

ANNUAL REPORT

2024



**NOAA
DIVING
PROGRAM**

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Juvenile fish hiding in a coral.
Photo: Ray Boland/NOAA

Cover: NOAA Diver and National Coral Reef Monitoring Program technical lead Corinne Amir diligently captures thousands of photogrammetry images of the reef while being pursued by a school of Ulua (*Caranx ignobilis*) fish off the coast of Manawai, Hawaii. Photo credit: Ari Halperin/NOAA

Two NOAA Divers install a buoy anchor in Florida Keys National Marine Sanctuary. The buoy team installed 6 anchors for boundary buoys in just 3 days, allowing for a complete boundary around the Sanctuary Preservation Area for the first time in several years.

Photo: Patrick Vandenaabeele/NOAA

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Who We Are

Our Divers



NOAA Diver Claire Fackler uses a full face mask on a dive for the [Channel Islands Live](#) underwater interpretive program. Photo: Reuven Bank/National Parks Service

With more than **350 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.

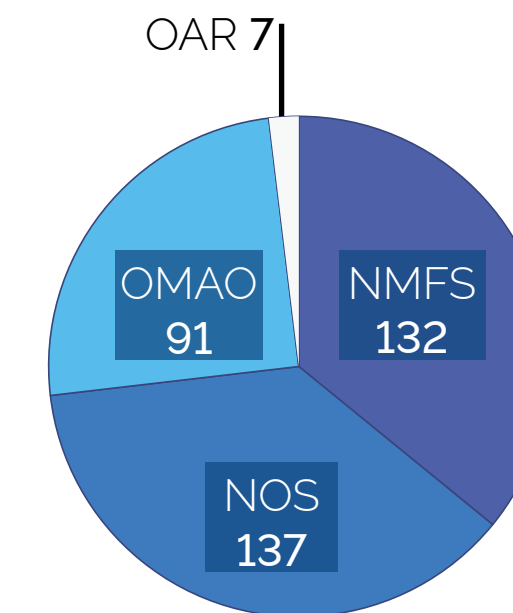
The tasks NOAA Divers complete are as varied as the waters they dive in, with most divers supporting projects and **research** for these three NOAA line offices: the National Ocean Service (NOS), the National Marine Fisheries Service (NMFS), and the Office of Marine and Aviation Operations (OMAO).

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.

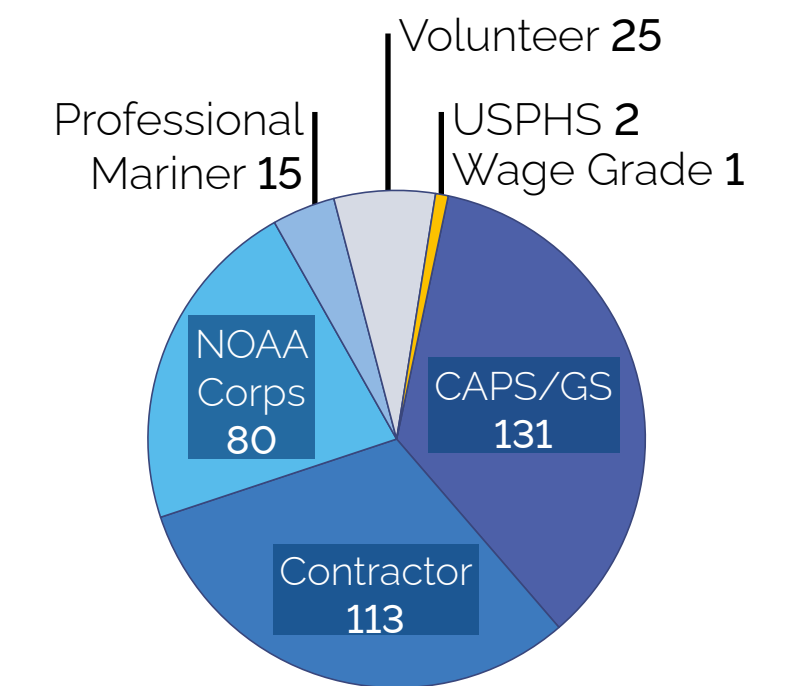
Since its inception in 1971, the NDCSB has had the ultimate authority in reviewing program needs, setting policy, and **advising** the field on operational diving matters. Through a robust leadership framework, comprehensive training methodology, perceptive policies, and a responsive Standardized Equipment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

Total Divers in 2024

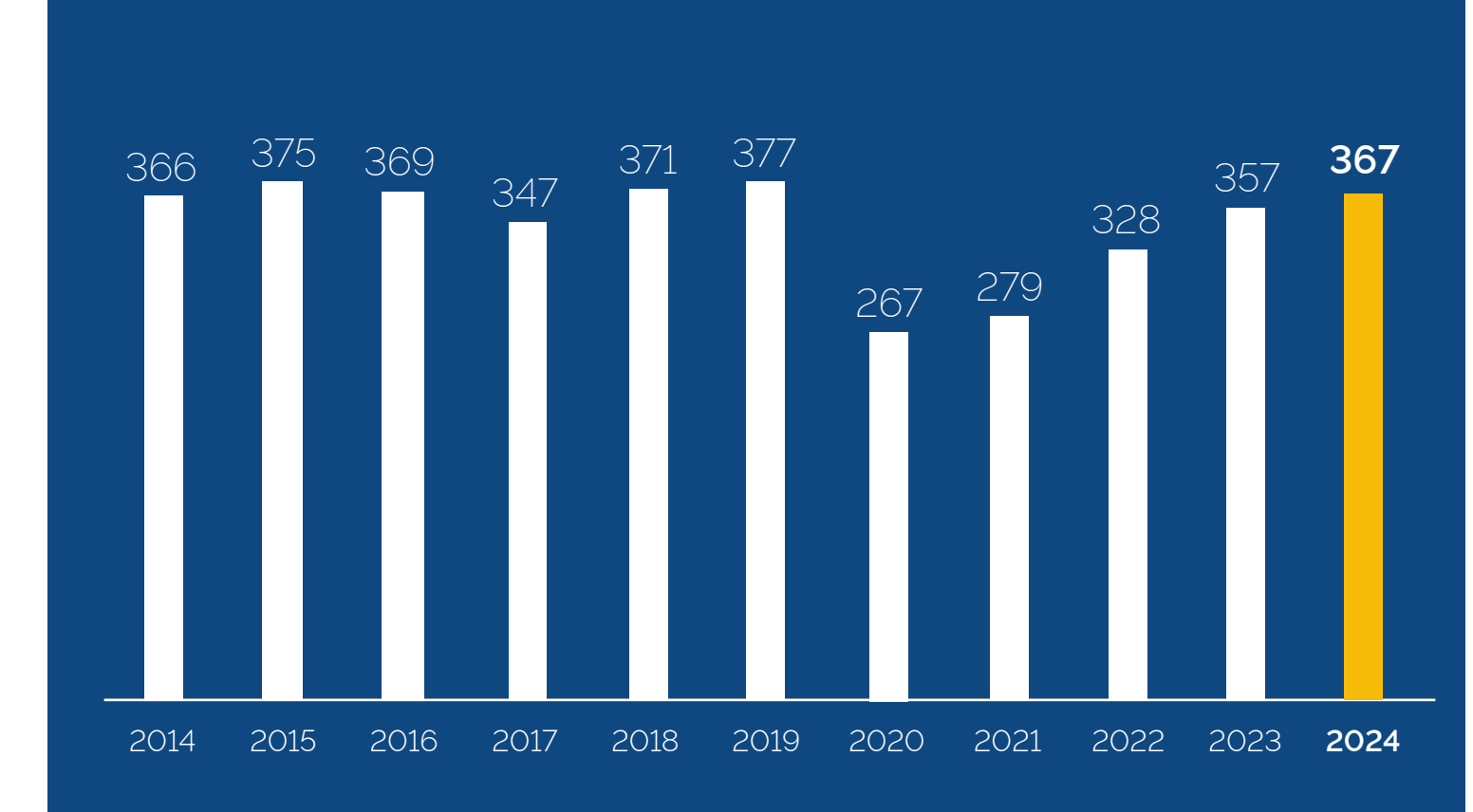
By Line Office



By Employment Type



Total NOAA Divers from 2014 to 2024



Purposeful Diving



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.



In partnership with [Diving with a Purpose](#), NOAA Divers and DWP students solved a 113-year mystery off Key Largo, FL. In 1911, the 4-masted schooner, *Star of the Sea*, was carrying lumber when she ran aground on a reef during a squall. Largely forgotten, this schooner has waited 20 feet beneath the waves ever since, with her debris scattered over 250 feet across the reef. Divers confirmed the debris were hers, [mapped the remains](#), and measured the artifacts. *All photos on this page: Brenda Altmeier/NOAA*

We are Stewards of History

Landscape Reveals Cascade of History

Historical perspectives are essential for creating effective management policies that aim to mitigate human impacts, promote sustainable use of marine resources, and highlight the value and importance of protecting historical resources in our national marine sanctuaries.

To further our knowledge about the broad historical context of the Florida Keys National Marine Sanctuary's northern reefs, FKNMS's Maritime Heritage Team is supporting Harvard University student Ahmed Riesgo's master's thesis research focused on the cultural landscape of Carysfort Reef. The area embodies important historical events including the loss of HMS *Winchester* in 1695, the 1770 grounding of the HMS *Carysfort*, Civil War steamship *Menemon Sanford's* grounding on the reef in 1862 with 800 Union soldiers, and many other shipwrecks. While the iconic Carysfort Lighthouse is the most visible reminder of the reef's perils today, lightships once warned mariners of the reef's danger before the lighthouse's construction in 1852. Revisiting the numerous sunken navigation aids, shipwrecks, spills of cargo, lost anchors, jettisoned armament, and ballast found in the area with newer photogrammetric survey technology will reveal much more about the many ways people interacted with this area in the past.



Top and far right: a diver inspects artifacts and the reef. Above left: a diver uses a photogrammetry rig to map the wreck. Above center: an artifact of the wreck. Above right: a photogrammetry model of the site. Right: a diver prepares to take photogrammetry images of the site. Photos: Brenda Altmeier/NOAA.

We are A Nimble Program

A Message from the NDP Manager, Joe Hoyt

This was a year of change and growth for the NOAA Diving Program. Several new hiring actions brought in new capabilities to the agency and positioned the program for sustained advancement. At the same time, we wished some long-standing staff farewell and good luck in their retirements and new adventures. So, while we lost some institutional knowledge, we also gained some diversity of skillsets through strategic hiring actions that allowed NDP to align to current agency needs. For example, NDP can now — for the first time ever — teach advanced diving modes in-house. Advanced modes such as decompression diving and closed-circuit rebreather diving represent a small, but growing, component of the NOAA diving portfolio. Being able to manage training and proficiency internally without relying on external contracts and partners will help us take ownership of this capability and help it grow to meet expanding mission needs.

Each year we have seen an increased demand for hyperbaric chamber support in the field. Thus, we also made targeted hires and training investments in hyperbaric support. This specialized skill and capability is a hallmark of our program and ensures divers have the highest level of care we can provide onsite where it really matters. We were successful in reestablishing a second Diving Medical Officer position, changing the prerequisite for Diving Medical Technician (DMT) to Emergency Medical Technician certification, and getting our internal DMT course nationally accredited. All of these advancements allow us to create a sustainable pipeline to qualify NOAA personnel to keep our chambers and attending staff in a constant state of readiness.

Another accomplishment this year saw NOAA officially join with American Academy of Underwater Sciences (AAUS) as an organizational member. While we have long enjoyed reciprocity with AAUS members, this move was strategic to better streamline interoperability, but most importantly to collaborate on industry standard policies and practices. AAUS was recently

designated as the standard setting body for the OSHA scientific diving exemption. This means OSHA sees the consolidated membership of AAUS and their community consensus standards as the reference for meeting that exemption. We are subject to OSHA as an agency, so participating with AAUS and communicating with a consolidated voice will help ensure our agency needs are represented and we can continue to operate seamlessly with valued partners.

It is my firm belief that the NOAA Diving Program is the strongest civilian science diving organization in the world. It is also my belief that without constant vigilance, adaptation, and change that our stature in this regard could change. Within a large program, change is hard. It can be disruptive and costly. But I believe there is great risk in stagnation. To that end, there have been some foundational changes to NDP that you will see continue into 2025. We have implemented changes to our training program to strengthen our standards and align with industry direction by requiring skills to be mastered neutrally buoyant in drysuits. We are implementing substantive changes to our Standardized Equipment Program (SEP) configuration to ensure divers have high quality reliable life support equipment that provides modularity and grows with the diver's skillset. This configuration also better aligns with industry norms and fosters more familiar interoperability with partners. Further, for the first time, we will be issuing dive computers as part of SEP.

Investments in people and training that we made as a program in 2024 will pay dividends for years to come. We have an energetic team at NDP eager to support work across the field and advance our mission safely into the future. Please continue to provide feedback to our team so we can continue to finetune our capabilities and services to meet your needs.

Dive safe and dive often!



*Joe Hoyt on the boat deck before a dive.
Photo: NOAA*

Josh Harvey (left) and Kaitlin Buhler on a safety stop during their fish survey dive. Josh is holding a repetitive quadrat camera used to monitor the reefs over time.

Photo: Donavon French/NOAA

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Diving In

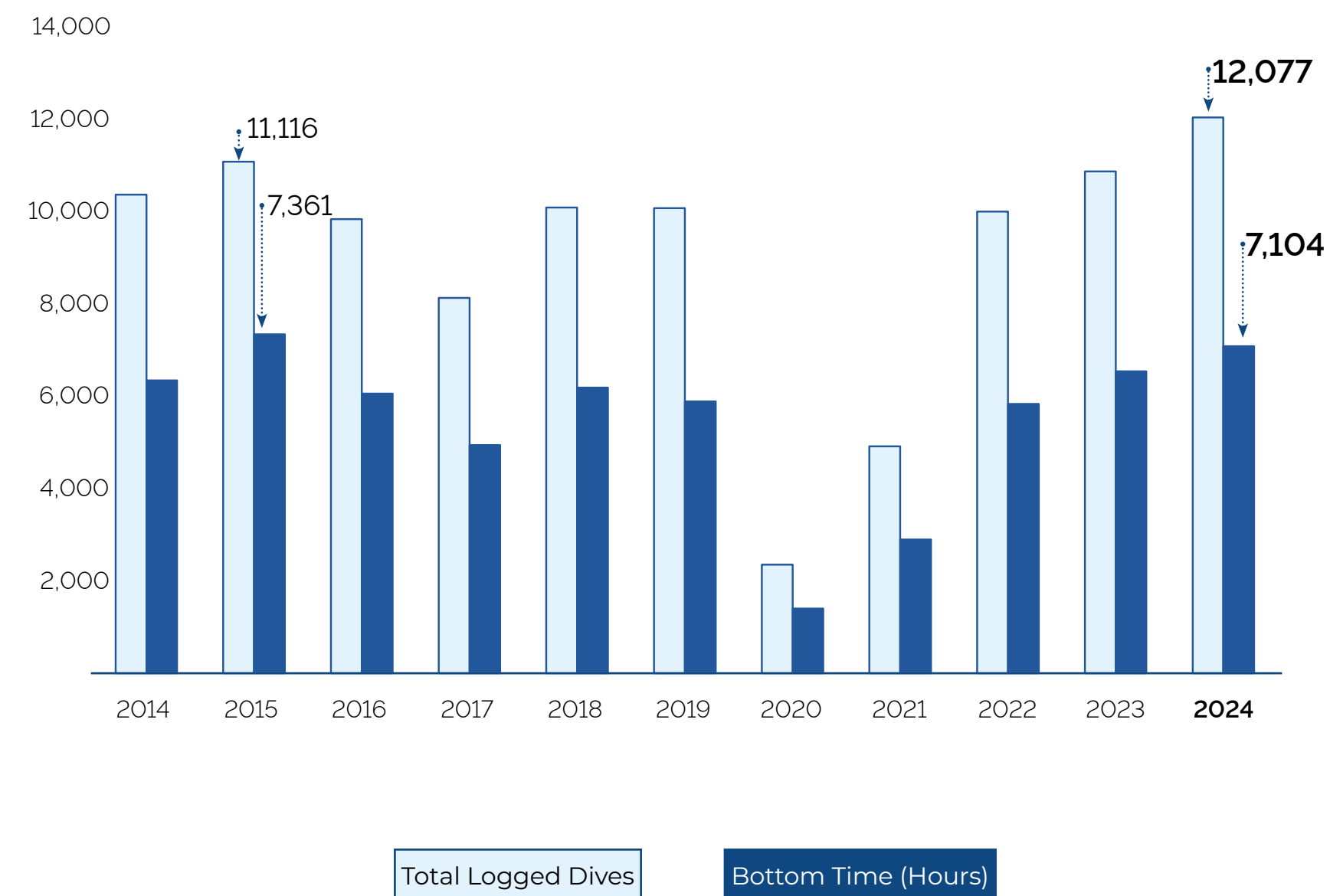
2024 By The Numbers

Total Dives & Time

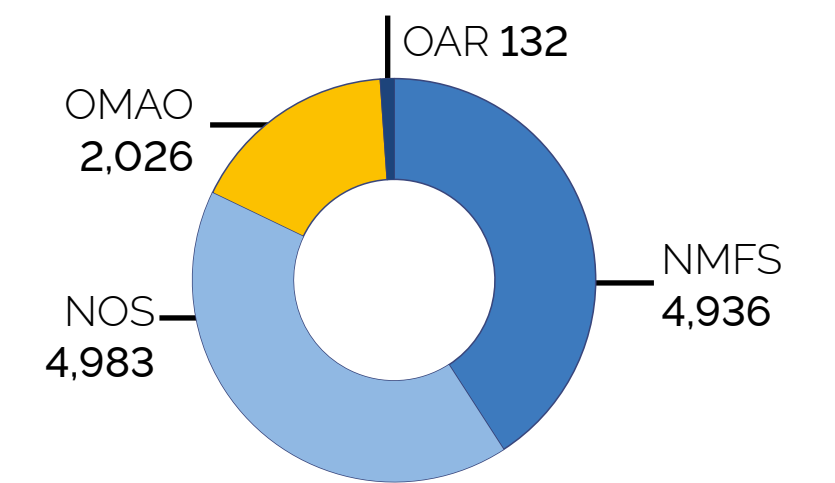
2024 Dive Totals Exceed 10 Year High

In 2024, NOAA Divers completed more dives in total than any previous year in the last 10 years. At 12,077 total dives, that is an increase of 1,175 dives over the previous year, and 2,982 dives more than the average for the last 10 years. While NOS has just 47 more dives than NMFS, NMFS has 335 hours more bottom time than NOS.

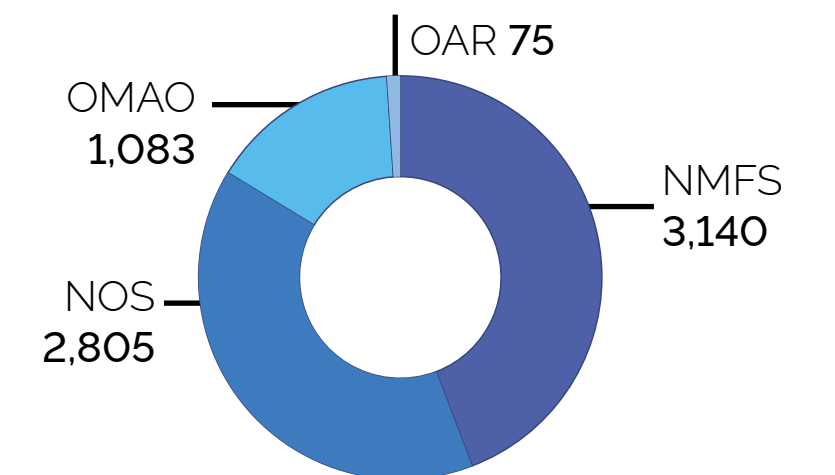
Total Dives and Bottom Time From 2014 to 2024



Total Dives by Line Office



Hours of Bottom Time by Line Office



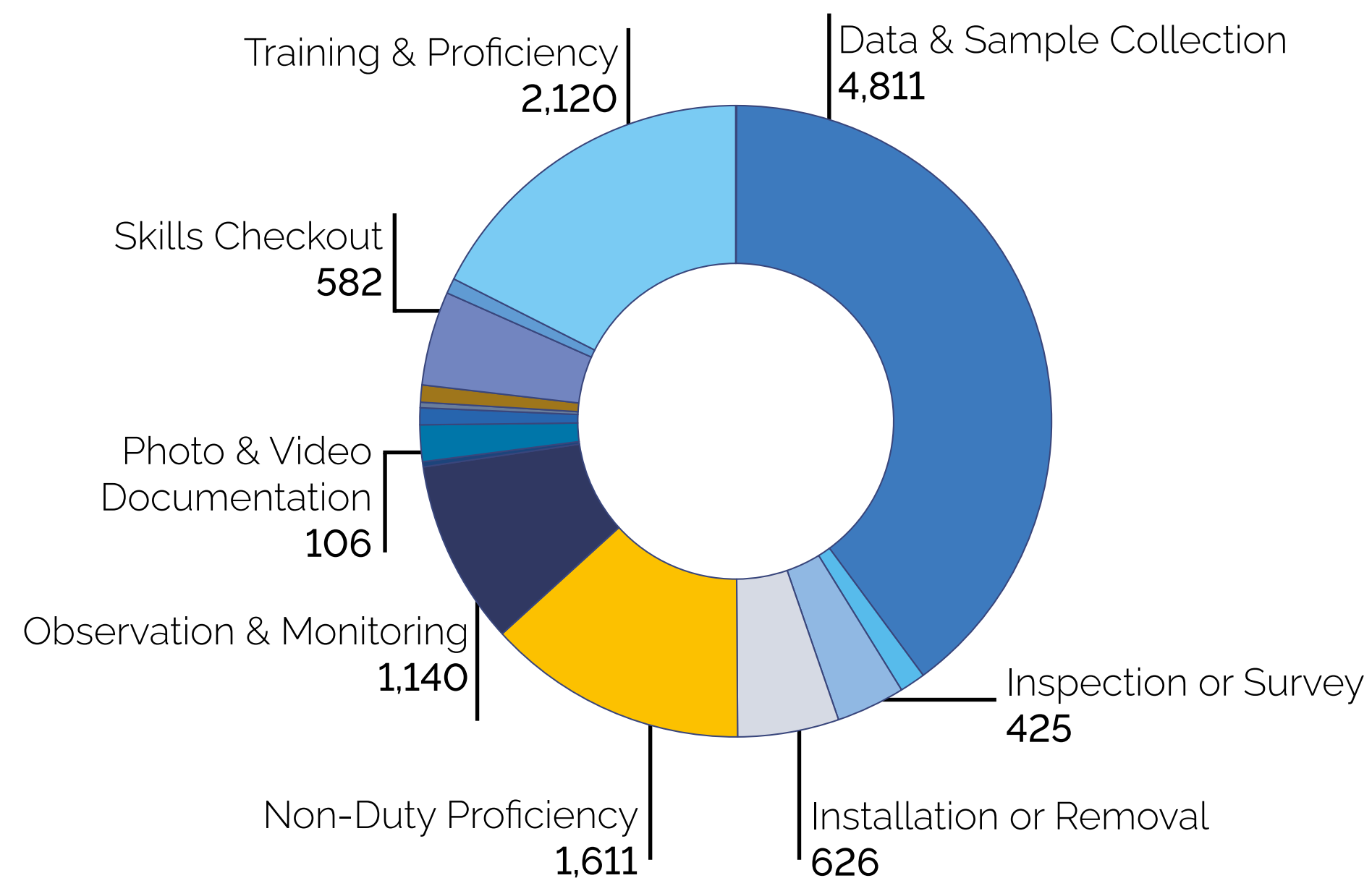
NOAA Diver Mia Lamirand spots a day octopus (*Octopus cyanea*) hiding in the reef during the National Coral Reef Monitoring Program mission on the NOAA Ship Oscar Elton Sette in June 2024. Photo: Ray Boland/NOAA

Dives & Tasks in 2024

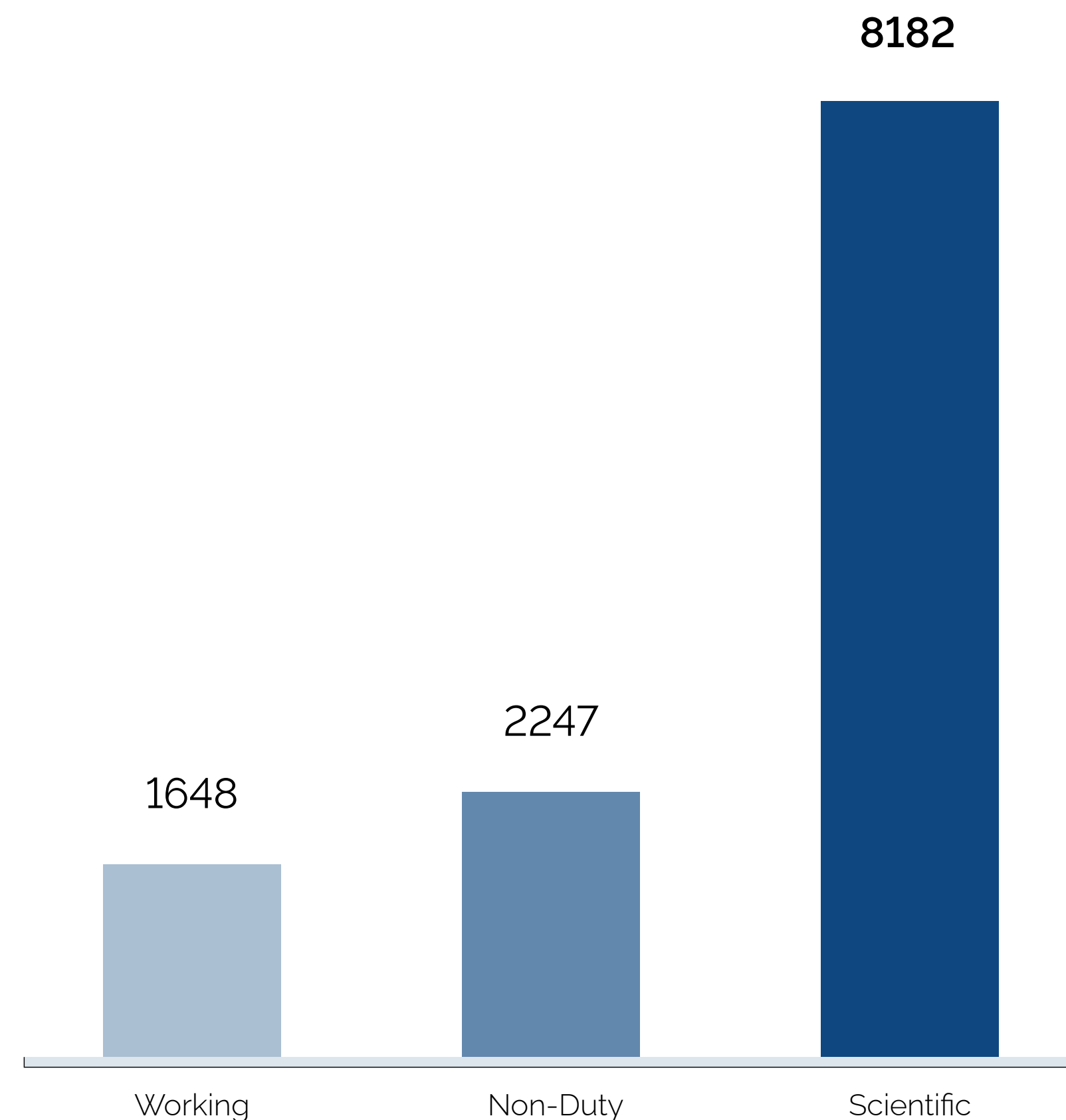
Making Waves With the OSHA Scientific Exemption

Most dives conducted at NOAA are classified as scientific dives, which means they are not subject to 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. Non-Duty dives are not subject to OSHA, and are used to ensure divers maintain proficiency.

Most Frequent NDP Dive Tasks

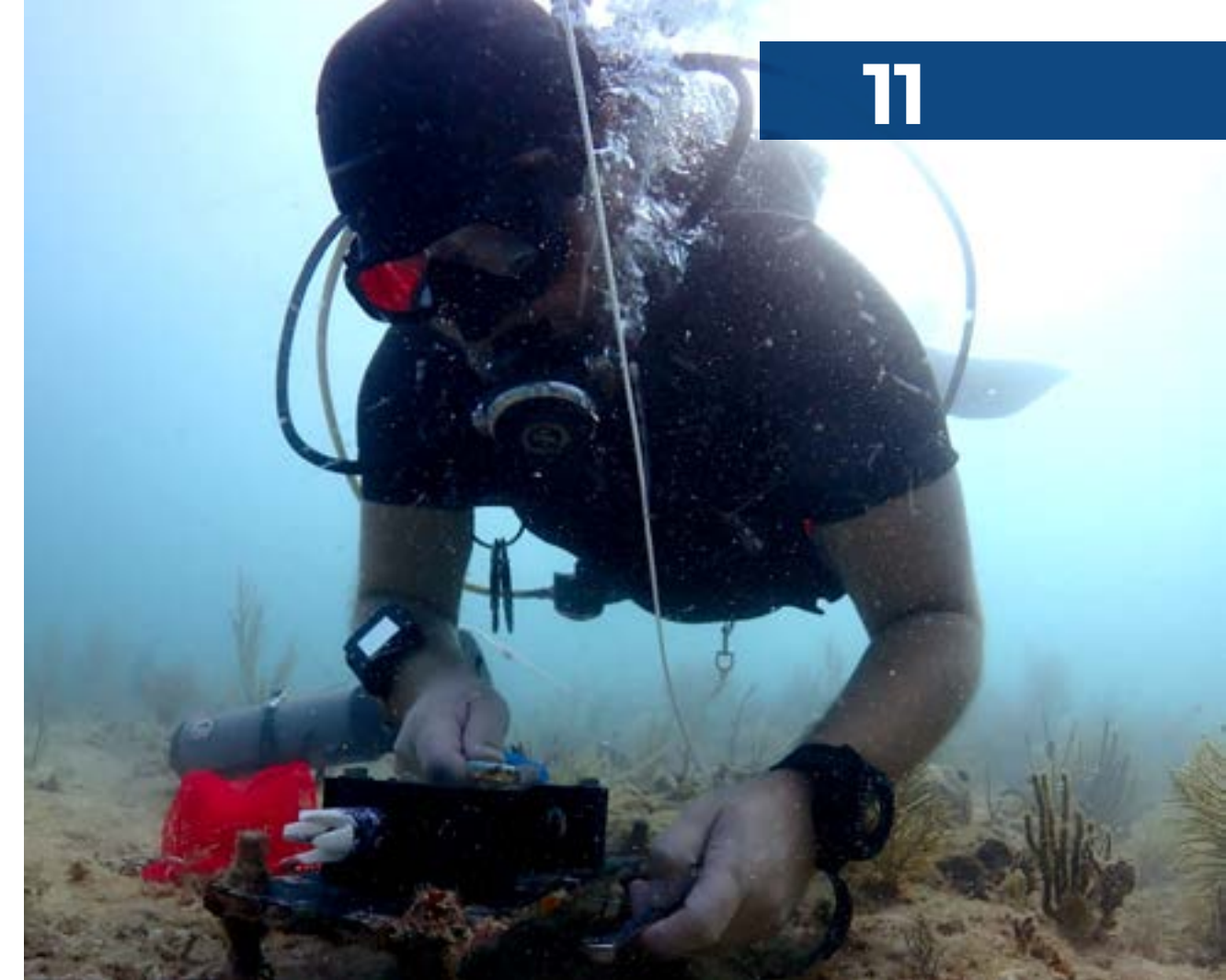
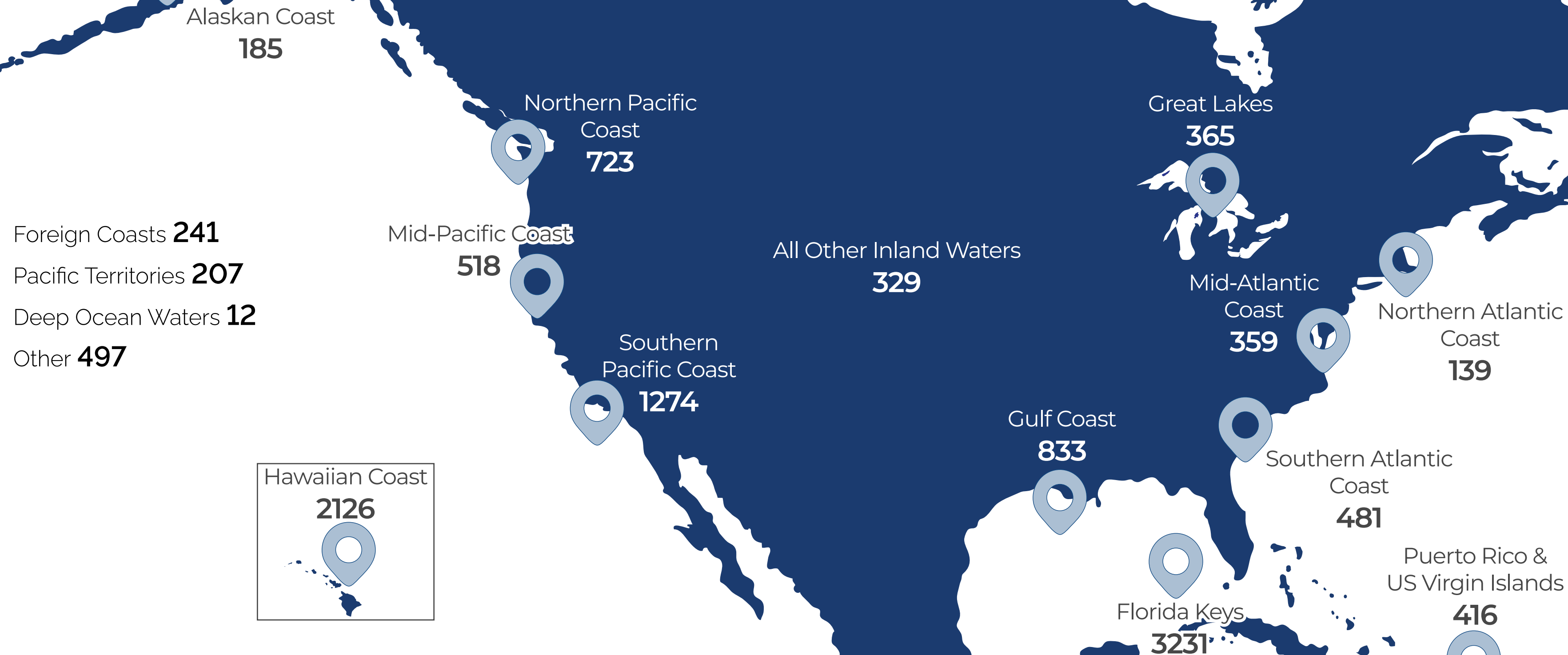


Total Dives by OSHA Status



Where we Dove in 2024

Locations & Number of Dives



NOAA and Duke University researchers deploy (top) and check (above) a wave attenuation study sensor to monitor impacts on outplanted corals in the Florida Keys. Several more dives are required to maintain the sensor and coral health. Photos: Ben Edmonds/NOAA

Dive Modes

Total Dives by Mode

In 2024, NOAA Divers logged a total of 690 Closed Circuit Rebreather (CCR) dives, a staggering **283 more** than the previous year. At 5.7 percent of the total annual dives, that is the highest number of CCR dives ever recorded at NDP.

DECOMPRESSION

No Decompression	11,881
Decompression	196

MODE

SCUBA	11,992
Hyperbaric Chamber	85

SCUBA TYPE

Open Circuit	7,831
Closed Circuit Rebreather	690
Semi Closed Rebreather	6



Top: A NOAA CCR diver pauses for a 'bubble check' before descending for a dive in Papahānaumokuākea Marine National Monument. Photo: Nathan Eagle, Honolulu Civil Beat.

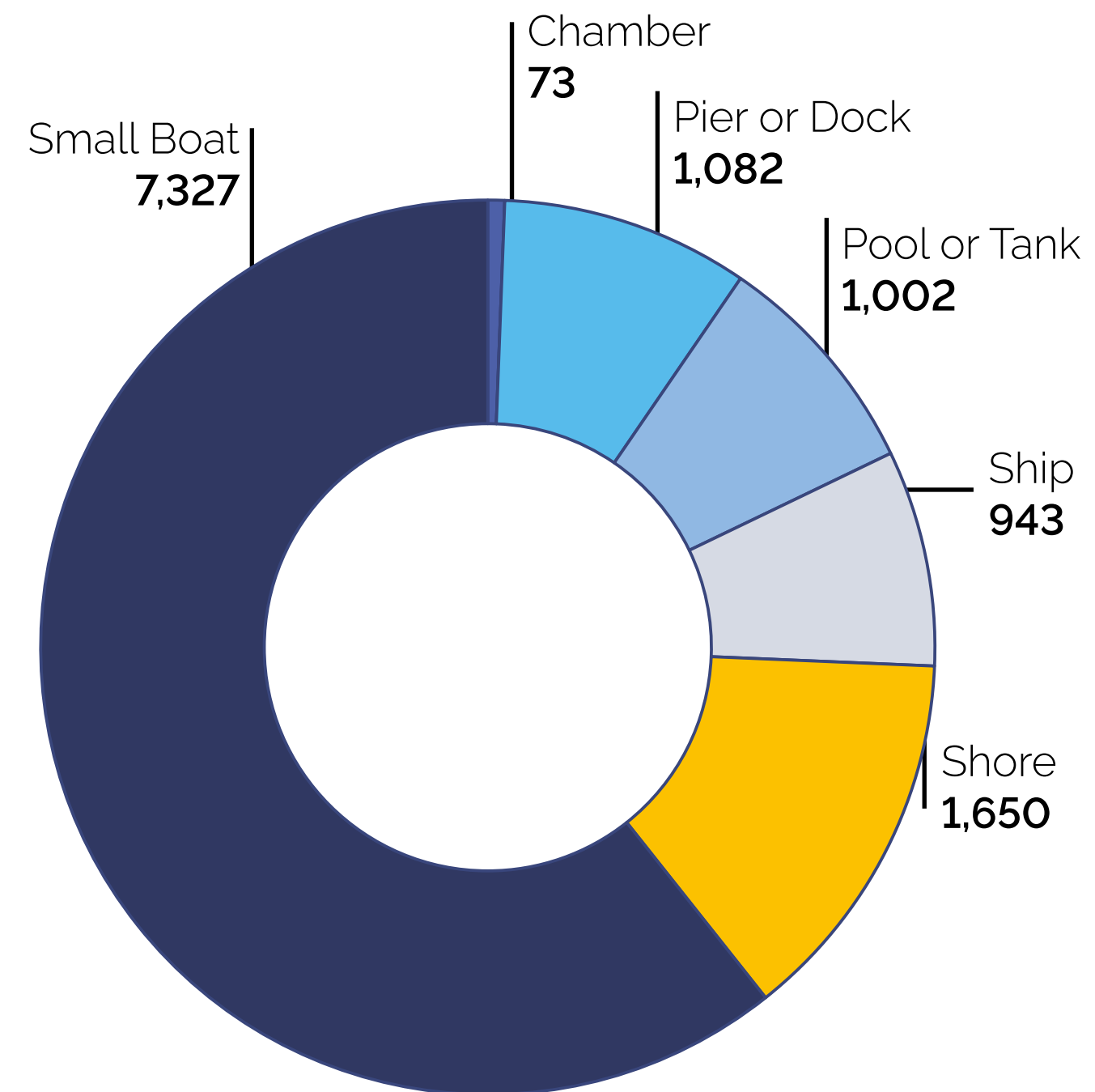
Above: NOAA Diver Marissa Nuttall (right) and a reciprocity partner diver conduct a fish surgery using CCRs. The bubbles from open circuit diving can scare fish, making CCRs perfect for delicate operations. Photo: Donavon French/NOAA.

Left: a NOAA open circuit diver conducts a Rapid Visual Consensus fish survey in the Florida Keys sanctuary. Photo: Ben Edmonds/NOAA.

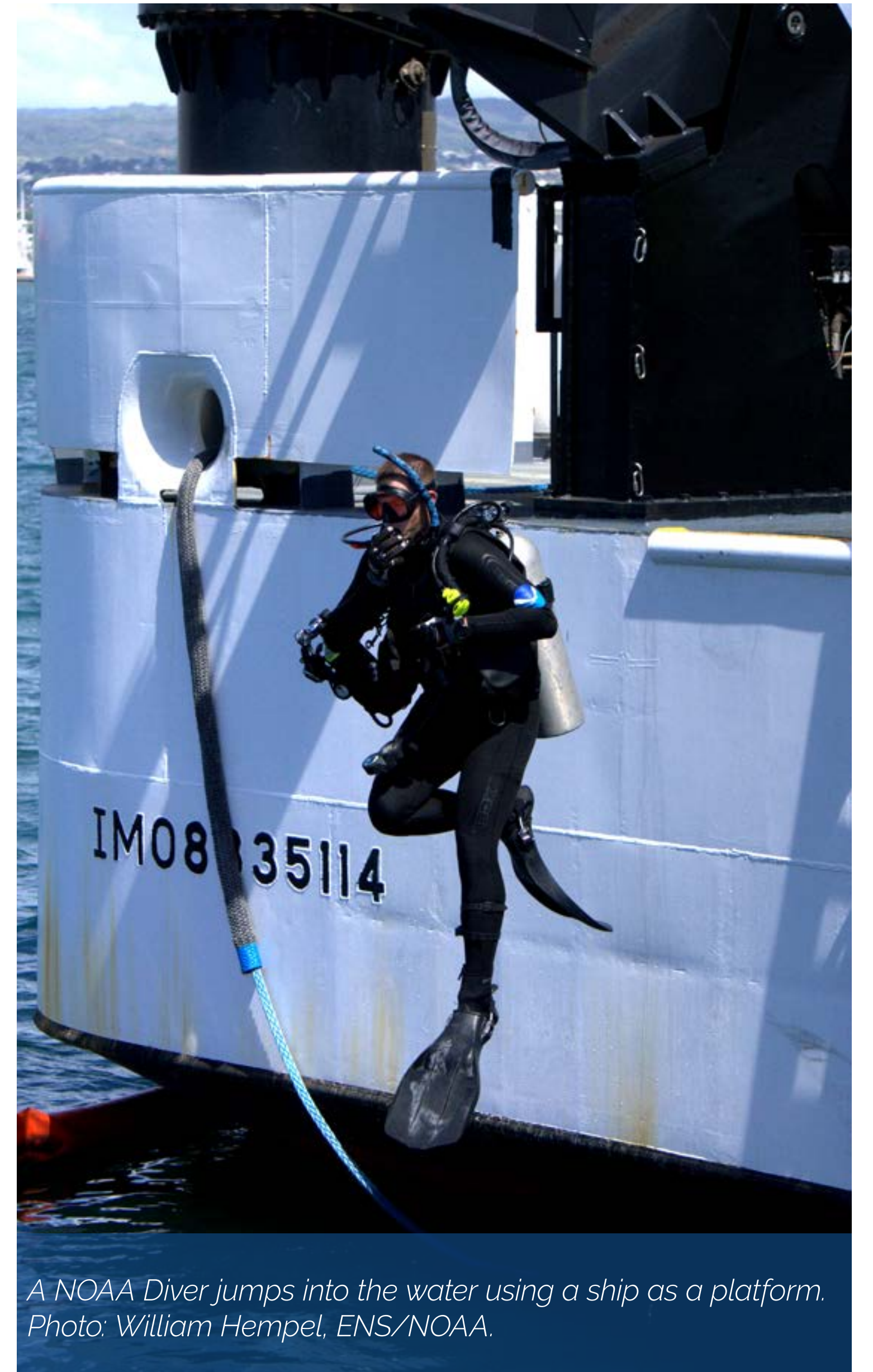
Dive Platform

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.

Diving Platforms in 2024



Above: NOAA Ship Okeanos Explorer divers conduct the ship's first underway dive in several years. Two dive teams completed hull inspection dives 10 nautical miles off the coast of Hawaii. Having divers onsite for hull inspections and repairs can save the ship tens of thousands of dollars. Photos: William Hempel, ENS/NOAA



A NOAA Diver jumps into the water using a ship as a platform. Photo: William Hempel, ENS/NOAA.

A diver observes the seafloor of Papahānaumokuākea Marine National Monument. The photograph was taken by journalist and NOAA observer diver Nathan Eagle, who was a part of the mission.

Photo: Nathan Eagle, Honolulu Civil Beat

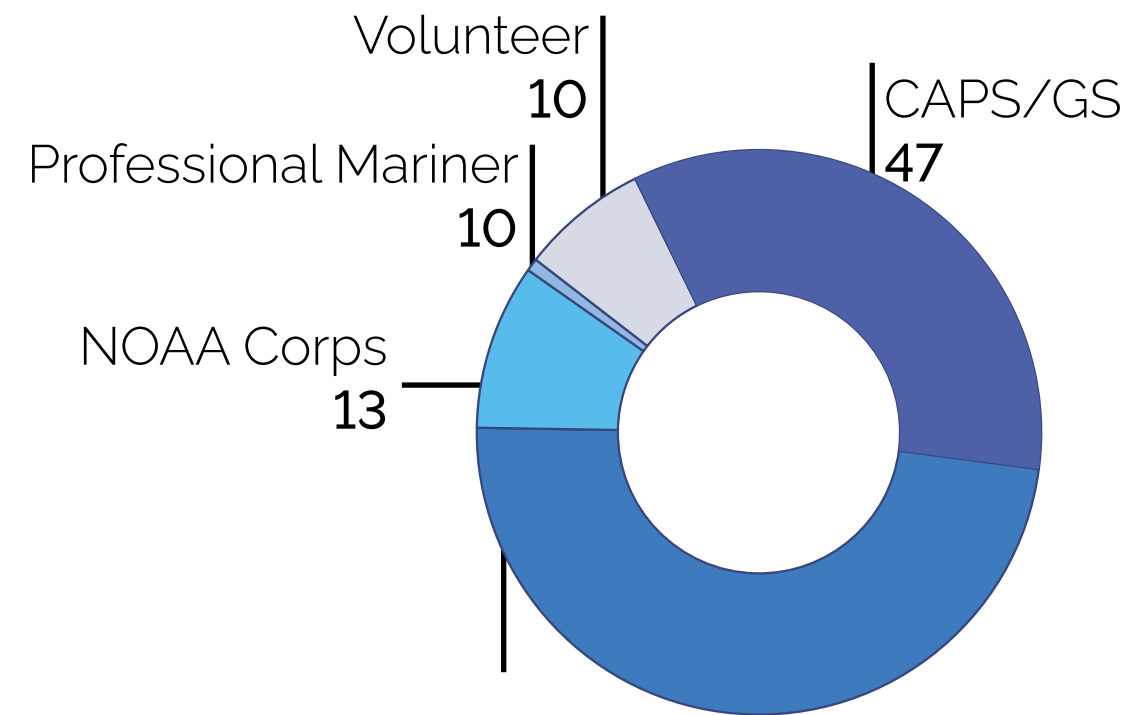
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Line Office Metrics

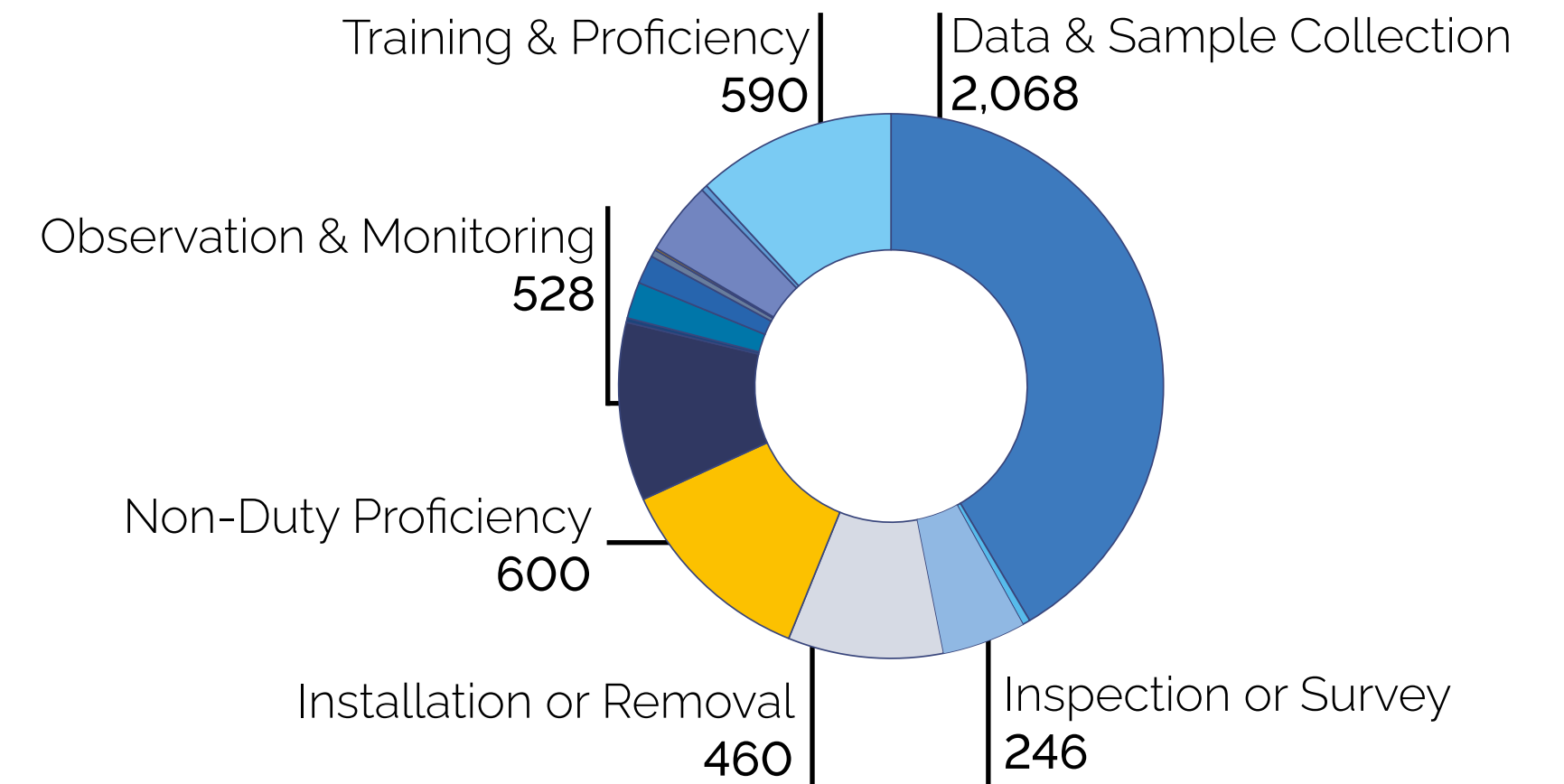
NOS

National Ocean Service 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.

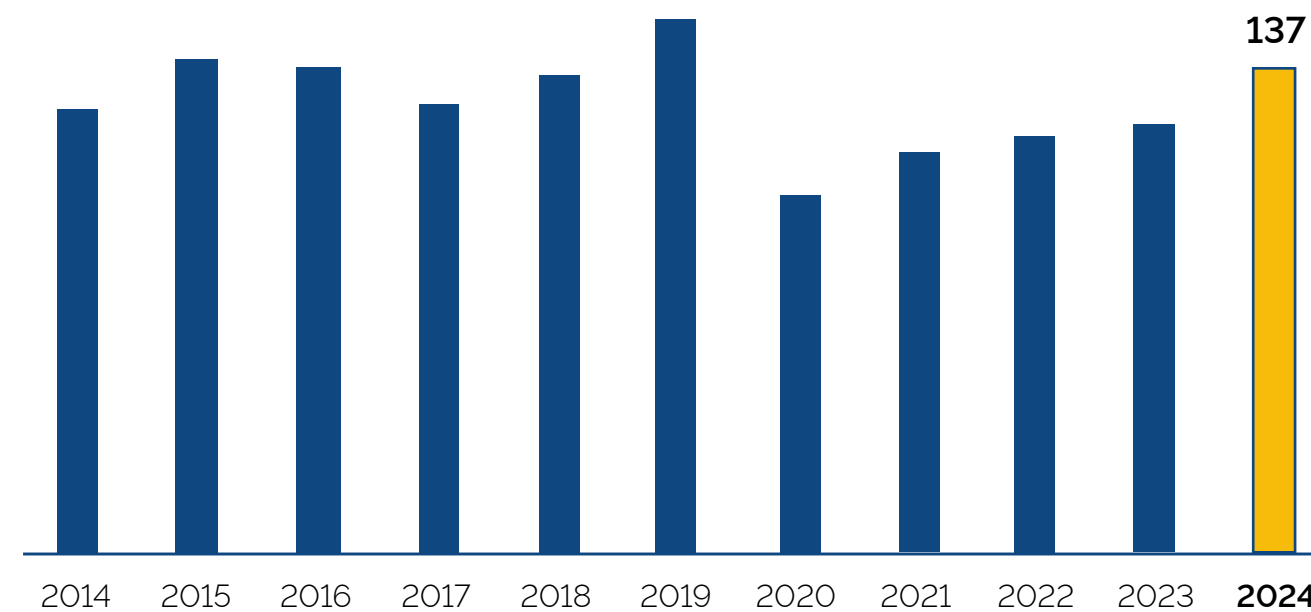
NOS Divers by Employment Type



Main NOS Dive Tasks



Total NOS Divers 2014 to 2024



Top 4 NOS Dive Locations

1. Florida Keys: **2069 dives**
2. Gulf Coast: **556 dives**
3. Hawaii Coastal: **448 dives**
4. Mid-Pacific Coastal: **374 dives**



A scientist holds a molting California spiny lobster (*Panulirus interruptus*) in an area known as the "Kelp Cavern". Photo: Claire Fackler/NOAA

NMFS

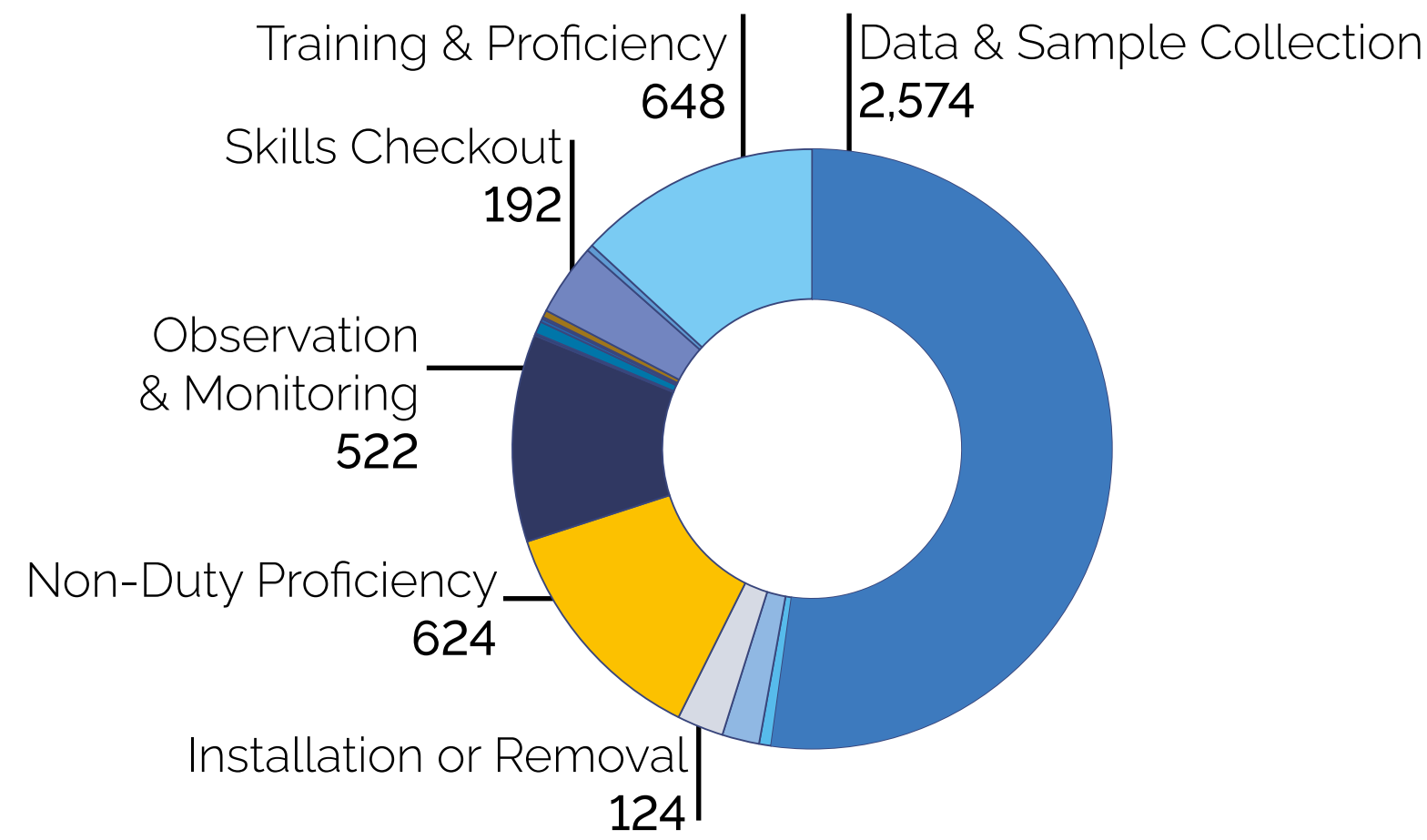
Metrics in 2024

With U.S. coral reefs spanning the Gulf Coast, Puerto Rico, Florida, as well as the Pacific Ocean—including Marianas, Hawaii, and American Samoa—continued diving for the Coral Reef Conservation Program remains a critical part of NOAA's science and stewardship mission. Divers within the National Marine Fisheries Service complete habitat conservation, fishery monitoring, and coral restoration, and other diving activities for the Coral Reef Conservation Program.

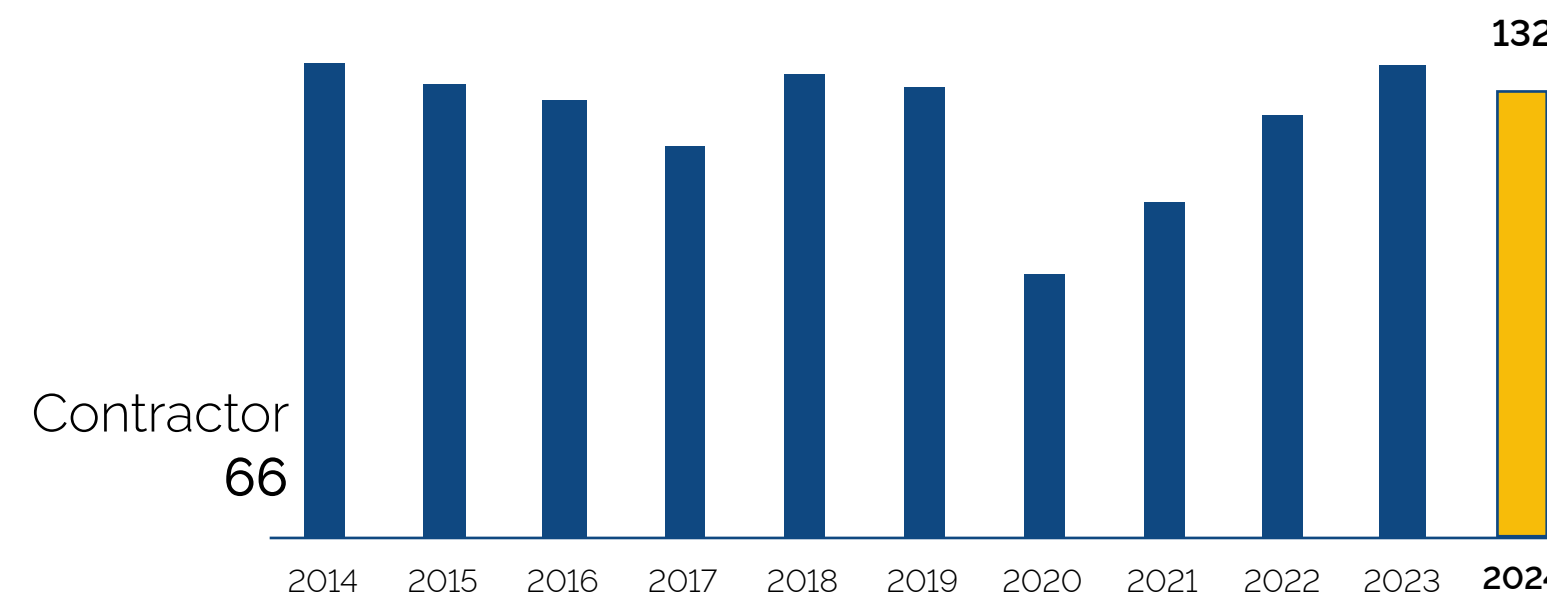


A divided flatworm (*Pseudoceros dimidiatus*) found on the 2024 CRCP mission. Photo: Ray Boland/NOAA

Main NMFS Dive Tasks



Total NMFS Divers from 2014 to 2024

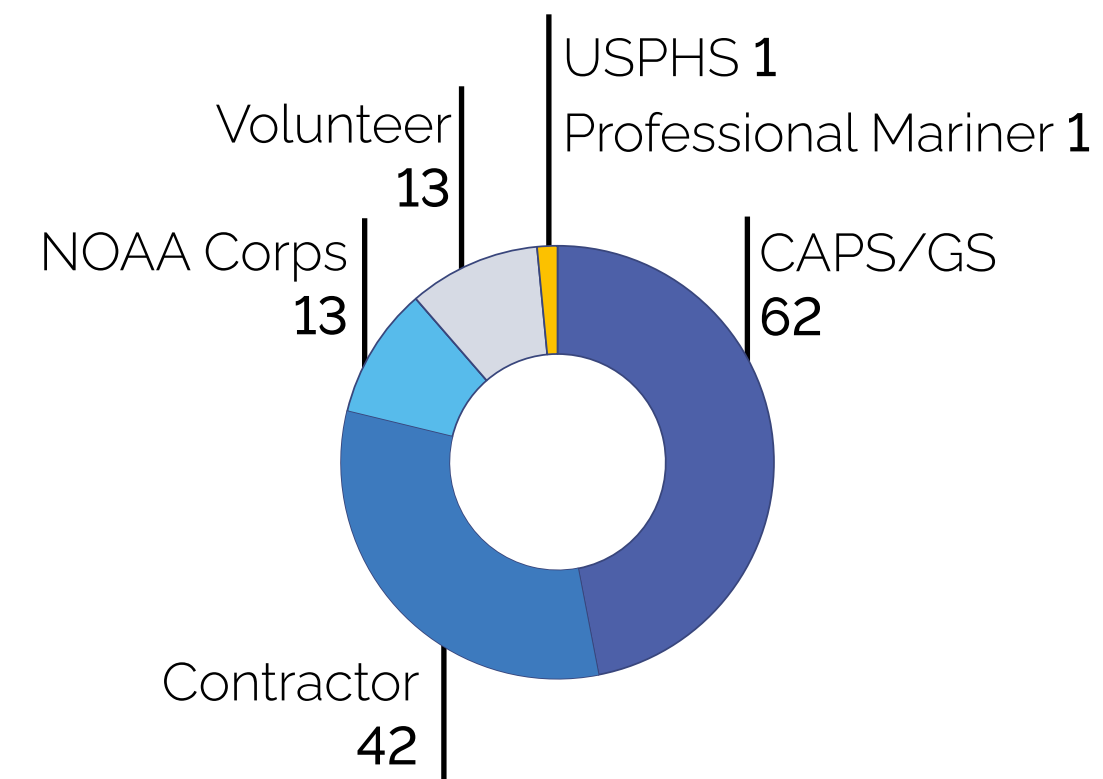


Top 4 NMFS Dive Locations



1. Hawaii Coastal: **1580 dives**
2. Florida Keys: **979 dives**
3. South Pacific Coast: **547 dives**
4. North Pacific Coast: **305 dives**

NMFS Divers by Employment Type

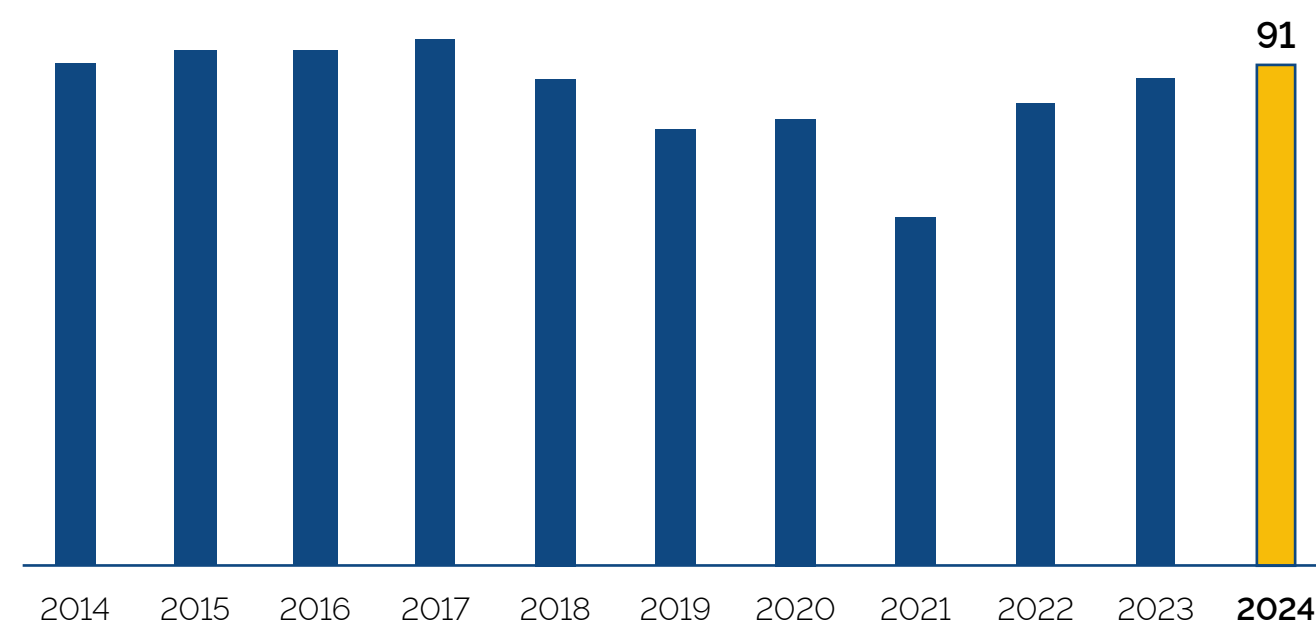


OMAO

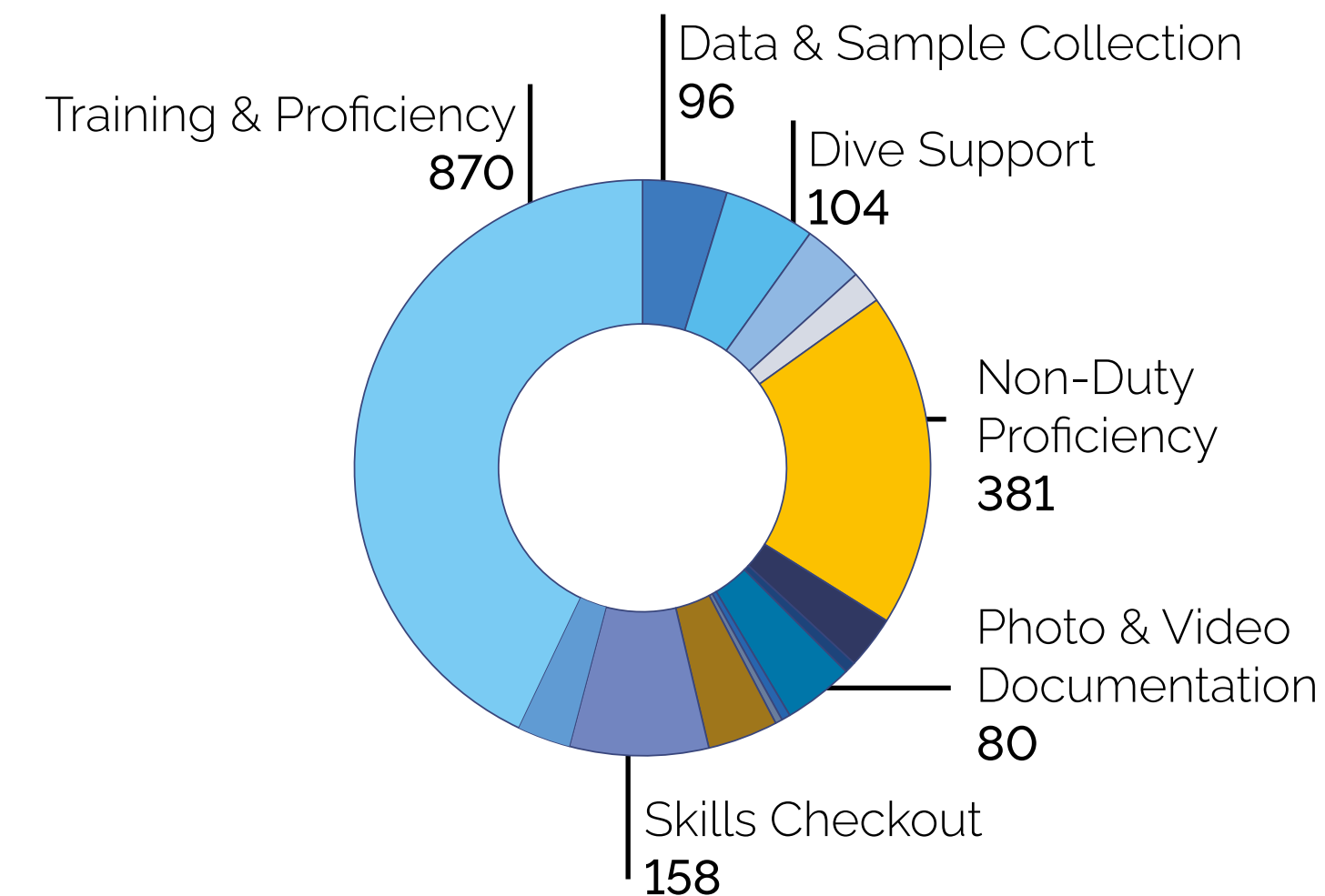
Metrics in 2024

The diving program is housed within the Office of Marine and Aviation Operations (OMAO) line office. This office supports diving units aboard NOAA ships as well as several shore-based diving units, including the NDC. The NDC serves as the headquarters for the diving program, and **oversees all diver training** at NOAA. NOAA ships supported by OMAO underpin the diverse hydrographic, oceanographic, fisheries, and other scientific missions that occur across all regions in which NOAA missions take place.

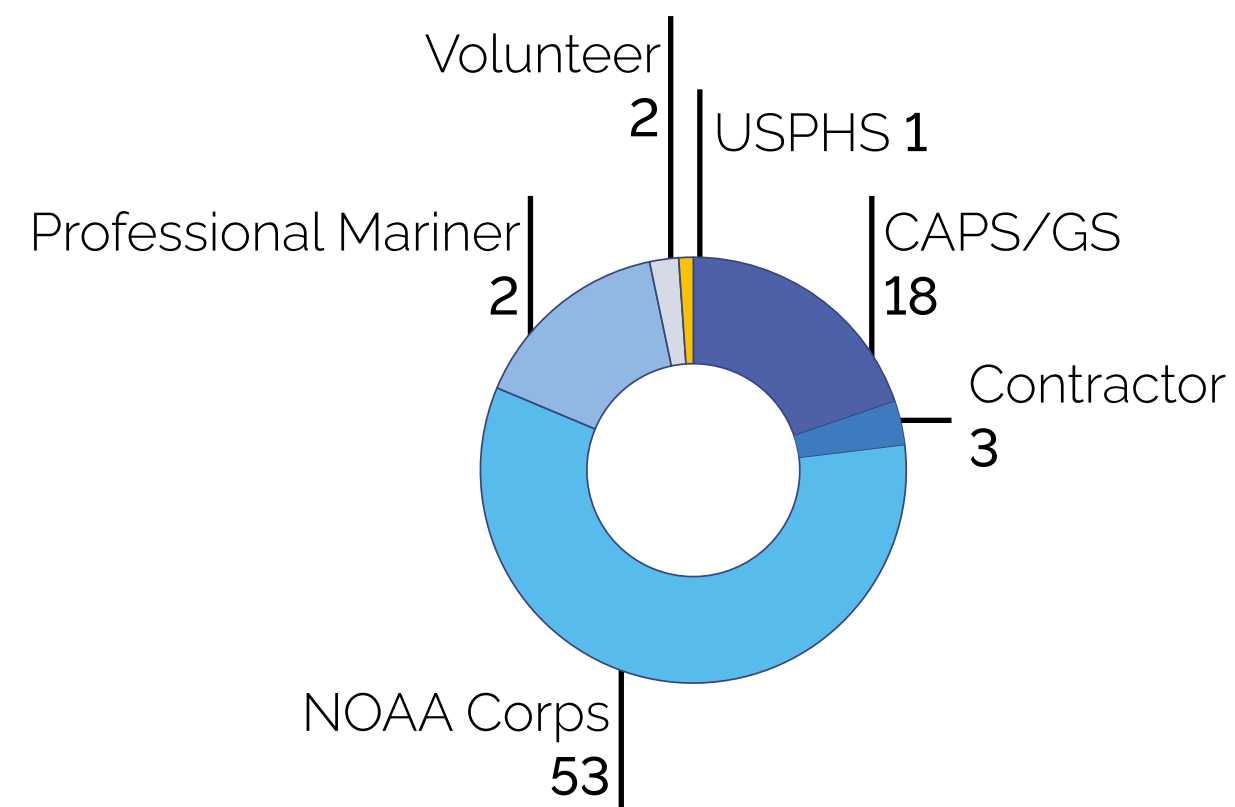
Total OMAO Divers from 2014 to 2024



Main OMAO Dive Tasks



OMAO Divers by Employment Type



Top 4 OMAO Dive Locations

1. South Pacific: **426 dives**
2. North Pacific Coast: **323 dives**
3. Hawaii Coast: **192 dives**
4. Other Inland Waters: **154 dives**



NOAA Diver students pose on the dock after a dive during the January course in Catalina, CA.
Photo: NOAA

January Diver Course



January NOAA Diver students practice rescuing an unconscious diver in Catalina Island, CA. Photo: Marybeth Head, LCDR/NOAA



January NOAA Diver students tour the Catalina Island hyperbaric chamber with chamber staff. Photo: Joe Hoyt/NOAA

In Total, NDC Graduated:

27 NOAA Divers

36 NOAA Divemasters, including 26 graduates of the Mobile Divemaster Courses hosted in Miami, FL & Honolulu, HI

September Diver Course



Top: NOAA Diver students prepare to enter the water from a high platform. Photo: Zee Rosolek/NOAA

Bottom: The September NOAA Diver class students line up on the finger pier before a dive. Photo: Dara McClary/NOAA

An aerial photograph of a red inflatable boat with a team of NOAA divers and a journalist on the water near a sandy beach. The boat is filled with people wearing life jackets and gear. The water is clear and turquoise, and the beach is white sand. The sky is blue with some clouds.

NOAA Diving Program 2024

Click here to learn more about the NDP: <https://www.oma.noaa.gov/noaa-diving-program>

*A team of NOAA Divers and journalist Nathan Eagle transit to a dive site in Papahānaumokuākea Marine National Monument.
Photo: Nathan Eagle, Honolulu Civil Beat.*