA]

## Newport, Oregon

### NOAA Ship *Rainier*

**Commanding Officer:** Commander Samuel Greenaway

**Primary Mission Category:** Hydrographic Surveys

**Depart:** Vallejo, California

**Arrive:** Newport, Oregon

**Ship Status:** The ship will remain at the Mare Island Dry Dock through late February. The *Rainier* crew will perform various ship repairs, maintenance, and training before getting underway for a transit to her home port in Newport, Oregon.

### NOAA Ship *Bell M. Shimada*

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

**Primary Mission Category:** Fisheries Research

**In Port:** Vallejo, California

**Ship Status:** The ship will undergo dockside and dry-dock maintenance in Vallejo California, until mid-February. After repairs are completed, the ship will depart the dry dock to commence operational readiness training and gear trials to ensure equipment and crew are prepared for operations in late February.

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

**Commanding Officer:** Captain Michael Hopkins

MOC-P serves as a homeport for two NOAA ships. Its personnel provide administrative and logistical support, and manage the day-to-day operations, 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. MOC-P also serves as the home of OMAO’s Marine Operations.

## Ketchikan, Alaska

### NOAA Ship *Fairweather*

**Commanding Officer:** Captain Marc Moser

**Primary Mission Category:** Hydrographic Surveys

**In Port:** Seattle, Washington

**Ship Status:** Ship will undergo extensive dockside maintenance in Seattle, Washington through mid-March.

## Kodiak, Alaska

### NOAA Ship *Oscar Dyson*

**Commanding Officer:** Commander Sarah Duncan

**Primary Mission Category:** Fisheries Research

**Depart:** Everett, Washington

**Arrive:** Kodiak, Alaska

**Ship Status:** The ship is alongside at Kodiak, Alaska conducting acoustic trawl Pollock surveys. During her transit north, the crew deployed a subsurface mooring to collect temperature, salinity, and current data on behalf of the Alaska Fisheries Science Center. During the month, Pollock surveys will be conducted in the Shumagin Islands and near Bogoslof Island. These surveys provide Pollock abundance assessments which are critical to provide recommendations to the North Pacific Fisheries Management Council for sustainable harvest limits.



NOAA Ship *Oscar Dyson* departs MOC-P in late January, bound for Everett, Washington, to load gear and personnel from the Alaska Fisheries Science Center.

[Photo Credit: Lieutenant Commander Timothy Sinquefield, NOAA]

## Honolulu, Hawaii

### NOAA Ship *Oscar Elton Sette*

**Commanding Officer:** Commander Tony Perry III

**Primary Mission Category:** Fisheries Research

**Depart:** Honolulu, Hawaii

**Arrive:** Honolulu, Hawaii

**Ship Status:** The ship is underway near the Main Hawaiian Islands on the NOAA Fisheries project, Winter Hawaiian Islands Cetacean Ecosystem Assessment Survey (WHICEAS). During this project, the crew and scientists will conduct cetacean surveys of the waters around the Main Hawaiian Islands and the eastern-most Northwest Hawaiian Islands. There is a mid-month port call in Honolulu before departing on the second leg of WHICEAS.

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

**Commanding Officer:** Captain Joe Bishop

MOC-PI serves as a homeport for one NOAA ship. Its personnel provide administrative and logistical support, and manage the day-to-day operations for NOAA Ship *Oscar Elton Sette* and for ships operating in the western Pacific. 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.



Marine Operations Center – Pacific Islands, located at the Inouye Regional Center, on Ford Island in Pearl Harbor.

[Photo Credit: NOAA]



# OMAO's Aircraft



## Lakeland, Florida

NOAA's fleet of nine manned aircraft is based at OMAO's Aircraft Operations Center ([AOC](#)). Located at Lakeland Linder Regional Airport in Lakeland, Florida, the officers, crew, and scientists from AOC provide capable, mission-ready aircraft and professional crews to the scientific community. AOC is committed to the safe, efficient and economical use of NOAA aircraft and has more than four decades of experience developing, coordinating and successfully and safely conducting airborne environmental data gathering missions. OMAO's aircraft fleet includes the following platforms and the web links provide additional photos, information on each aircraft, and the missions they serve. For the latest news from the NOAA skies, please visit the Aircraft Operations Center on [Instagram](#), [Facebook](#) and [Twitter](#).

## [OMAO'S AIRCRAFT OPERATIONS CENTER \(AOC\)](#)

**Commanding Officer:** Commander Christian Sloan

The AOC, located at Lakeland Linder Regional Airport in Lakeland, Florida, 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.



AOC personnel and aircraft in the hangar at the NOAA Aircraft Operations Center in Lakeland, Florida

[Photo Credit: NOAA]

**P-3 "Hurricane Hunter" [Tail ID# N42RF]**

**Who:** Officers and crew of OMAO/NOAA Corps along with scientists from [NOAA's National Environmental Satellite, Data, and Information Service's Center for Satellite Application and Research](#)

**What:** Ocean Winds and Rain Experiment

**When:** Present - February 12 (science test flights and scheduled maintenance to follow)

**Where:** Shannon, Ireland

**Why:** To monitor and observe ocean surface vector winds, which are crucial pieces of information needed to understand and predict the short-term and long-term processes that drive our planet's environment. As the largest source of momentum for the ocean surface, winds affect the full range of ocean movement, from individual surface waves to complete current systems.



NOAA WP-3D Orion, N43RF, at Bridgetown, Barbados, supporting ATOMIC in January.

[Photo Credit: NOAA]

**P-3 "Hurricane Hunter" [Tail ID# N43RF]**

**Who:** Officers and crew of OMAO/NOAA Corps along with scientists from [NOAA's Office of Atmospheric Research \(OAR\), Earth Sciences Research Laboratory \(ESRL\)](#)

**What:** ATOMIC (Atlantic Tradewind Ocean–Atmosphere Mesoscale Interaction Campaign)

**When:** Present - February 13 (science test flights to follow)

**Where:** Barbados, U.S. Virgin Islands

**Why:** To investigate atmospheric shallow convection and air-sea interaction in the tropical North Atlantic east of Barbados. This effort will deploy instruments from a research ship and aircraft to measure key cloud and air-sea interaction processes that are needed to improve understanding and prediction of the impacts of shallow convection on weather and climate conditions on the U.S.

#### **G-IV "Hurricane Hunter" [Tail ID# N49RF]**

**Who:** Officers and crew of OMAO/NOAA Corps along with scientists from [NOAA's Office of Atmospheric Research \(OAR\), Earth Sciences Research Laboratory \(ESRL\)](#)

**What:** Atmospheric Rivers

**When:** Present - March 30

**Where:** Portland, Oregon

**Why:** To obtain high altitude data capturing aerosol (solid or liquid particles suspended in air) plumes and the interaction with atmospheric rivers off, near, and on coastal and inland environments. Atmospheric rivers are a direct source of precipitation to the west coast of the United States.

#### **King Air 350 [Tail ID# N68RF]**

**Who:** Officers and crew of OMAO/NOAA Corps along with scientists from [NOAA's National Ocean Service, National Geodetic Survey's Coastal Mapping Program](#)

**What:** Coastal mapping flights

**When:** Present - March 30

**Where:** TBD based on weather and tide stages.

**Why:** These flights provide critical baseline data to help accurately map the U.S. shoreline. This data is important for national security, maritime shipping, and navigation.

#### **Jet Prop Commander [Tail ID# N45RF]**

**Who:** Officers and crew of OMAO/NOAA Corps along with scientists from the [National Weather Service \(NWS\), National Operational Hydrologic Remote Sensing Center \(NOHRSC\)](#)

**What:** Water Resource Surveys (Soil Moisture)

**When:** Present - May 15

**Where:** Midwest and Northeast United States

**Why:** The aircraft will conduct low level (500 feet) surveys to collect Snow Water Equivalent data for NWS River Forecast Centers. NWS Weather Forecast Offices and NWS River Forecast Centers use these data when issuing river and flood forecasts, water supply forecasts, and spring flood outlooks.



A view from the cockpit of N45RF late in the day during a snow survey flight over the Northern Plains.

[Photo Credit: NOAA]

#### **Twin Otter [Tail ID# N46RF]**

**Who:** Officers and crew of OMAO/NOAA Corps along with scientists from the [National Weather Service \(NWS\)](#), [National Operational Hydrologic Remote Sensing Center \(NOHRSC\)](#)

**What:** Water Resource Surveys (Snow Survey)

**When:** Present – April 30

**Where:** Midwest and Northeast United States

**Why:** The aircraft will conduct Low level (500 feet) surveys to collect Snow Water Equivalent data for NWS River Forecast Centers. NWS Weather Forecast Offices and NWS River Forecast Centers use these data when issuing river and flood forecasts, water supply forecasts, and spring flood outlooks.

#### **Twin Otter [Tail ID# N48RF]**

**Who:** Officers and crew of OMAO/NOAA Corps along with scientists from the [National Marine Fisheries Service \(NMFS\)](#), [Southeast Fisheries Science Center \(SEFSC\)](#)

**What:** Southeast North Atlantic Right Whale Surveys

**When:** Present - March 31

**Where:** St. Simons Island, Georgia

**Why:** Provide real time sighting information to commercial shipping interests in an effort to reduce ship collisions, to better understand the distribution and abundance, and collect photographic images of critically endangered North Atlantic Right Whales. With as few as 400 remaining, surveillance flights to track their migration patterns are important for conservation and recovery efforts.

#### **Twin Otter [Tail ID# N56RF]**

**Who:** Officers and crew of OMAO/NOAA Corps along with scientists from [NMFS, Northeast Fisheries Science Center \(NEFSC\)](#)

**What:** Northeast North Atlantic Right Whale Surveys

**When:** Present - March 19

**Where:** Cape Cod, Massachusetts

**Why:** Provide real time sighting information to commercial shipping interests in an effort to reduce ship collisions, to better understand the distribution and abundance, and collect photographic images of critically endangered North Atlantic Right Whales. With as few as 400 remaining, surveillance flights to track their migration patterns are important for conservation and recovery efforts.

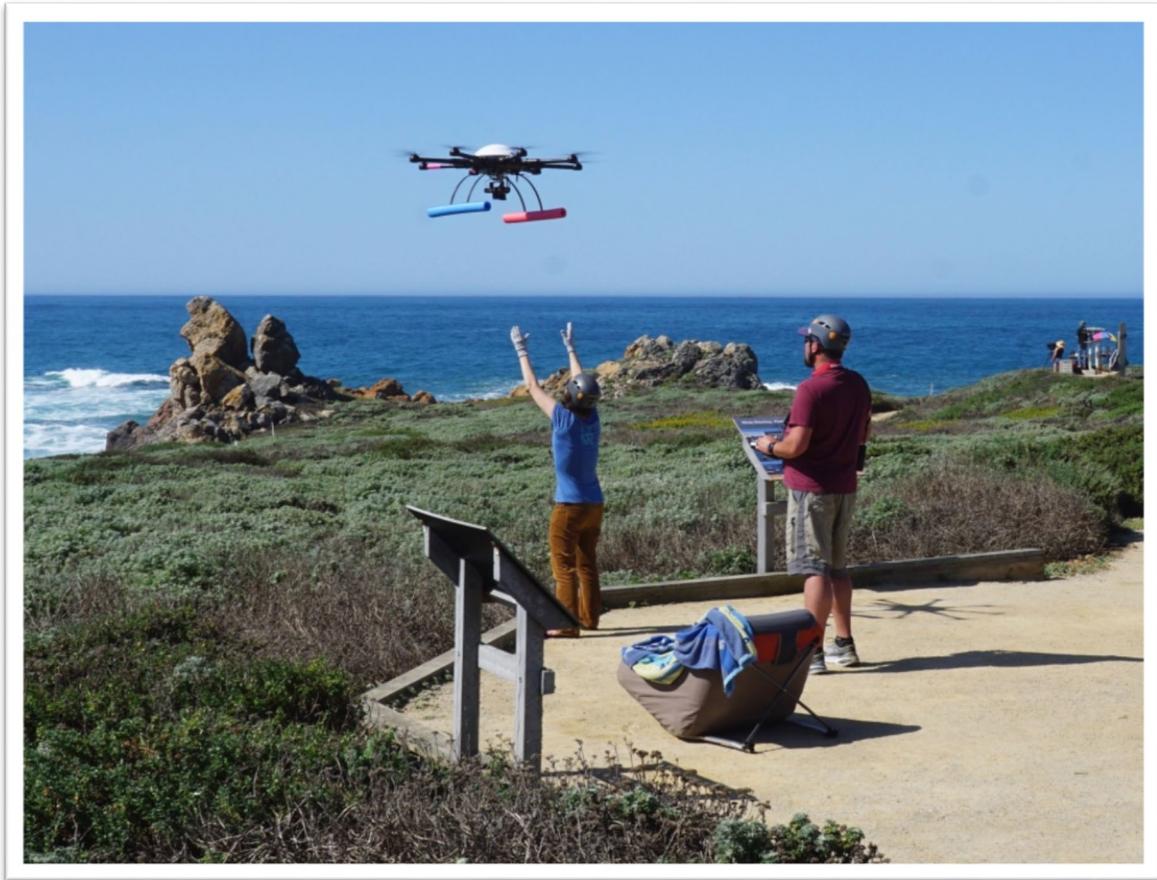
#### **Twin Otter [Tail ID# N57RF]**

Aircraft is in scheduled maintenance until April 7.

#### **Unmanned Aerial System (UAS) Section**

The UAS Section provides nationwide policy input, oversight, and guidance for all of NOAA's UAS operations. The UAS Section of AOC is staffed by a team of aviation professionals who specialize in operational UAS implementation. The UAS Section tracks all small UAS (sUAS) operations for NOAA to include aircraft hours, types, pilot qualifications, and pilot

training. The UAS Section also coordinates airspace approvals for operations within the United States National Airspace System, special use airspace, and foreign airspace. AOC conducts a thorough review of all projects by applying established risk management procedures to UAS missions, including an airworthiness review of all aircraft. This support is provided to NOAA Line Offices and partners to further develop and refine the use of sUAS for NOAA's research and data collection.



A team of researchers launches a small unmanned aircraft system.

[Photo Credit: NOAA]



# Unmanned Systems Support



## Nationwide

### APH-22 Hexacopter

**Location:** Copacabana, Antarctica

**Mission:** Antarctic Ecosystem Research Division Copacabana Field Station Antarctica

Southwest Fisheries Science Center’s Antarctic Ecosystem Research Division will conduct operations to collect aerial images of penguin colonies.

**Location:** Oahu, Hawaii

**Mission:** Pacific Islands Fisheries Science Center (PIFSC) APH-22 Training

Pacific Islands Fisheries Science Center utilizes the Kawainui Model Airplane Field to conduct training and proficiency flights. This allows APH-22 operators to maintain proficiency for future operations at a reduced cost. Training flights are also approved from NOAA small boats.

**Location:** San Miguel Island, Channel Islands National Park, California

**Mission:** Marine Mammal Laboratory-Alaska Fisheries Science Center: NOAA Fur Seals and California Sea Lions

Marine Mammal Laboratory's California Current Ecosystem Program is conducting northern fur seal and California sea lion surveys to identify tagged/branded individuals and conduct population assessments.

**Location:** Sea Life Park and Dolphin Quest Oahu, Hawaii

**Mission:** Pacific Islands Fisheries Science Center Cetacean Research Program

Images taken by the APH-22 are used to collect photogrammetric measurements of captive cetaceans. Photogrammetric measurements are compared with the known manual measurements to determine accuracy. Consistent trade winds can make image collection difficult. Practices found to improve image quality and accuracy can be used to improve operations over wild populations.



APH-22 Hexacopter



APH-28 Hexacopter



Image taken by an APH-28 Hexacopter

### APH-28 Hexacopter

**Location:** Cape Shirreff, Livingston Island, Antarctica

**Mission:** Antarctic Ecosystem Research Division Cape Shirreff

The Antarctic Ecosystem Research Division will conducting flights to survey Penguin and Seal Colonies in Cape Shirreff, Livingston Island, Antarctica.

### **APH-22 Hexacopter / APH-28 Hexacopter**

**Location:** Nearshore Atlantic Coast, Florida/Georgia

**Mission:** Northeast Fisheries Science Center Right Whale Calving

Northeast Fisheries Science Center is conducting operations surveying Right Whales along the Florida/Georgia coastline. An emphasis is being placed on collecting images of mother and calf pairs.

**Location:** Muskeget Island, Massachusetts

**Mission:** Northeast Fisheries Science Center Grey Seal Survey

Northeast Fisheries Science Center is conducting Grey Seal Pup surveys on Muskeget Island.

**Location:** Woods Hole, Massachusetts

**Mission:** NMFS Northeast Fisheries Science Center Training sites

Northeast Fisheries Science Center is approved to conduct proficiency and demonstration flights at Woods Hole Pier, Waquoit Bay National Estuarine Research Reserve, and nearshore waters in the Woods Hole area.

**Location:** NOAA Aircraft Operations Center, Lakeland, Florida

**Mission:** New Aircraft

The NOAA Aircraft Operations Center acquired 1 APH-22 and 1 APH-28 for training, testing and fleet support. Training flights will be conducted monthly.

**Location:** Western Regional Center, NOAA Campus, Seattle, Washington

**Mission:** Alaska Fisheries Science Center Training Site

Alaska Fisheries Science Center has been approved to conduct proficiency training, manufacturer training, and payload calibration flights at the Western Regional Center-Seattle, NOAA Campus. These flights will allow Alaska Fisheries Science Center to remain proficient and prepare for upcoming projects.

### **APH-22 Hexacopter / APH-28 Hexacopter / APO-42 Octocopter**

**Location:** Jamul, California

**Mission:** Jamul Bureau of Land Management Area

Southwest Fisheries Science Center has been approved to conduct training and proficiency flights in Jamul, California. This training site is owned by US Fish and Wildlife. This will allow pilots to practice landing, following a target, and approaching to collect blow samples.



APO-42 Octocopter

## FireFLY6 PRO

**Location:** Granite Canyon, Monterey County, California

**Mission:** Southwest Fisheries Science Center Granite Canyon Whales

Southwest Fisheries Science Center is conducting operations to evaluate use of the Firefly6 Pro to complete whale surveys.

**Location:** Kaneohe Bay, Hawaii

**Mission:** Pacific Island Regional Office Coral Reef Mapping

Coral reef mapping operations are being conducted in Kaneohe Bay. A FAA waiver, 2018-P107-WSA-29955, was granted to allow operations.

**Location:** Oahu, Hawaii

**Mission:** Pacific Islands Fisheries Science Center Proficiency/Training Flights

Kawainui Model Airplane Field will be used monthly to perform proficiency flights for Pacific Islands Fisheries Science Center operators. The main objective will be to practice hand launches, recoveries and locating targets. These flights are essential in providing the necessary skills needed for successful operations.

**Location:** Jamul, California

**Mission:** Southwest Fisheries Science Center Proficiency Flights

Southwest Fisheries Science Center is utilizing the BLM Jamul California site to conduct proficiency flights.



FireFly 6 PRO



3DR Solo

## 3DR Solo

**Location:** Coastal Waters, Florida/Georgia

**Mission:** Southeast Regional Office/Georgia Department of Natural Resources Right Whale Calving Grounds

Southeast Regional Office/Georgia Department of Natural Resources are conducting operations to assess entanglements and ID North Atlantic Right Whales.

**Location:** Newport, Oregon

**Mission:** NOAA Ship *Bell M. Shimada* Newport Operations

Operations will be conducted to collect images of NOAA buildings, ships, and small boats for public outreach material and infrastructure inspection.

**Location:** Mare Island, California

**Mission:** NOAA Ship *Bell M. Shimada* Mare Island Dry Dock

Operations are being conducted to maintain proficiency and collect images of the ship in dry dock.

**Location:** Blacksburg, Virginia

**Mission:** Weather Forecast Office Blacksburg Disaster Assessment

Weather Forecast Office Blacksburg will conduct operations after severe weather events to assess damage stricken areas.

**Location:** Charleston, South Carolina

**Mission:** Weather Forecast Office Blacksburg Disaster Assessment

Weather Forecast Office Blacksburg will conduct operations after severe weather events to assess damage stricken areas.

**Location:** Alafia River State Park (Hillsborough County), Florida

**Mission:** AOC Airworthiness

3DR Solo airworthiness flights at Alafia River State Park.

### **Meteodrone SSE / Blackswift S2**

**Location:** Oak Ridge, Tennessee

**Mission:** Instrument Testing and Calibration

A combination of these UAS will be used to conduct flights to in an experiment at Oliver Springs Airport up to 3500' in altitude. Operation will occur under an approved Certificate of Authorization (COA).



Blackswift S2



Meteomatics Meteodrone SSE



MD4-1000

### **Meteodrone SSE / Blackswift S2**

**Location:** Oak Ridge, Tennessee

**Mission:** Instrument Testing and Calibration

A combination of these will be used to conduct vertical profile flights to at Oliver Springs Airport up to 3,500' in altitude. Operation will occur under an approved COA.

### **MD4-1000 / Meteodrone SSE / Blackswift S2**

**Location:** Oak Ridge, Tennessee

**Mission:** Instrument Testing and Calibration

A combination of these will be used to conduct vertical profile flights to at Oliver Springs Airport up to 1,200' in altitude. The NOAA Class G Blanket COA is utilized for these operations.

### **DJI Mavic Pro GE / APH-22**

**Location:** Oahu, Hawaii

**Mission:** PIFSC Monk Seal Research

Flights are being conducted to assess monk seal health, stranding status, condition after release, and to support captures and releases.



DJI Mavic Pro



DJI S-1000



Matrice 210

### DJI Phantom 4

**Location:** Pivers Island, North Carolina

**Mission:** National Centers for Coastal Ocean Science Pivers Island

Method development flights will be conducted to determine the most efficient way of mapping intertidal wetlands and shallow nearshore habitats. For the purpose of tracking changes in vegetative cover and creating digital elevation models.

### DJI Phantom 4 / DJI Mavic

**Location:** Norfolk, Virginia

**Mission:** NOAA Ship *Thomas Jefferson*, Proficiency Training

DJI Phantom 4 and Mavic Zoom proficiency flights are being conducted at Marine Operations Center Atlantic.



DJI Phantom 4



Image taken from Phantom 4



DJI M600

### DJI M600

**Location:** Santa Barbara, California

**Mission:** University of California Santa Barbara M600 Test Flights

National Marine Fisheries Science is planning flights at University of California Santa Barbara to test and validate a hyperspectral scanner payload.

### P-3 Deployed UAS

**Location:** Aircraft Operations Center, Lakeland, Florida

**Mission:** P-3 Deployed UAS

AOC, Hurricane Research Division and the Unmanned Aircraft Systems Program Office are currently exploring new vehicle options for a hurricane deployed UAS.



# OMAO Partnerships



OMAO and the NOAA Commissioned Officer Corps provide key services and leadership to a number of federal agencies and external partners to help them meet their mission – and ours – and to better leverage federal resources.

## United States House of Representatives - Natural Resource Committee

**Location:** Washington, District of Columbia

**Detail:** Lieutenant Commander Zachary Cress

Lieutenant Commander Cress is currently on detail with the staff to the Committee Chair, Representative Raúl M. Grijalva (D-AZ), where he is assisting on activities pertaining to the Committee's work on oversight and authorization of NOAA programs, as well as other matters within the Committee's jurisdiction.

## National Science Foundation (NSF)

**Location:** South Pole, Antarctica

**Embedded Liaison:** Lieutenant (Junior Grade) Marisa Gedney

Members of the NOAA Commissioned Officer Corps carry out NOAA's mission in remote locations across the globe. Lieutenant (Junior Grade) Gedney is assigned to Antarctica where she 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

**Location:** Honolulu, Hawaii

**Embedded Liaison:** Captain Joe Bishop

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. Captain Bishop 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

**Location:** Boulder, Colorado

**Embedded Liaison:** Captain Catherine Martin

The U.S. Northern Command (USNORTHCOM) 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 to

include The Bahamas, Puerto Rico, and the U.S. Virgin Islands. The commander of USNORTHCOM is responsible for theater security cooperation with Canada, Mexico, and The Bahamas. The embedded NOAA liaison is linked closely with the activities within the region allowing for identification of opportunities and cooperation between USNORTHCOM and NOAA, and serves as a liaison between fostering greater situational awareness of NOAA response activities to natural disasters and Arctic activities.

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

**Location:** Stennis Space Center, Mississippi

**Embedded Liaison:** Lieutenant (junior grade) Garrison Grant

Embedded in the Navy's Naval Oceanography Mine Warfare Center, Lieutenant (junior grade) Garrison Grant works side by side with Navy officers operating Unmanned Underwater Vehicles worldwide and is currently stationed at Stennis Space Center. 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 Homeland Security – U.S. Coast Guard**

**Location:** Washington, District of Columbia

**Embedded Liaison:** Captain Kurt Zegowitz

As the NOAA liaison to the United States Coast Guard (USCG), Captain Zegowitz 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. Captain Zegowitz 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 NOAA's [Teacher at Sea Program](#) (TAS) is to provide teachers hands-on, real-world research experience working at sea with world-renowned NOAA scientists, thereby giving them unique insight into oceanic and atmospheric research crucial to the nation. The program provides a unique opportunity for kindergarten through college-level teachers to sail aboard NOAA research ships and work under the tutelage of scientists and crew.

Since its inception in 1990, the program has enabled more than 800 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. Former teacher at sea [blogs](#) can be accessed, which document their missions at sea and offer a wealth of information about the research being conducted as well as personal stories.

The 2019 TAS Field Season ended in October. During the 2019 season, 19 teachers from 13 states spent over 3,300 research hours aboard NOAA's research vessels. Additionally, they participated in 25 outreach events and 17 media appearances. Highlight [videos](#) featuring a few of the Teachers at Sea are available at the program's website.

Applications for the 2020 Field Season were accepted ahead of a deadline on November 30, 2019. Applicants will be notified of their acceptance or denial by early February, 2020. The application for the 2021 season will be available in November 2020.



# OMAO - NOAA Diving Program



Seattle, Washington

## NOAA Diving Center and Program

OMAO manages and implements [NOAA's Diving 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 approximately 350 divers who perform over 8,000 dives per year and leverages its cooperative agreements to accomplish twice that number of dives contributing to scientific research. The NDP is headquartered at the NOAA Diving Center (NDC), which is located at the NOAA Western Regional Center in Seattle, Washington.

The NOAA Diving Center conducted NOAA Diver training in Key West, Florida from January 6-24. Students were mainly OMAO Shipboard divers who learned the various skills required to conduct safe diving operations in support of NOAA missions. In addition to basic scuba skills, students earned qualifications in the use of drysuits, full-facemasks, ship husbandry, lift bags, and pneumatic tools. Their training started in the pool, and later expanded to confined open water, offshore depths of up to 100', and a dive in a hyperbaric chamber. NOAA Divemaster training takes place in conjunction with the NOAA Diver course. Divemaster candidates gain proficiency in the various skills that are required as a dive supervisor, including dive planning, administration, and accident management.



NOAA Diver students practice deploying Surface Marker Buoys in the pool (left), and prepare to conduct a night dive (right) in Key West, Florida in January.

[Photo Credit: Lieutenant Junior Grade Sean Digre, NOAA]



# NOAA Small Boat Program



Oversight of the NOAA Small Boat Fleet is a collaboration across OMAO, NMFS, NOS, OAR and NWS. The Small Boat Program (SBP) was established in 2004 to create policies and procedures to ensure safety in support of NOAA's field operations. Direction, technical and administrative support is provided by OMAO through the NOAA Small Boat Program Office. NOAA Line and Program Offices are responsible for acquisitions, operational funding and mission support. The NOAA Small Boat Safety Board is comprised of NOAA Line Offices, SBP, and Safety and Environmental Compliance Office (SECO) representatives and is charged with initiating policies and training, program metrics, and compliance.

In addition to its ships and aircraft, NOAA relies on hundreds of small boats located throughout the country to complete the organization's complex and varied scientific missions. The NOAA Small Boat Program is committed to supporting the safe operation of these small boats through the principles of risk management.

The NOAA Small Boat Program manages a fleet of about 400 small boats that perform various data collection missions for NOAA throughout the United States and its territories including hydrographic surveys, fishing, diving, scientific instrument deployment/recovery, water and air quality monitoring, law enforcement and marine mammal surveys. Vessels vary in size from a simple 10-ft. kayak to a complex 85-foot research vessel. The majority of small boats fall within the range of 16-26 feet in length and operate in near-shore environments, but extended missions in deep water environments are common among the larger vessels.

The Small Boat Safety Board and Program Office have launched the Small Boat Program Google Page. This website allows more open communication between the Safety Board, Program Office and the Small Boat Community. Announcements for future meetings and trainings can be made on the Google Page where they cannot be made on the public facing website.

The Small Boat Program Google Page also houses the Small Boat Forum. This forum is an invaluable tool for the Small Boat Community to ask questions to the fleet and capture answers for future reference for all Small Boat Vessel Operations Coordinators and operators. Forum categories include; Engineering and Deck Technical discussions, Line Office specific discussions, safety, unmanned systems, diving and more. This new tool for the community will increase networking, consistency and safety on the waterfront.



# 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 survey. 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 15 research and survey ships and nine specialized aircraft. Together, OMAO and the NOAA Corps support nearly all of NOAA's missions.



*NOAA Ship Reuben Lasker.*

[Photo Credit: NOAA]

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 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 jet, these 'hurricane hunter' 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, Turbo Prop 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.



NOAA WP-3D Orion.

[Photo Credit: NOAA]

The NOAA fleet provides immediate response capabilities for unpredictable events. For example, during the 2019 Hurricane season, NOAA flight crews and scientists flew a combined 468 hours for hurricane surveillance, research, reconnaissance, and emergency response. NOAA's Lockheed WP-3D and Gulfstream IV-SP collected and provided vital data used by NOAA scientists for improving modeling, forecasting, and ensuring accurate forecasts were provided to the public. NOAA's Beechcraft King Air 350 rapidly responded to demand from emergency managers, using state-of-the-art equipment to collect thousands of aerial images from Miami, Florida to Norfolk, Virginia, and the northern Bahamas, of damaged and affected communities following Hurricane Dorian. This imagery provided a timely and cost-effective way to better understand the damage sustained to both property and the environment.

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 unmanned aerial and marine systems that could significantly contribute to environmental observations. 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 man-made disasters, and understanding coastal and marine systems more fully. Meeting these requirements is essential to the development of 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 workforce 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. House Representatives among others where they lend their leadership, expertise and service. We also continue to strengthen our partnership with the Department of Homeland Security through 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 the Federal family is critical to ensuring the long-term capability and success of the federal ocean infrastructure. Our partners' success is our success.



# NOAA Commissioned Officer Corps



– Honor, Respect, Commitment –

The NOAA Commissioned Officer Corps is one of the United States' seven Uniformed Services and commissioned officers serve with the 'special trust and confidence' of the President. NOAA Corps officers are an integral part of the National Oceanic and Atmospheric Administration, an agency of the U.S. Department of Commerce. With an authorized strength of 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 and traces its roots back to the former U.S. Coast and Geodetic Survey, which dates back to 1807 and President Thomas Jefferson. The U.S. Coast and Geodetic Survey Corps was founded in 1917 to provide officers to command U.S. coastal survey ships and field survey parties locally and abroad. 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. The NOAA Corps celebrated its Centennial year in 2017.

## 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. Discipline and flexibility are inherent in the NOAA Corps personnel system. Officers are trained for positions of leadership and command in the operation of ships and aircraft; in the conduct of field projects on land, at and under the sea, and in the air; in the management of NOAA observational and support facilities; as members or leaders of research efforts; and in the management of various organizational elements throughout NOAA. NOAA Corps officers must be technically competent to assume positions of leadership and command in NOAA and Department of Commerce programs and in the Armed Forces during times of war or national emergency. 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 2019, NOAA aircraft flew over 468 hours in support of storm reconnaissance, surveillance, research and emergency response. NOAA assets performed multiple operations in the Gulf of Mexico, North Atlantic and the Caribbean for Hurricanes Barry, Dorian, Humberto, Jerry, Lorenzo and Tropical Storm Nestor. During the reconnaissance of Hurricane Lorenzo, NOAA's two Orion P-3s provided on-scene coordination during the Search and Rescue operation for the M/V *Bourbon Rhode*. In response to Hurricane Dorian, NOAA's King Air 350 flew post-storm, damage assessment imagery over areas of the northern Bahamas, and of the U.S. east coast from the north end of the Florida Keys to Virginia Beach, Virginia. Nearly 27,000 images were collected, covering over 11,000 square kilometers, including shorelines, ports, and impacted inland areas of several islands to aid in emergency response.
- In 2018, NOAA aircraft flew over 556 hours in support of storm reconnaissance, surveillance, research and emergency response for Hurricanes Hector, Lane, and Norman in the Central Pacific, and Hurricanes Chris, Florence, Gordon, Isaac, and Michael in the Gulf of Mexico, North Atlantic, and Caribbean Sea. In response to Hurricane Florence, NOAA Ship *Ferdinand R. Hassler* surveyed eastern North Carolina for multiple days in order to ensure vessels could safely navigate the area. NOAA Ship *Thomas Jefferson* conducted 66 days of post-Hurricane Maria surveys in and around Puerto Rico to support the island's recovery efforts.



# OMAO/NOAA Corps Resources



## OMAO Sites

- [OMAO](#)
- [NOAA Corps](#)

## Two Pagers, Reports, and Informational Slide Decks

- [Monthly NOAA Fleet Update](#)
- **OMAO two pager with Recent Mission Highlights** – Available upon request.
- [OMAO Fleet Recapitalization Slide Deck – Building NOAA’s 21st Century Fleet](#)
- [OMAO Fleet Recapitalization Questions and Answers \(Q&As\)](#)
- [NOAA Fleet Independent Review Team Final Report](#)
- [The NOAA Fleet Plan: Building NOAA’s 21st Century Fleet](#)

## Other Web Resources

- [OMAO Marine Operations](#)
- [OMAO Aircraft Operations](#)
- [OMAO on Facebook](#)
- [Hurricane Hunters on Facebook](#)
- [OMAO on Twitter](#)
- [Hurricane Hunters on Twitter](#)
- [OMAO Ship Tracker](#) - (restricted to only .gov or .mil users)