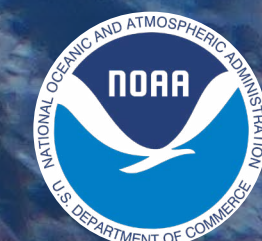


NOAA Diving Program

# ANNUAL REPORT



2022



# Contents

- 01 **Who We Are** .....Page 3
- 02 **Diving In: All NDP Metrics** .....Page 7
- 03 **Line Office Metrics** .....Page 11
- 04 **Diving Missions** .....Page 15



# 01

## Who We Are

### The NOAA Diving Program: Serving Divers, and the Nation

*Our vision is to lead the nation in the advancement of diving safety, education, training, innovation, and execution of underwater operations in support of science, service, and stewardship.*

*A NOAA Diver surveys Pagan Reef in the Marianas Islands amongst jack fish.  
Photo: Jonathan Charendoff/NOAA*



A NOAA Diver conducts a night dive off of the NOAA Ship Nancy Foster to conduct an invertebrate survey.  
Photo: Ben Edmonds/NOAA

# Our Divers

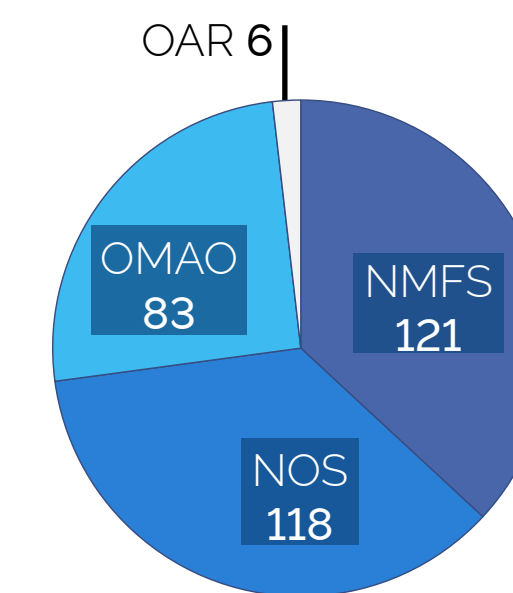
With more than **300 divers**, the National Oceanic and Atmospheric Administration (NOAA) has the largest complement of divers of any civilian federal agency. NOAA employees, contractors, and volunteers conduct diving operations in **our nation's waters and beyond** in support of NOAA's scientific research and operations. NOAA Divers are called upon to work in various conditions ranging from the warm, clear waters of a **marine sanctuary**, to the cold, murky waters of a commercial harbor.

The tasks NOAA Divers complete are as varied as the waters they dive in, with most divers supporting projects and **research** for these three NOAA line offices: the National Ocean Service (NOS), the National Marine Fisheries Service (NMFS), and the Office of Marine and Aviation Operations (OMAO).

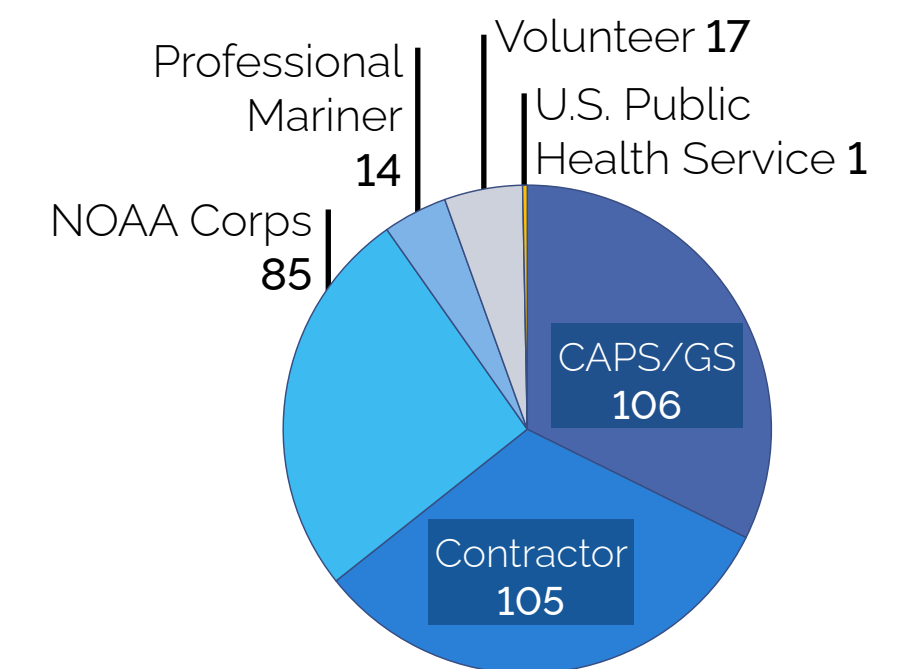
Each line office within NOAA has a different **operational focus**, but work together to ensure **safety** and completion of NOAA's mission for science, service, and stewardship. Two senior diving representatives are elected from each line office to sit on the NOAA Diving Safety and Control Board (NDCSB), which has governance authority over the NOAA Diving Program (NDP). Along with the two senior representatives, the NDCSB is also made up of key members of the NDP administration, specialists in occupational safety, and the Director of NOAA Diving Medicine.

Since its inception in 1971, the NDCSB has had the ultimate authority in reviewing program needs, setting policy, and **advising** the field on operational diving matters. Through a robust leadership framework, comprehensive training methodology, perceptive policies, and a responsive Standardized Equipment Program, the NDP ensures safe and effective **underwater operations** in support of NOAA's mission.

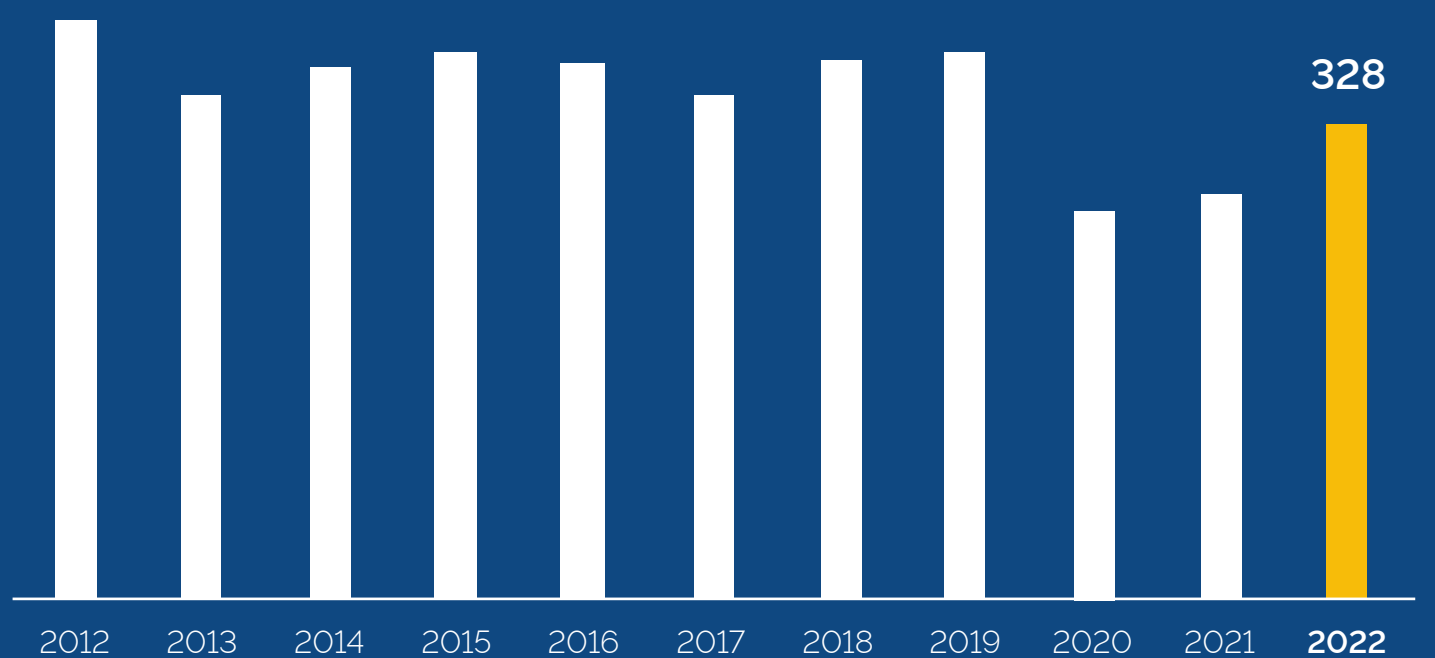
Total Divers by Line Office in 2022



Total Divers by Employment Type in 2022



Total NOAA Divers from 2012 to 2022





# Collaboration

## A Message from Acting NDP Manager, David Kowalick

Despite additional risk mitigation strategies associated with an ongoing pandemic, 2022 was a year marked with significant accomplishments and an **increased operational tempo**. The NOAA Diving Program (NDP) continued to operate in accordance with the NOAA Diving Safety and Control Board (NDCSB)'s Return to Diving Operations Memo initiated in 2020.

The year started with the NOAA Diving Center (NDC) continuing to deliver small group diving unit refreshers, and **customized hyperbaric and medical training** for NOAA Ship *Rainier* Diving Medical Technicians (DMTs). NDC prepared 1 Transportable Recompression Chamber System (TRCS) for delivery to *Rainier* in preparation for their diving missions throughout the spring and summer. NDC instructors provided diving and divemaster operational support for missions in Flower Garden Banks National Marine Sanctuary, Thunder Bay National Marine Sanctuary, and on NOAA Ship *Nancy Foster* for Gray's Reef National Marine Sanctuary.

In addition, NDC conducted its normal rhythm of **3 NOAA Diver and Divemaster** (DM) courses scheduled in January, May, and September. NDC implemented a **unique strategy** for the January NOAA Diver class in Key West, FL: to reduce COVID-19 infection risk for both staff and students, we divided the class into two groups and proceeded to conduct an accelerated one-week course for the most experienced students. All of the students were successfully certified as either NOAA Divers or DMs.

NDC also conducted the Mobile DM course for both Florida Keys National Marine Sanctuary and Miami diving units. This

course is a hybrid virtual and on-site collaborative training event where NDC instructors travel to the unit to provide training. Mobile DM courses have been particularly effective for NDP not only from a cost perspective, but also because the instructors are **able to customize the training** to the needs, resources, and personnel in their respective units.

The NDCSB held its annual board meeting in Galveston, TX with the purpose of **developing closer relationships** with the Board of the American Academy of Underwater Scientists Annual Symposium, which was held concurrently in the same location. Board members continued monthly Federal Diving Consortium calls involving participants across 12 Federal agencies.

We continued collaborating with the U.S. Army, and provided 2 Joint Hyperbaric Medical Officer and Hyperbaric Medical Technician Courses at NDC. This joint effort has not only resulted in the training of NOAA and military personnel, but also Army medical officers filling critically-needed medical officer roles aboard NOAA ships, and in reviews of our hyperbaric chamber procedures that we use in our training.

At the end of 2022, NDC received a strong signal for increased at-sea operations off three NOAA vessels in the coming year. We anticipated the need for more specialized diving medicine training which would include combining NOAA DMT training with TRCS operator training. In November, crew from NOAA's *Sette* joined NDC instructors for a combined DMT/TRCS operator course, which would anticipate the use of a TRCS on *Sette* and the need for qualified Diving Medical Technicians.

We are continuing to adapt to a changing environment through **innovation, teamwork, synergy**, and building a **resilient community** of diving professionals through 2023.



David Kowalick (left) and Joseph Hoyt (right) at Southwest Fisheries Science Center. Hoyt took over the NDP Manager position from Dave at the end of 2022.  
Photo: Zee Rosolek/NOAA





NOAA Diver Course students training in the NDC basin.  
Photo: Zee Rosolek/NOAA

## NDC Graduated

- 41** NOAA Divers
- 40** Jointly-Trained HMO/HMTs
- 21** NOAA Divemasters
- 9** NOAA Diving Medical Techs
- 7** Tethered Communicators
- 7** Accelerated NOAA Divers

# The NDP HQ

## The NOAA Diving Center in 2022

*In 2022 the NDC completed: 3 NOAA Diver and Divemaster (DM) courses, 2 Mobile DM courses, 1 accelerated NOAA Diver course for experienced divers, 2 Joint Hyperbaric Medicine (HMO/HMT) courses, 2 NOAA Diving Medical Technician (DMT) courses, 1 Tethered Communications course, and several unit diving refreshers. NDC instructors also provided diver and DM support for several critical NOAA missions at 3 National Marine Sanctuaries (NMS), and the "Rainier Integrates Charting, Hydrography, and Reef Demographics" (RICHARD) mission.*

The NOAA Diving Center (NDC) is the administrative headquarters for the diving program, operating out of NOAA's Western Regional Center in Seattle, WA. The NDC provides training and field support to all NOAA Divers, as well as provides administrative support through the NOAA Dive Log, the diving program informational websites, and ensures that they are properly equipped through the Standardized Equipment Program (SEP). For decades, the SEP has provided common equipment and standardized maintenance for issued equipment, thus optimizing both cost and safety. The NDC staff includes training, equipment, hyperbaric, operational, and administrative specialists with extensive experience in military, scientific, and commercial diving.

## NDC-Supported Missions

### RICHARD

- 1,500** Dives Supervised
- 123** Days of Chamber Support
- 120** Pier Dives Supervised
- 3** NDC Staff

### Gray's Reef NMS

- 386** Dives Supervised Over 9 Days
- 1** NDC Divemaster

### Thunder Bay NMS

- 200** Feet of Average Depth

### Flower Garden Banks NMS

- 100s** of Corals Treated for Disease
- 9** Mooring Buoys Installed
- 1** Instrument Recovered



02

# Diving In

Take a dive into the total NDP metrics for 2022

*Florida Public Archaeology Network (FPAN) instructor Della Scott-Ireton, Ph.D., holds a site plan from Marathon, FL's mystery wreck during the 2022 Heritage Awareness Diving (HAD) Seminar. FPAN and the Florida Keys Sanctuary Maritime Heritage Program have partnered together since 2005 to bring HAD to the Florida Keys. Photo: Nichole Grinnan/FPAN*



A NOAA Diver surveys fish in Pagan Reef during the NOAAS Rainer's 2022 survey cruise. Divers on this cruise traveled on the Rainier from Honolulu, HI to collect essential data in the Marianas Islands. NOAA Divers often collaborate with other NOAA line offices, and may be called to dive in locations far from their home units.

Photo: Nicholas Osborn, LTJG/NOAA

# Where we Dove in 2022

## Locations & Number of Dives

Foreign Coasts **190**  
 Pacific Territories **1352**  
 Deep Ocean Waters **3**  
 Other **215**

**5,847 hours**  
 or  
**244 days**  
 of bottom time





# Dives and Tasks

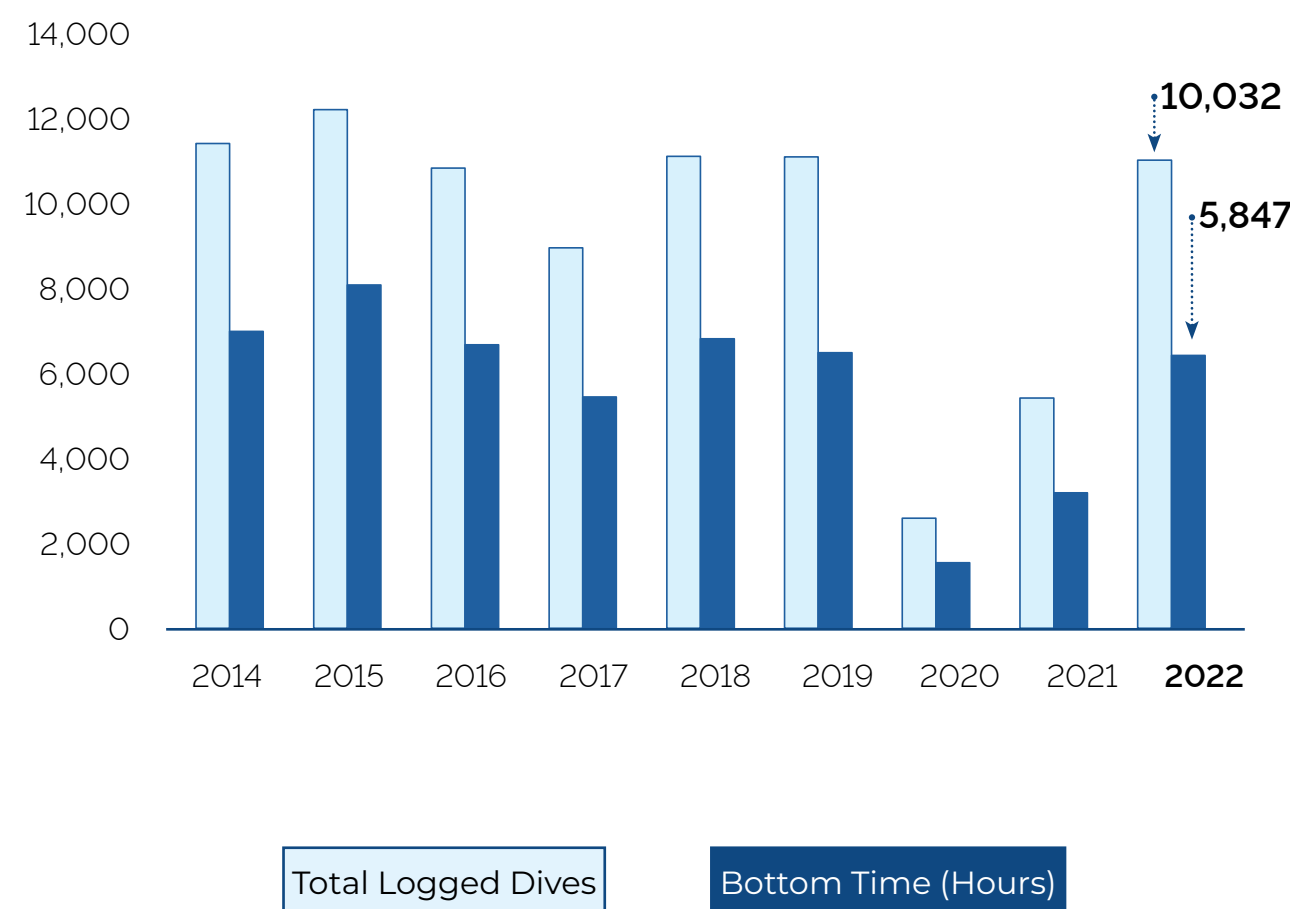
## Making waves with the OSHA Scientific Exemption

Most dives conducted at NOAA are classified as scientific dives, which means they are not subject to Occupational Safety and Health Administration (OSHA) restrictions. This is because these dives use simple lightweight tools, and are primarily for tasks such as scientific or archaeological observation, or other tasks that will advance NOAA's scientific mission. In contrast, working dives **are** subject to OSHA. NOAA divers conduct working dives for tasks such as installing or removing heavy underwater scientific equipment, or other physically difficult or potentially dangerous tasks.

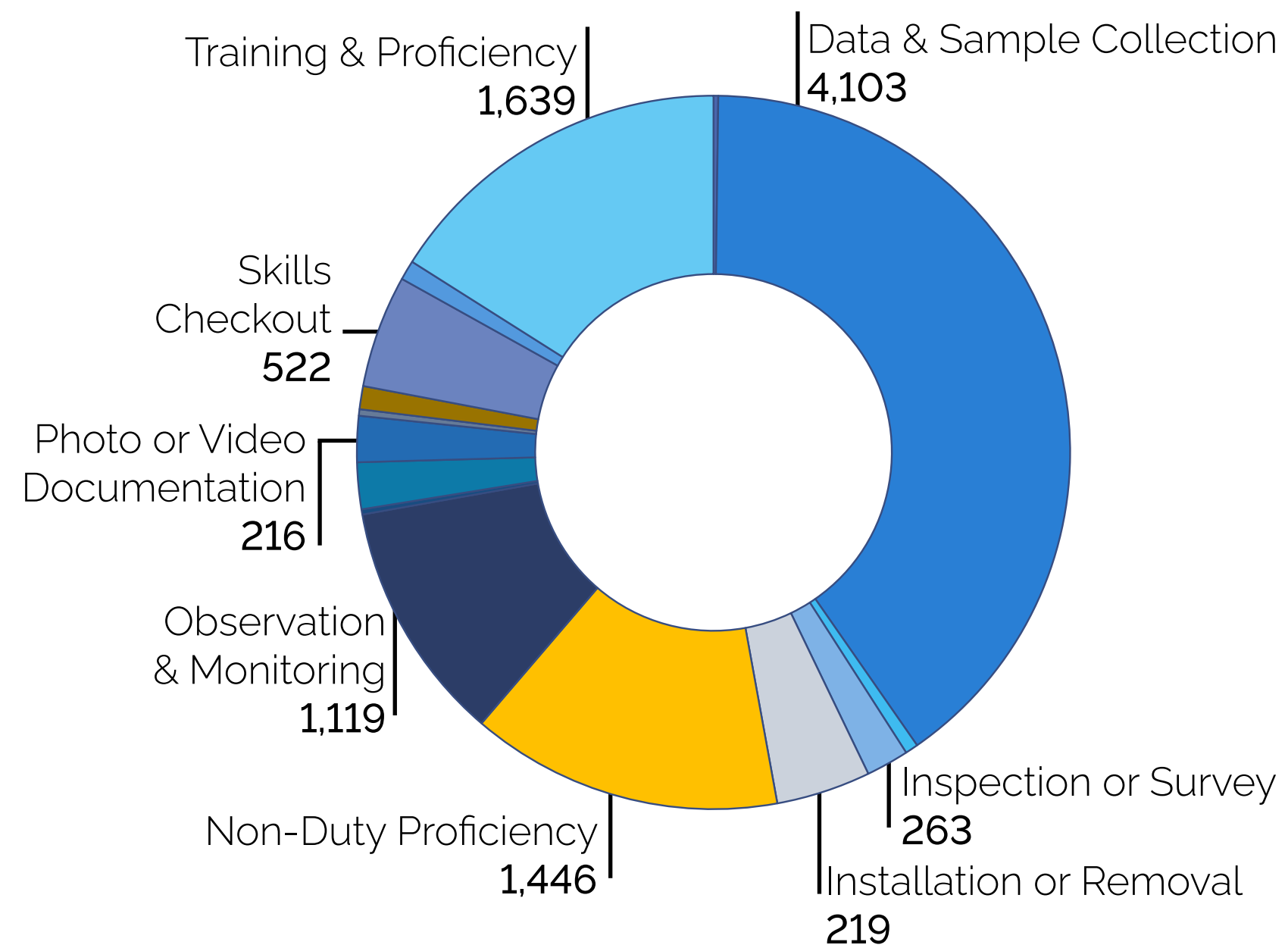


A NOAA Diver extends a tape measure during a kelp canopy fish survey training exercise. Photo: Steve Lonhart/NOAA

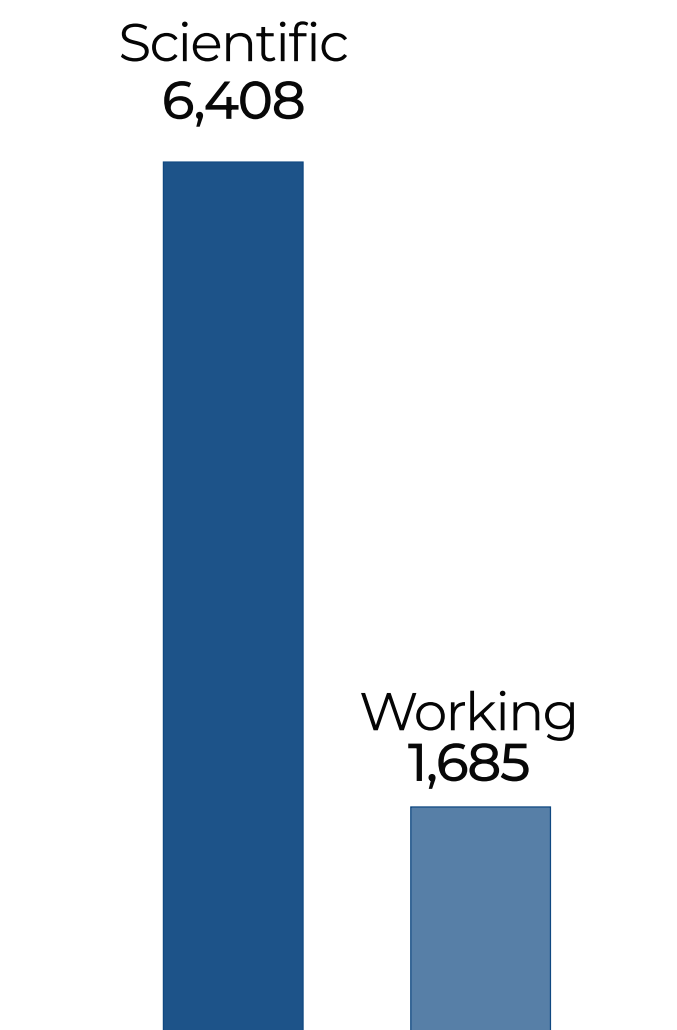
Total Dives and Bottom Time  
From 2014-2022



Most Frequent 2022 NDP Dive Tasks



Total Scientific or Working Dives  
in 2022







September NOAA Diver students practice a small boat diver rescue as their instructor watches in the background.  
Photo: Zee Rosolek/NOAA

# Dive Platform & Mode

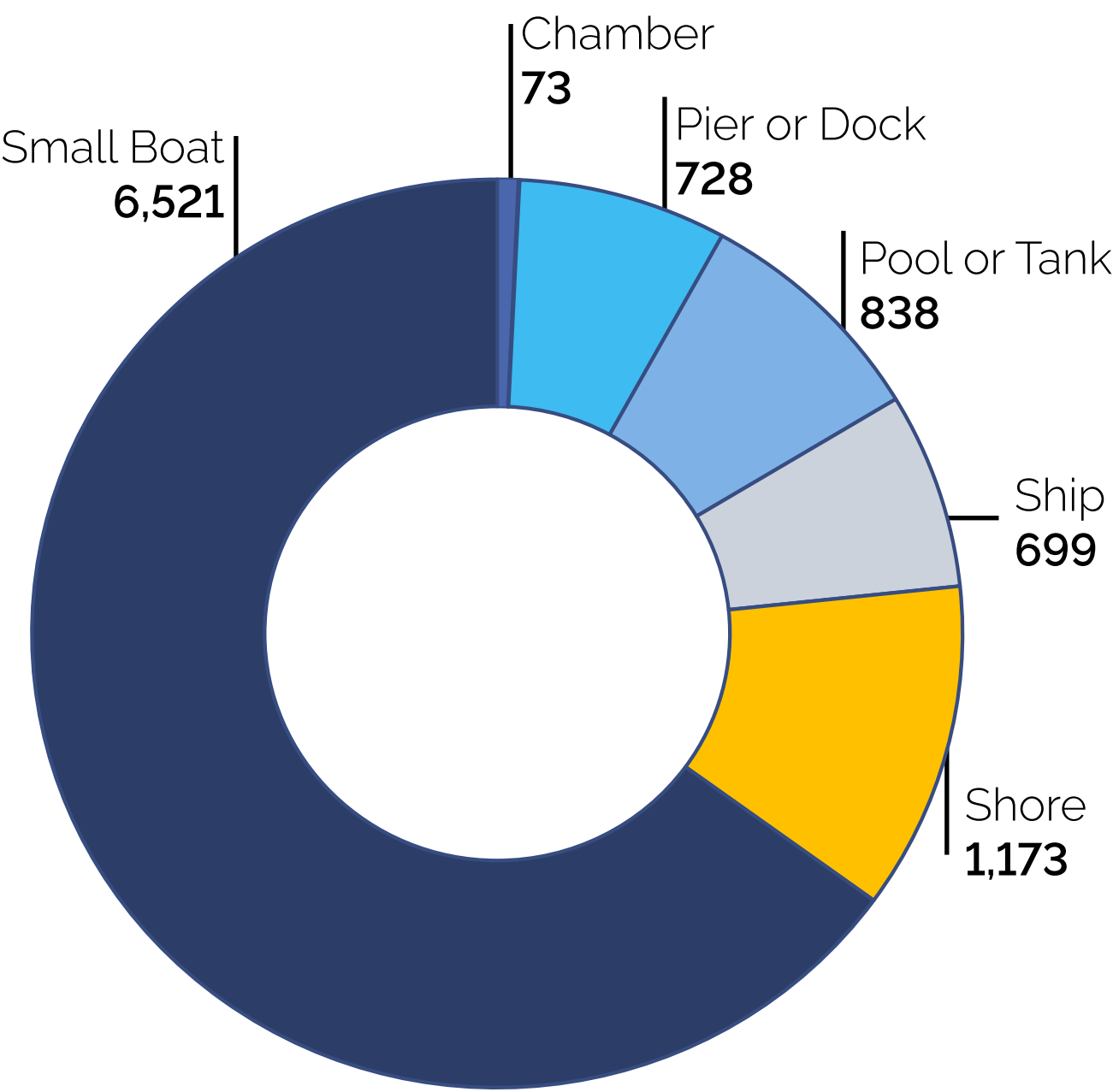
## The NDP Total Dive Modes and Platforms in 2022

Most dives NOAA conducts take place off of a small boat. Boats that are less than 300 tons have more utility for divers than most other platforms, since smaller boats can more easily navigate to the dive site.

### Number of Dives by Mode

DECO	No Decompression	9871
	Decompression	161
MODE	SCUBA	9961
	Chamber or Habitat	71
SCUBA	Open Circuit	7835
	Closed Circuit Rebreather	282
	Semi Closed Rebreather	1

### Dive Platforms





*Two NOAA Divers observe clownfish at Pagan Reef during the 2022 Rainier survey mission.*

*Photo: Jonathan Charendoff/NOAA*

# 03

## Line Offices

**Facts & Figures from NOAA's  
Main Diving Line Offices**



# NOS

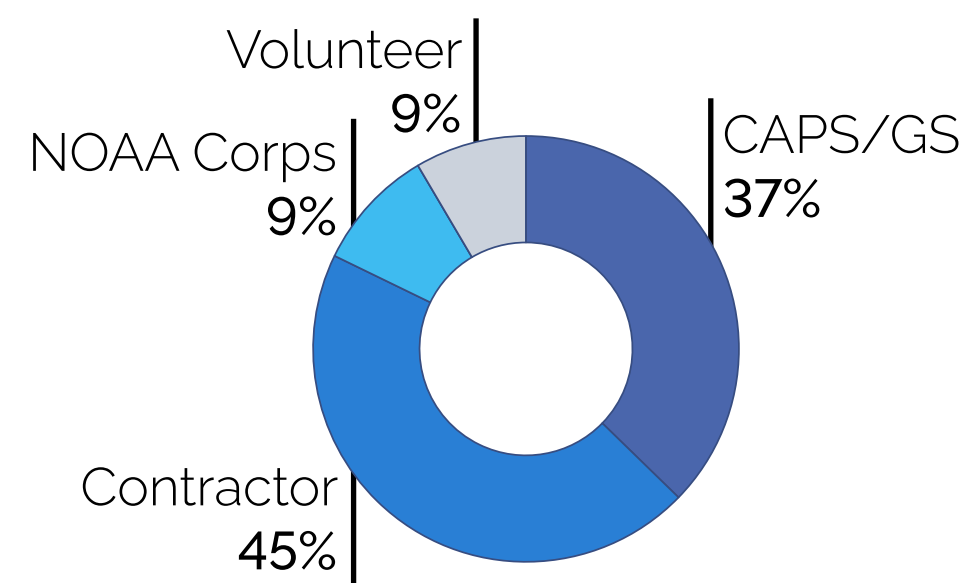
## In 2022

National Ocean Service (NOS) diving units have a variety of missions that span from a focus on oceanic instrument installation and maintenance to research monitoring, resource protection, public outreach, and education. Divers at NOS units conduct research missions that include biological monitoring and sampling, invasive species studies, climate change, severe weather damage assessment, restoration and monitoring of coral and seagrass habitats, as well as maritime archaeological surveys. In addition, many of the NOS diving units seek to actively engage the public in NOAA's mission through live diving broadcasts, documentary films, research opportunities for volunteer divers, as well as the installation of mooring buoys that allow safe access to diving sites and protect habitats and resources.

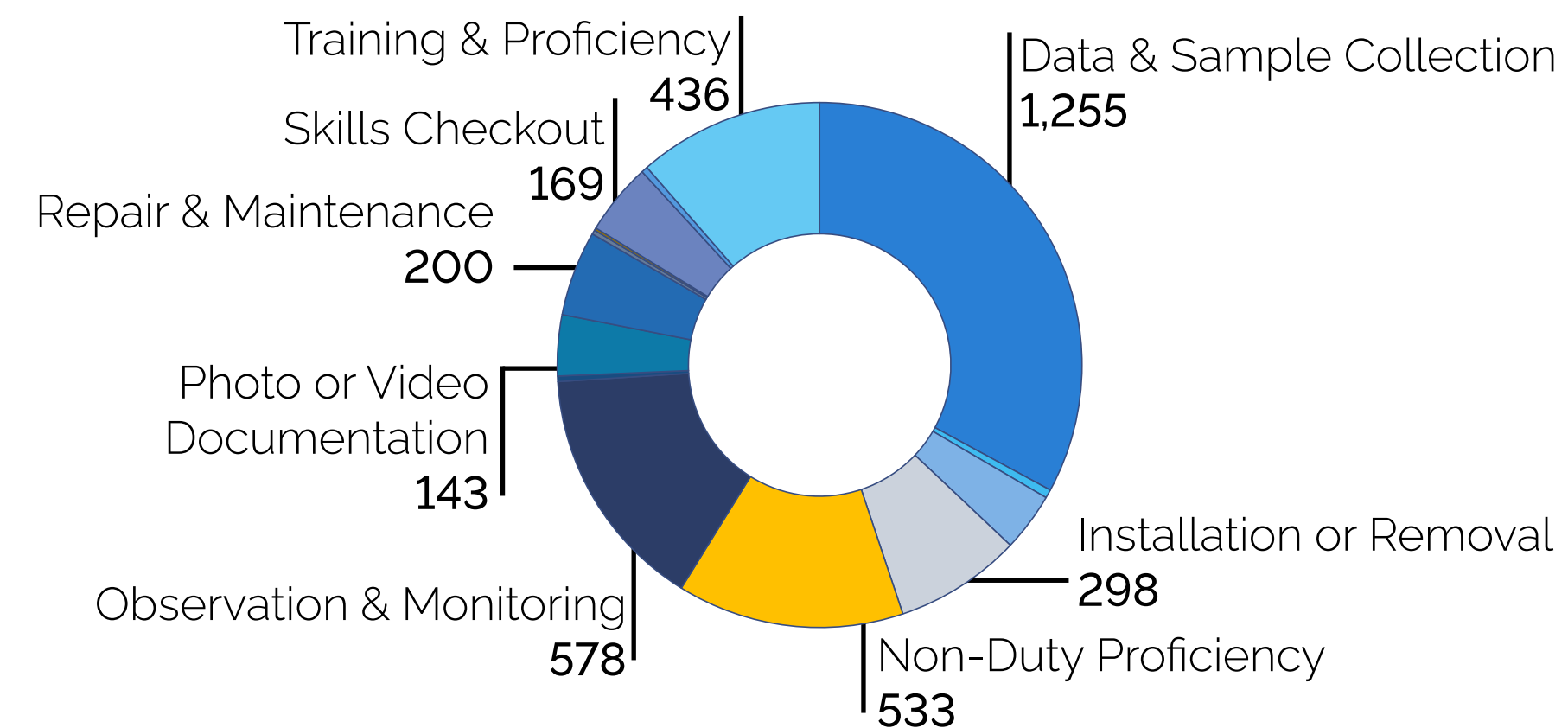


*Kelp in a kelp forest near Santa Barbara Island, CA.  
Photo: Claire Fackler/NOAA*

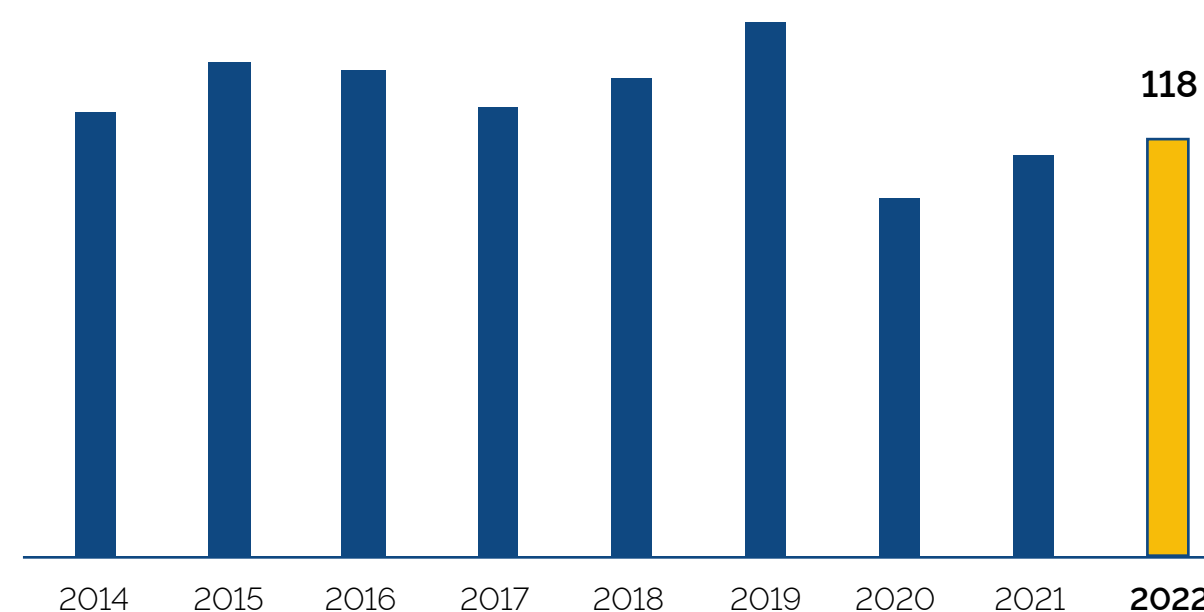
## NOS Divers by Employment Type



## Main NOS Dive Tasks

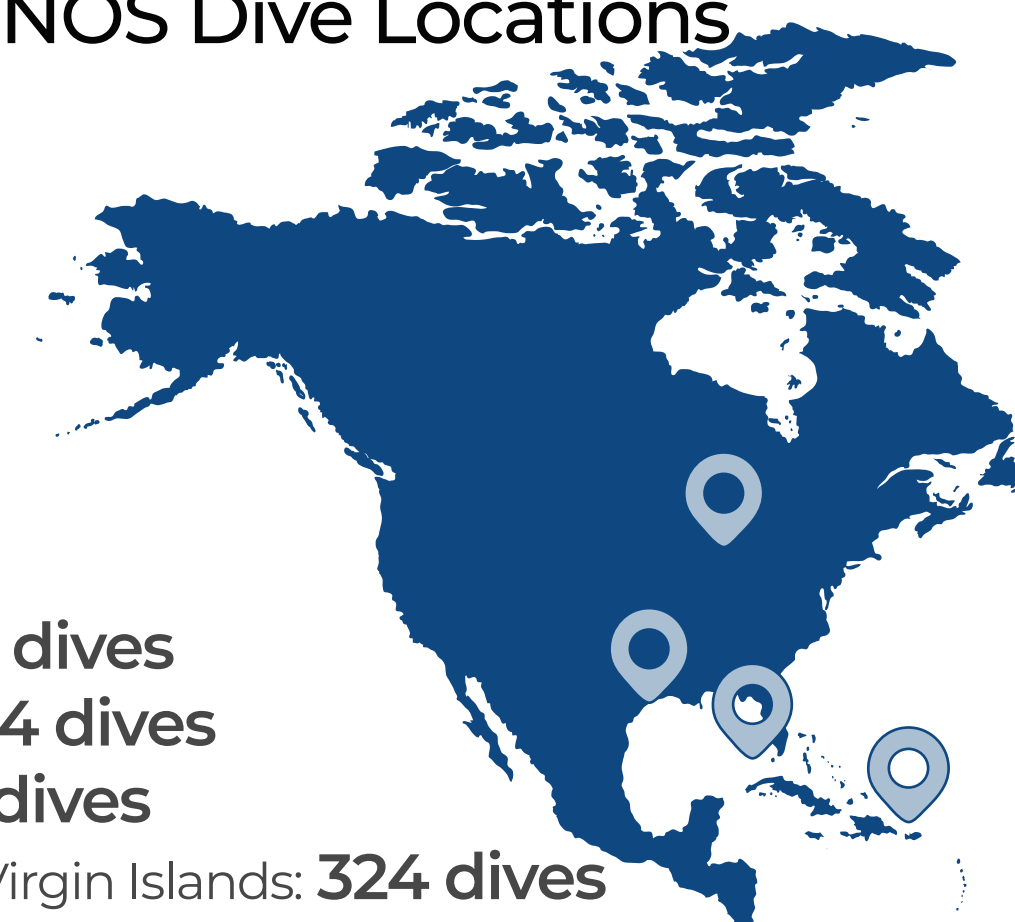


## Total NOS Divers from 2014 to 2022



## Top 4 NOS Dive Locations

1. Florida Keys: **1338 dives**
2. Gulf of Mexico: **444 dives**
3. Great Lakes: **380 dives**
4. Puerto Rico / U.S. Virgin Islands: **324 dives**



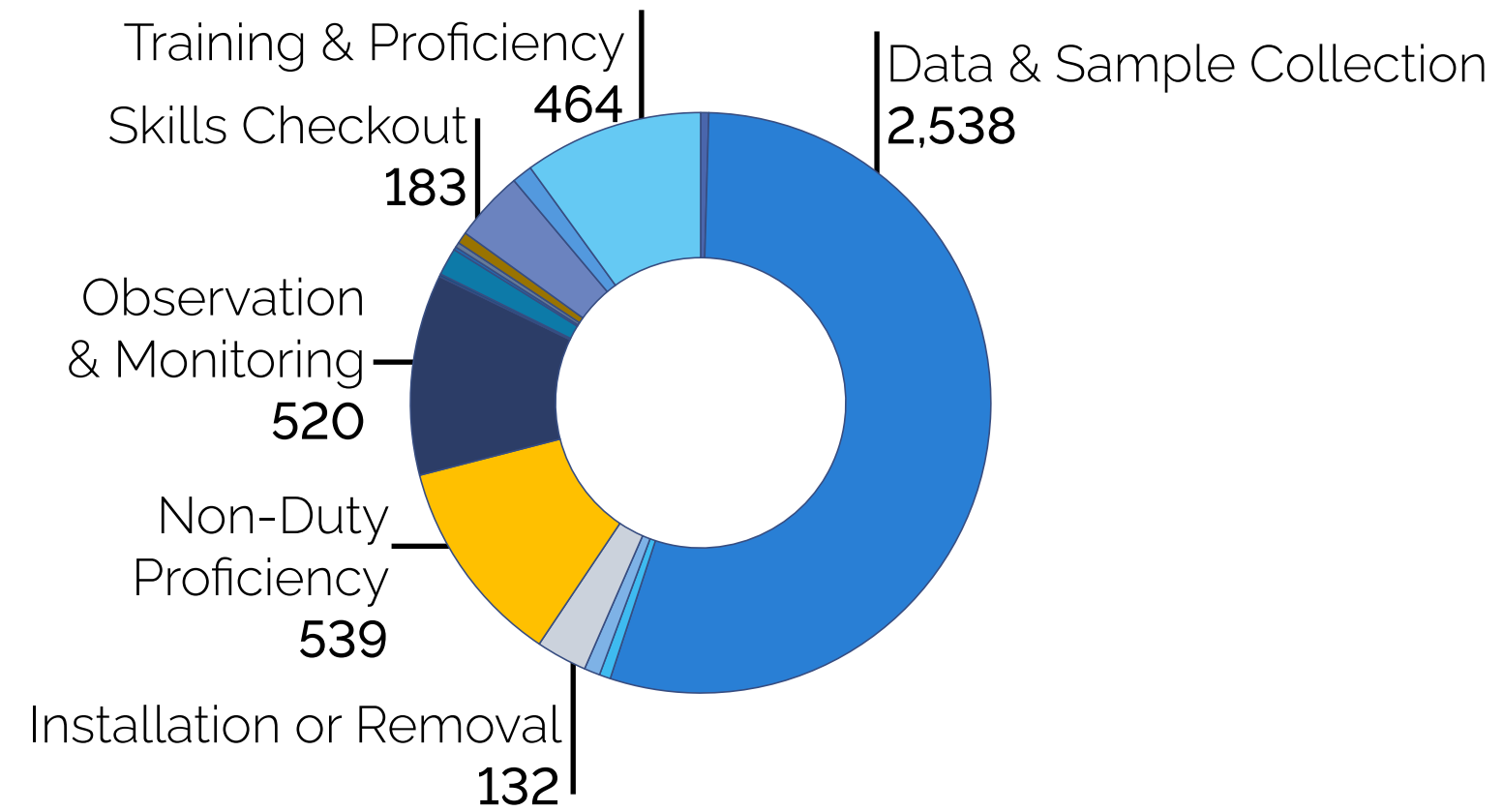


# NMFS

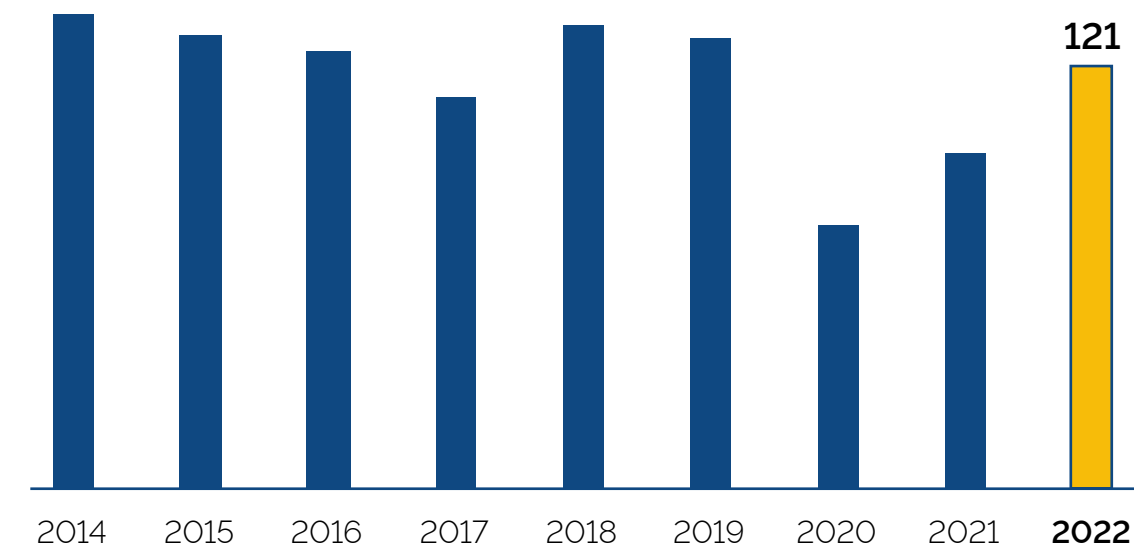
## In 2022

With U.S. coral reefs spanning the Gulf Coast, Puerto Rico, Florida, as well as the Pacific Ocean—including Marianas, Hawai'i, and American Samoa—continued diving for the Coral Reef Conservation Program (CRCP) remains a critical part of NOAA's science and stewardship mission. Despite a reduction in diving operations during the pandemic, the combined total of 121 active divers spread between the 16 diving units of National Marine Fisheries Service (NMFS), and diligently did their part to safely carry out this aspect of NOAA's mission. The most significant diving activities NMFS completes for the CRCP include habitat conservation, fishery monitoring, and coral restoration.

### Main NMFS Dive Tasks



### Total NMFS Divers from 2014 to 2022

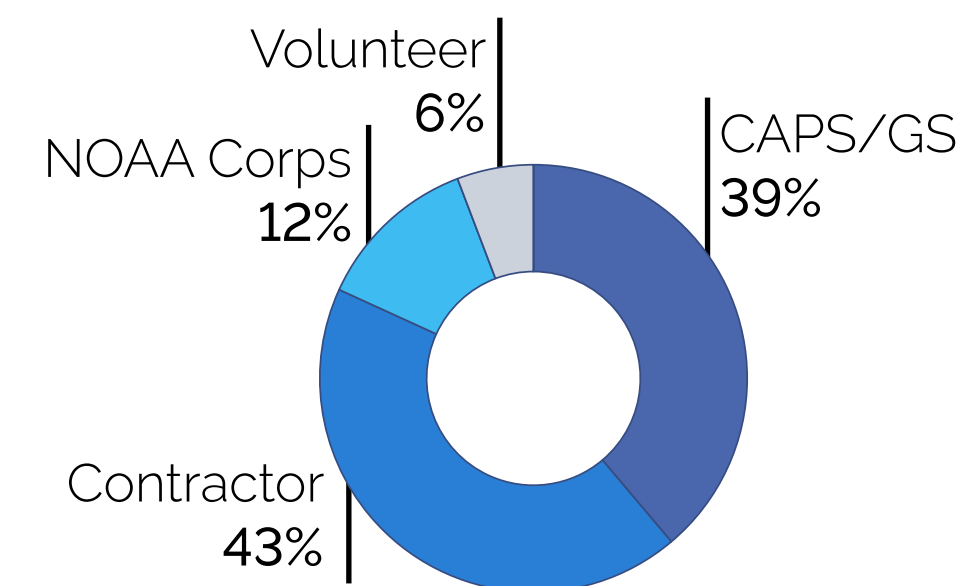


### Top 4 NMFS Dive Locations

1. Pacific Territories: **1239 dives**
2. Florida Keys: **877 dives**
3. Hawaii Coastal: **764 dives**
4. South Pacific Coast: **373 dives**



### NMFS Divers by Employment Type



*A NOAA Diver waves from behind a school of chub near Pagan Reef.  
Photo: Nicolas Osborn, LTJG/NOAA*

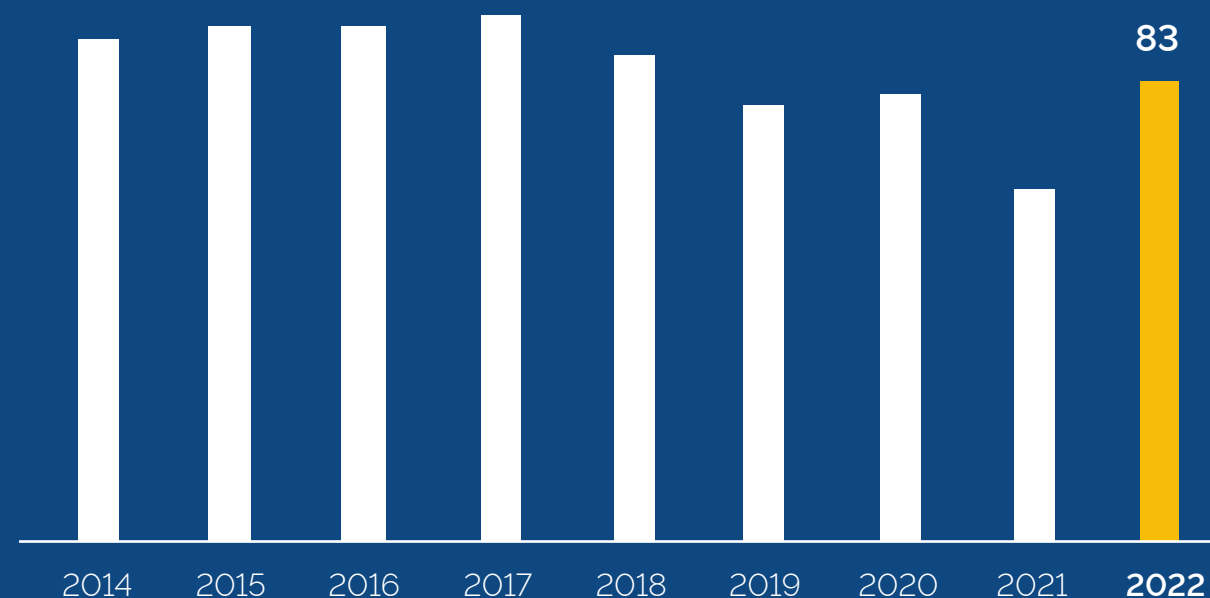


# OMAO

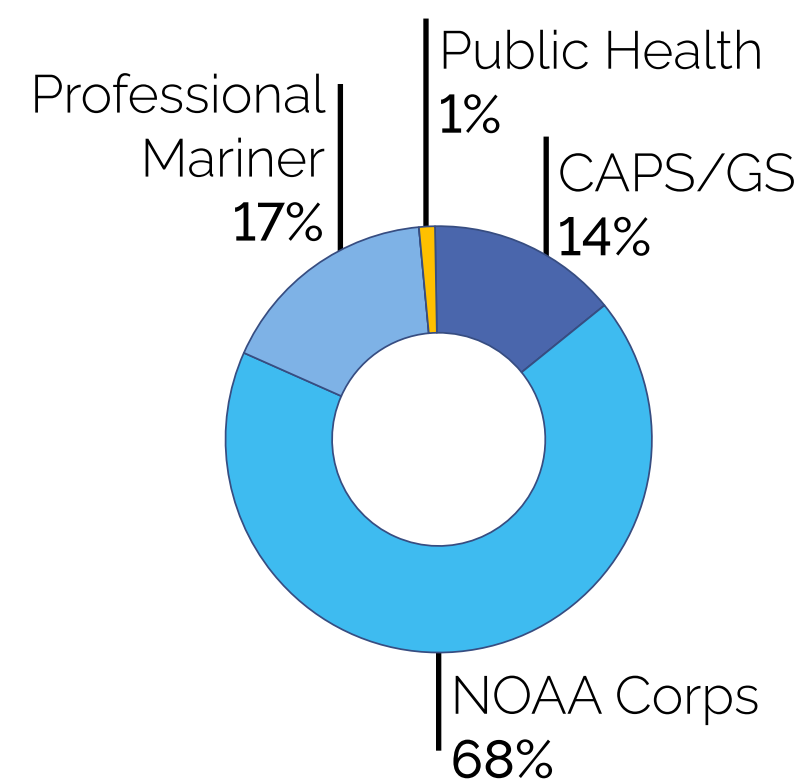
## In 2022

The diving program is housed within the Office of Marine and Aviation Operations (OMAO). This office supports diving units aboard NOAA ships as well as several shore-based diving units, including the NOAA Diving Center (NDC). The NDC serves as the headquarters for the diving program, and oversees all diver training at NOAA. OMAO ships support the diverse hydrographic, oceanographic, fisheries, and other scientific missions that occur across all regions in which NOAA missions take place. With the majority of OMAO divers being NOAA Corps officers or Professional Mariners, OMAO ship divers primarily conduct hull inspection dives on their ships in support of the ship's scientific mission. Also called ship husbandry dives, these ship dives ensure quality data collection for the line offices they serve during underway missions, as well as ensure that the ship runs efficiently and safely.

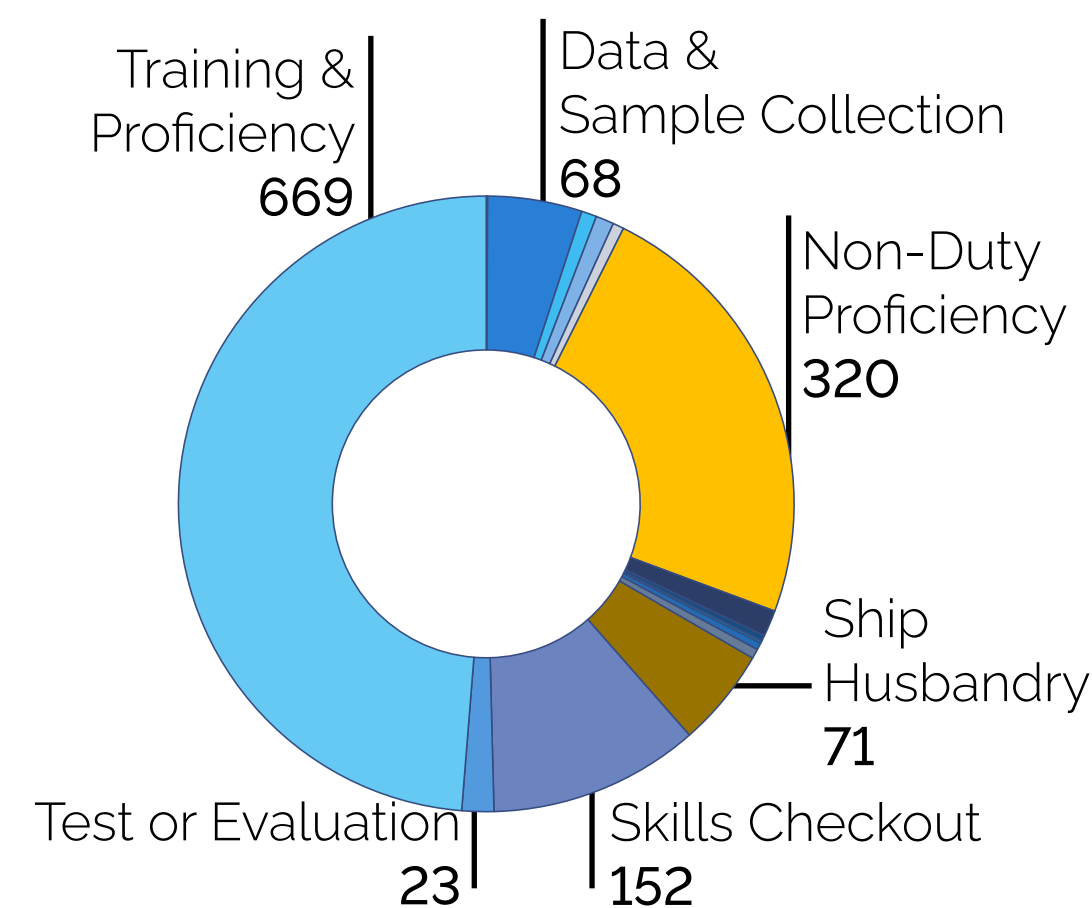
Total OMAO Divers from 2014 to 2022



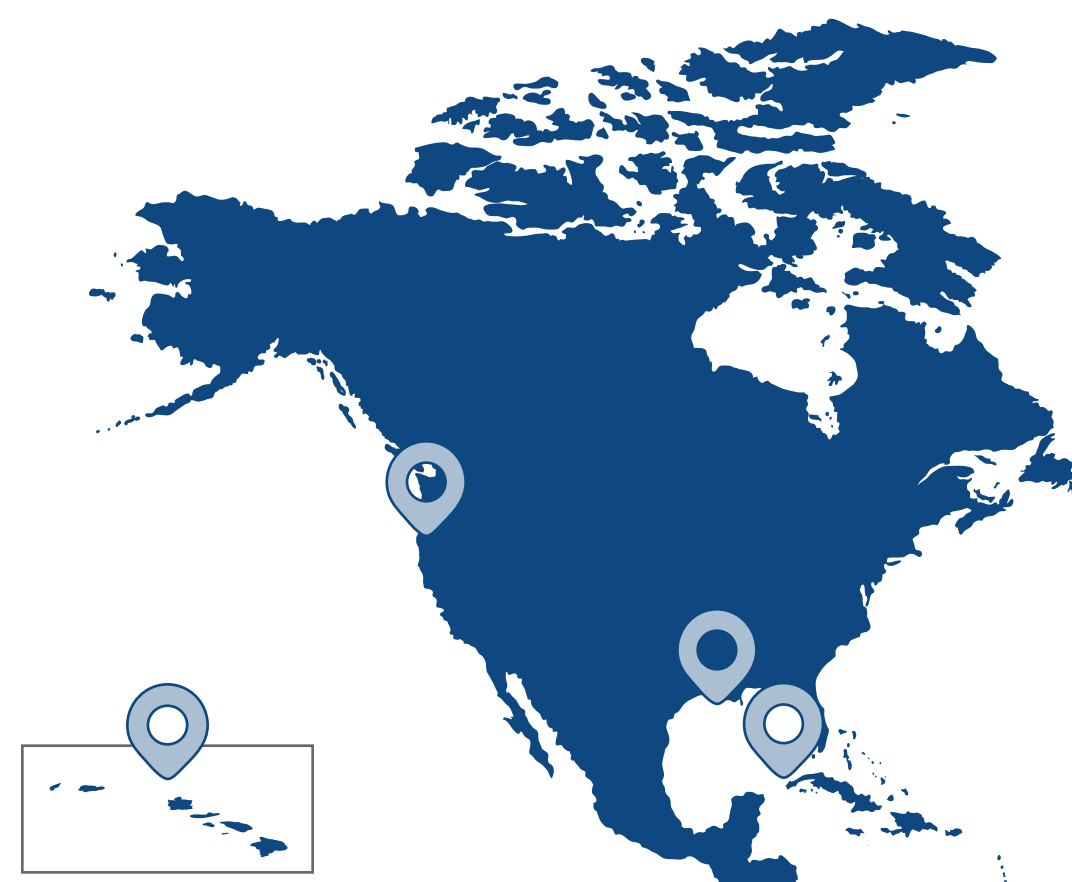
### OMAO Divers by Employment Type



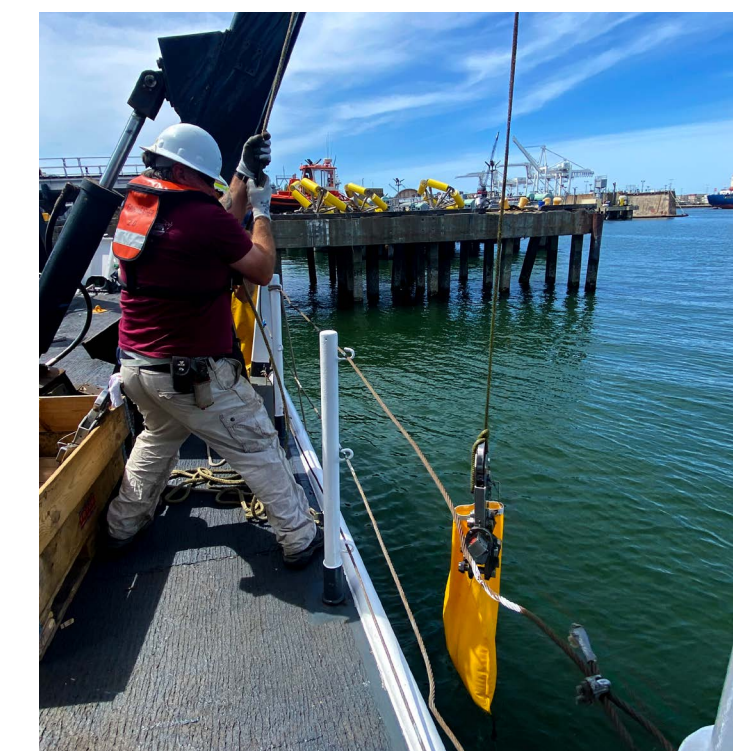
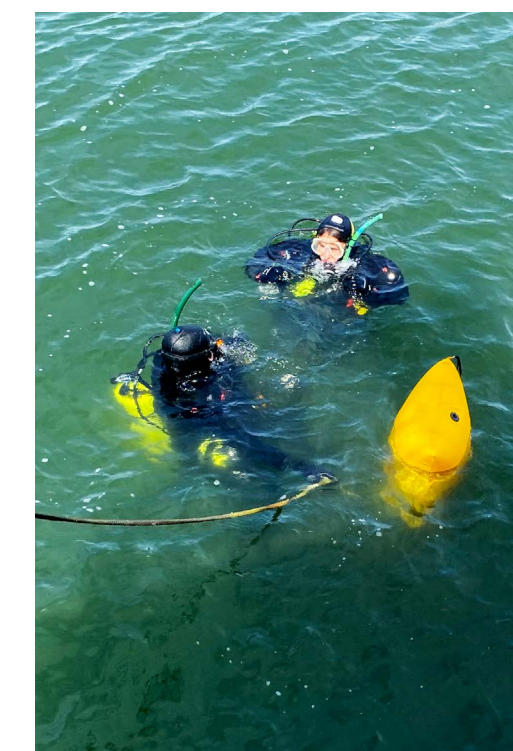
### Main OMAO Dive Tasks



### Top 4 OMAO Dive Locations



1. North Pacific Coast: **449 dives**
2. Florida Keys: **163 dives**
3. Hawaii Coast: **137 dives**
4. Gulf of Mexico: **120 dives**



Hover your cursor over the images to read about the OMAO search and recovery diving mission.  
Photos: Jesse Spiruill, ENS/NOAA



*Two NOAA Divers in Wisconsin Shipwreck Coast National Marine Sanctuary (WSCNMS) swim above the wreck of the schooner Northerner, 130 feet below the surface.*

*Photo: WSCNMS/NOAA*

# 04

## Diving Missions





# In the Dive Light

## Recovering Fallen Soldiers

Since WWII, it is estimated that around 41,000 fallen American service members have been lost at sea\*. With 70 percent of our planet covered in water, finding and recovering underwater remains has been a long, daunting, and labor-intensive process.

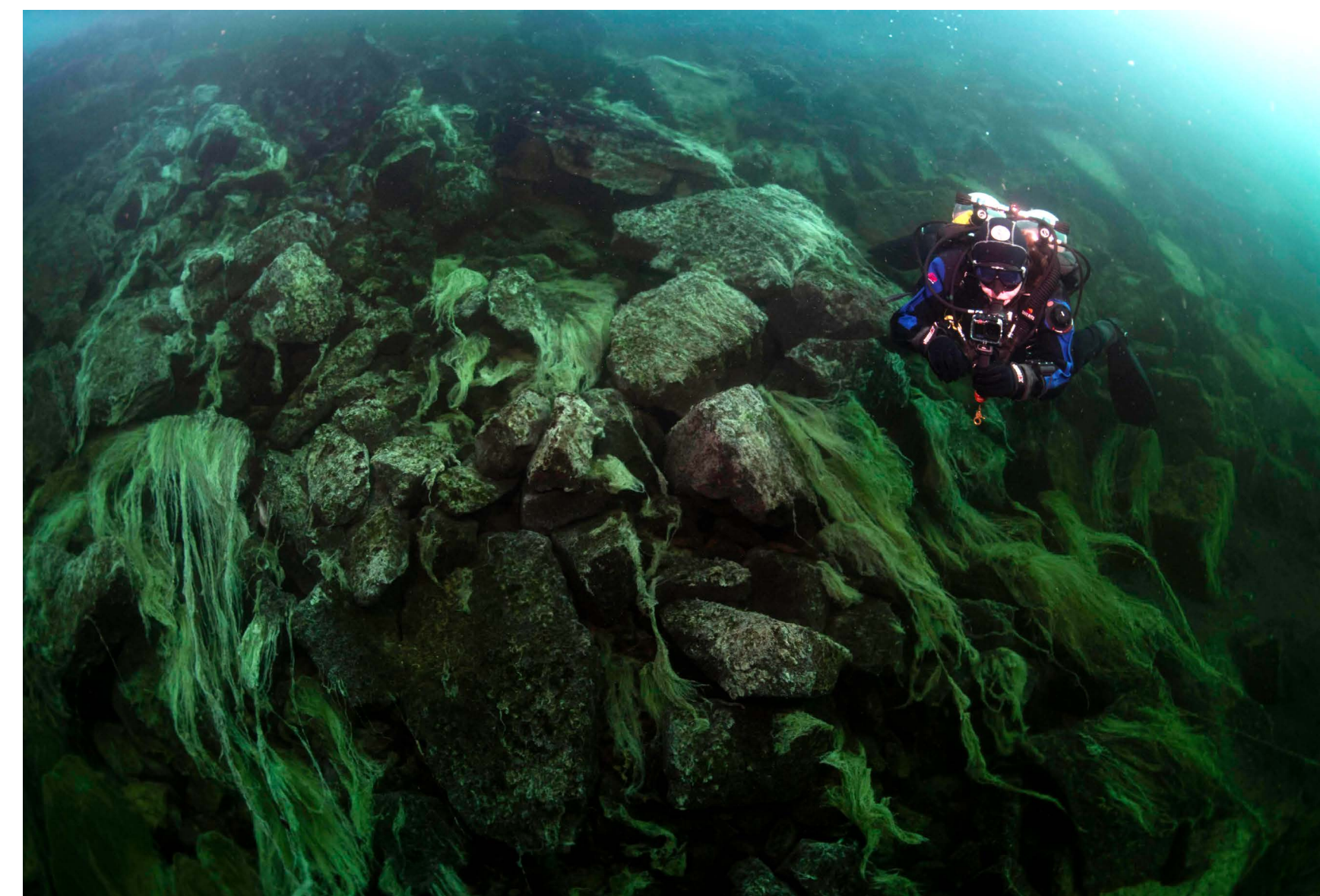
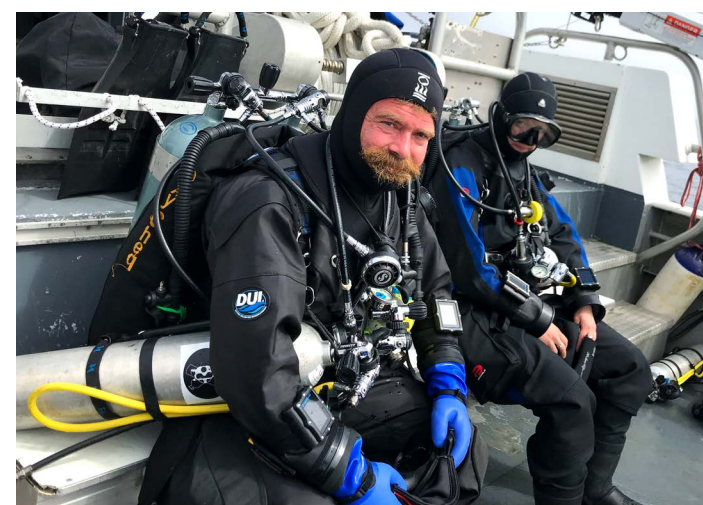
Now, thanks to groundbreaking new interdisciplinary and inter-organizational research, we may soon be able to quickly find missing military personnel using genetic samples found in waterways. As part of this research, NOAA Divers dove to three shipwrecks in Thunder Bay National Marine Sanctuary (TBNMS), at depths of 200 feet, to collect samples of water and sediment from the wrecks. Among these divers was NOAA Diving Center instructor and Marine veteran Mikey Kent, as well as NOAA underwater scientists and archaeologists.

The samples will be tested for “environmental DNA” (or eDNA), in hopes to find some human genetic material that might still be among the wreckage to give clues about the location of the missing service members. This promises to considerably streamline the search for human remains, and to help bring missing service members home.

In the future, this process might also expand the boundaries of forensic science and archaeology, both on land and in the water.

This research is made possible through the cooperation of numerous government and civilian agencies. The NOAA Diving Program thanks the Defense POW/MIA Accounting Agency, the University of Wisconsin-Madison, the network of civilian and government multi-disciplinary specialists, the NOAA divers, boat captains, and other mission supporters for your dedication.

*\*(Defense POW/MIA Accounting Agency, Accessed May 24, 2022)*



*Above: NOAA Divers near the TBNMS sinkhole. Left: TBNMS mission divers preparing for their dives, including NOAA Divers Maddie Roth, John Bright, Mikey Kent, and Joe Hoyt.*

*All photos on this page: TBNMS/NOAA*



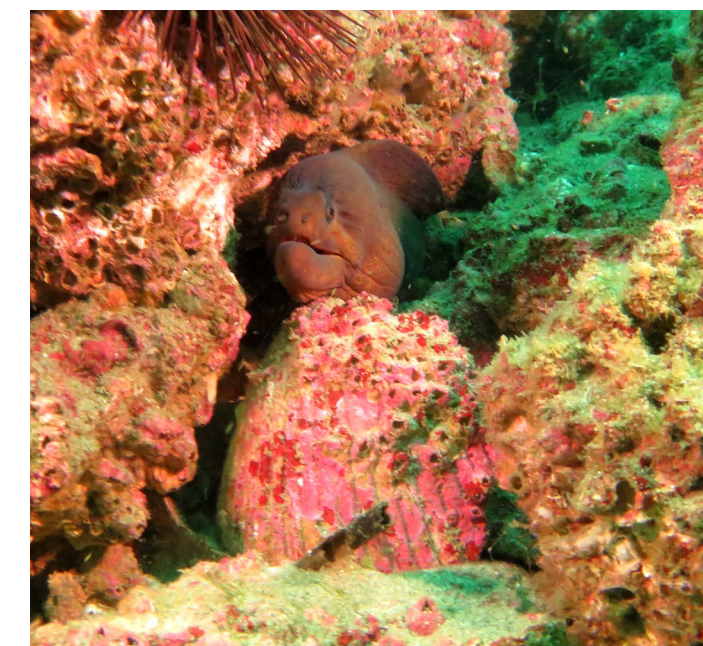
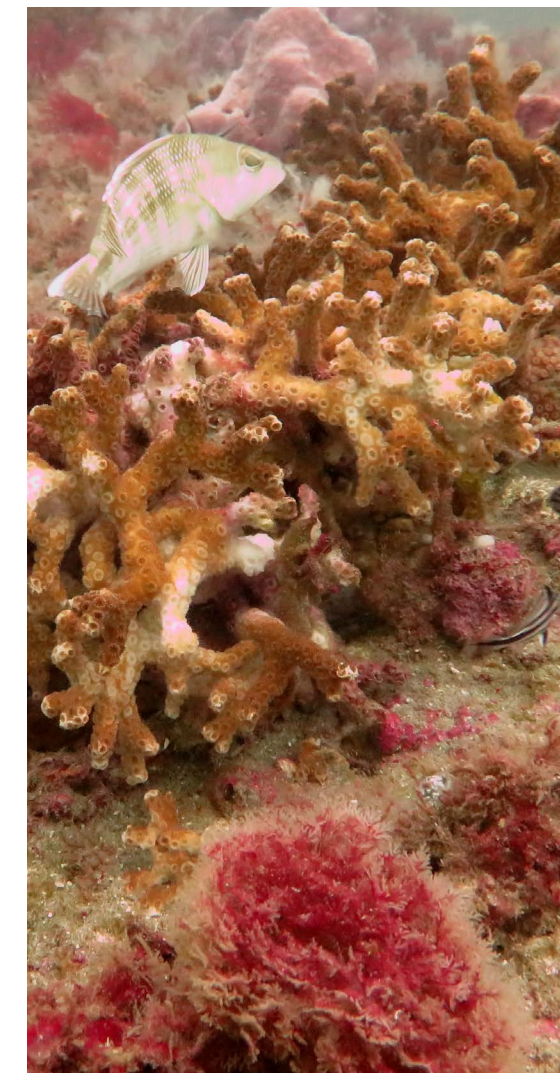
# In the Dive Light

## Collecting Crucial Fisheries Data in GRNMS

The Gray's Reef National Marine Sanctuary (GRNMS) expedition aboard NOAA Ship *Nancy Foster* was supported by NOAA Diving Center (NDC) diving instructor Jill Wentworth. Jill served as expedition divemaster, supporting 12 divers over 9 days of diving. Divers on this mission safely completed 386 dives, equaling about 16 hours of bottom time per diver in total over the expedition. There were 14 scientists on board *Nancy Foster* from 9 different organizations, including four NOAA line offices, NDC, Georgia Southern University, Savannah State University, the University of Georgia, GA Sea Grant and Marine Extension.

Data were collected on fish, habitat, and invertebrate abundance and distribution, as well as marine debris and microplastics. The scientists also mapped three high priority mapping areas. All this effort contributes to the scientific information known about the sanctuary, and strengthens management decisions about our special ocean places.

Sea life sightings include 18 sea turtles, and at least three Goliath groupers. Many thanks are extended to the NDC and divemaster Jill Wentworth for the support and success of this expedition.



Hover your cursor over the images to read the photo descriptions.  
Above photos: Ben Pruiett/NOAA Affiliate to GRNMS

Above photos: Jill Wentworth/NOAA



# In the Dive Light

## Protecting Coral Reefs in FKNMS

Mission: Iconic Reefs (MIR) is an ambitious coral restoration project for seven iconic reefs in the Florida Keys National Marine Sanctuary (FKNMS).

NOAA Divers and reciprocity divers from the Florida Department of Environmental Protection (FDEP) and the Florida Fish and Wildlife Conservation Commission (FWC) completed benthic surveys to assess the health and status of these coral reefs, and of the surrounding underwater communities.

After the survey, divers removed marine debris and an overgrowth of *Coralliophila galea* snails from the coral colonies. Marine debris removal is essential, as it can damage fragile species and ecosystems, entangle wildlife, and attract invasive species. Though *C. galea* snail populations are native to FKNMS, the local coral and snail populations are out of balance in the Keys, making the removal of the snails a necessary reef management strategy.

Given the scope of MIR, inter-agency collaborations are key the project's success. The NDP and FKNMS are thankful to have such dedicated partners.

*Hover your cursor over the images on this page to learn more about the mission, the divers, and about reef conservation efforts.  
Photos: Ben Edmonds/NOAA*





# NOAA Diving Program 2022

## *Science, Service, Stewardship*

Click here to learn more: <https://www.omao.noaa.gov/noaa-diving-program>



NOAA diving instructor Mikey Kent (far right) gives instructions to the students of the January 2022 NOAA Diver class in Key West, FL. Due to new logistical constraints that arose this year, this may be the last course ever held in Key West, ending nearly a decade of NOAA courses held there. Photo: Marybeth Head, LT/NOAA