



National Marine Fisheries Service

# National Observer Program FY 2021 Annual Report

NOAA TECHNICAL MEMORANDUM NMFS-F/SPO-241



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# National Observer Program FY 2021 Annual Report

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National Marine Fisheries Service

NOAA Technical Memorandum NMFS-F/SPO-241

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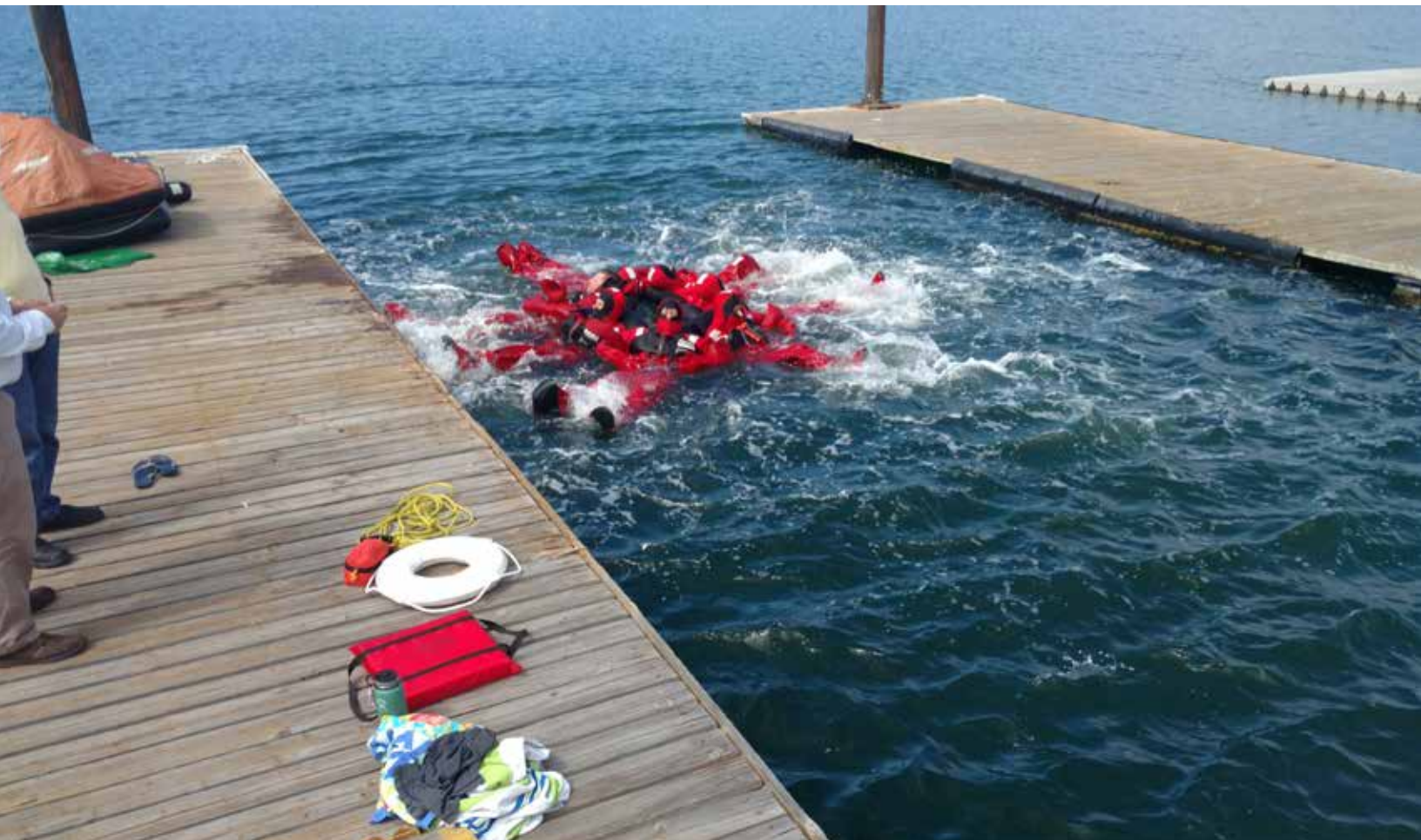
<https://spo.nmfs.noaa.gov/tm.htm>

**Cover photo:** An observer measures a scallop.

**Photo credit:** Northeast Fisheries Science Center

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Credit: West Coast Regional Observer Program

NOAA Fisheries continually works to develop and institute world-class training and safety protocols for observers. Above, observers in immersion suits participate in a safety drill during training.

# Executive Summary

For FY 2021 (October 1, 2020-September 30, 2021), 779 observers provided 60,350 days of fishery observations, compared to 56,768 days of fishery observations in FY 2020. The National Oceanic and Atmospheric Administration's National Marine Fisheries Service (NOAA Fisheries), along with commercial fishing fleets in the Alaska, West Coast, and Greater Atlantic regions, invested a total of \$75.5 million to provide this coverage in 54 U.S. fisheries. Of this amount, congressionally appropriated funds provided \$53.1 million, and fishing industry expenditures related to monitoring totaled \$22.4 million.

Despite the challenges presented by the continuing global COVID-19 pandemic, the National Observer Program (NOP), in NOAA Fisheries' Office of Science and Technology, supported six regional observer programs in FY 2021. The NOP, along with the National Observer Program Advisory Team, supported the deployment of observers in major U.S. fisheries and provide coordination and guidance regarding program performance metrics, budgets, and other important topics pertinent to enacting monitoring programs nationwide.

In addition to ensuring that high-quality fishery-dependent data are collected by well-trained fishery observers, the regional observer programs also achieved the following during 2021:

- Alaska—Collaborated with the fishing industry and the NOAA Fisheries Alaska Regional Office on an Exempted Fishing Permit (EFP) to test electronic monitoring (EM) applications on the pollock pelagic trawl fishery, and began the process of revitalizing an observer program focusing on marine mammal interactions in Alaska salmon drift gillnet (DGN) fisheries.
- Northwest—Continued to deploy its Observer Program Technology Enhanced Collection System that replaced the use of paper form by creating a handheld device to be used for data entry, and collected observer data that were the basis of

numerous published peer-reviewed papers and NOAA Fisheries Technical Memoranda published in 2021.

- West Coast—Supported a research project that used vessel monitoring system, observer, logbook, sea surface temperature, and landings data to facilitate comparisons between observed and unobserved behaviors by DGN vessels, and continued to implement a tablet-based data collection application called the Onboard Record Collection Application (ORCA) for the deep-set buoy gear EFP fishery.
- Pacific Islands—Doubled its observer coverage rate for the American Samoa pelagic longline fishery compared to 2020, and, because the West Coast and Pacific Islands programs overlap in responsibility to monitor highly migratory species fisheries in the Pacific Ocean, worked with the West Coast program to refine the ORCA project.
- Greater Atlantic—Implemented an electronic pre-trip vessel safety checklist, and implemented a management change that allowed groundfish sectors to use an audit-model EM program as a replacement for at-sea monitoring.
- Southeast—Supported projects funded by the Deepwater Horizon oil spill settlement, including implementing 300 additional sea days of observer coverage to enhance monitoring of sea turtle bycatch, deploying observers for the fifth year of an alternative gear experimental fishing project designed to test alternative gear in the Gulf of Mexico, and supporting development of a monitoring program for the Gulf of Mexico menhaden purse seine fishery.

The preceding milestones represent only a fraction of observer activities in 2021, which are detailed elsewhere in this report. None of these achievements would be possible without the hard-working and talented fishery observers who work under challenging conditions to help NOAA Fisheries fulfill its mission to ensure sustainable fisheries.





# 1. Introduction

The National Oceanic and Atmospheric Administration’s National Marine Fisheries Service (NOAA Fisheries) deploys fishery observers to collect high-quality catch and bycatch data from U.S. commercial fishing and processing vessels, as well as from some shoreside processing plants. NOAA Fisheries has been using observers to collect fisheries data in the U.S. exclusive economic zone, state waters, and high seas since 1972. Observers, trained biological technicians who collect data to support a wide range of conservation and management activities, have monitored fishing activities on all U.S. coasts, collecting data for a range of conservation and management issues.

NOAA Fisheries regional offices and science centers administer the various regional observer programs. Each observer program is authorized by one or more of the following federal authorities: the Magnuson-Stevens Fisheries Conservation and Management Act (MSA), the Marine Mammal Protection Act (MMPA), and the Endangered Species Act (ESA). (For more information

on these federal mandates, and U.S. observer program history in general, see Brooke 2014.)

## 1.1 Program Structure

Within the NOAA Fisheries Office of Science and Technology, the National Observer Program (NOP) provides national support to six regional observer programs, each with at least a couple of sub-programs (Figure 1). In addition to national program administration, budget development, and planning, the NOP works with regional observer programs to develop national policy, standards for observer data quality, and training standards for observer and marine safety instructors. In 2021, the NOP had four permanent staff positions: program coordinator (Ken Keene), electronic technologies coordinator (Brett Alger), bycatch expert (Lee Benaka), and safety expert (Dennis Hansford).

The NOP also provides regional observer programs with a forum to increase collaboration and communication during bimonthly and biannual National Observer

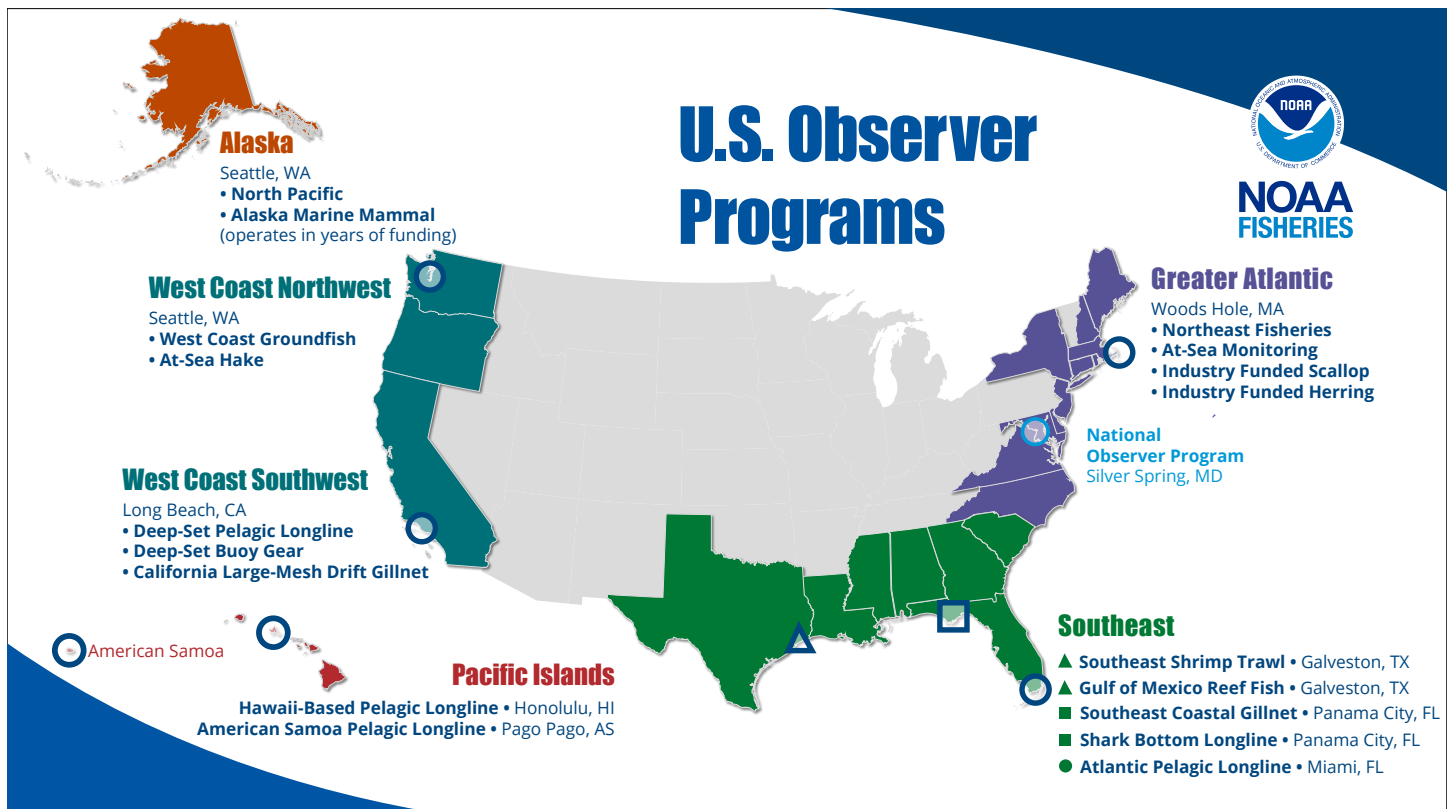


Figure 1: Map of regional observer programs.

Program Advisory Team (NOPAT) meetings. Representatives from all regional fisheries science centers and regional offices, as well as many NOAA Fisheries Headquarters offices with observer expertise, participate on the NOPAT (Figure 2).

Regional observer programs are responsible for day-to-day program operations, including providing administrative services, responding to data requests from a range of users, and working closely with third-party contracting companies that provide observers and address logistics and operational issues. Program scientists and managers determine the appropriate sampling protocols and necessary observer coverage levels for each fishery. In general, regional programs work with observer provider companies to recruit, train, and deploy observers.

The FY 2021 budget included funds to pay for most regional observer program costs for the fisheries currently observed. NOAA Fisheries has authority to require that industry fund observer coverage. Thus, in some cases, the fishing industry pays for the costs of observer coverage by contracting directly with private observer provider companies to obtain the required coverage. The full (100 percent) coverage fisheries managed by the Alaska Observer Program, for example, are funded primarily by the fishing industry, which pays observer salaries, travel costs, and insurance. NOAA Fisheries covers onshore infrastructure costs. Alternately, the partial coverage fleet in Alaska is paid by an ex-vessel fee determined by the North Pacific

Fishery Management Council and implemented in federal regulations. NOAA Fisheries' Alaska Fisheries Science Center administers this program, establishes coverage rates, and contracts with an observer provider company. Both the full- and partial-coverage fisheries contribute substantial data for near real-time management of the groundfish fishery. These data are also made available to industry members. Industry funding also supports the West Coast Trawl Catch Share Program and the Atlantic Sea Scallop Fishery.

Regardless of an observer program's funding, NOAA Fisheries provides all observers with training in sampling techniques and species identification, data collection, fishing and safety regulations, and at-sea survival skills. NOAA Fisheries is responsible for ensuring data quality through what is known as debriefing. This quality-control process involves data and sampling process review, as well as discussions with the observers themselves, before observer data are used to help fulfill agency science and management objectives.

## 1.2 Use of Observer Data in Fisheries Management

The information compiled by observer programs supports the management of fisheries and conservation of fish stocks, protected species, and ecosystems throughout the United States (Figure 3). Observer data are also increasingly relied on to monitor compliance with fisheries and marine resource regulations.

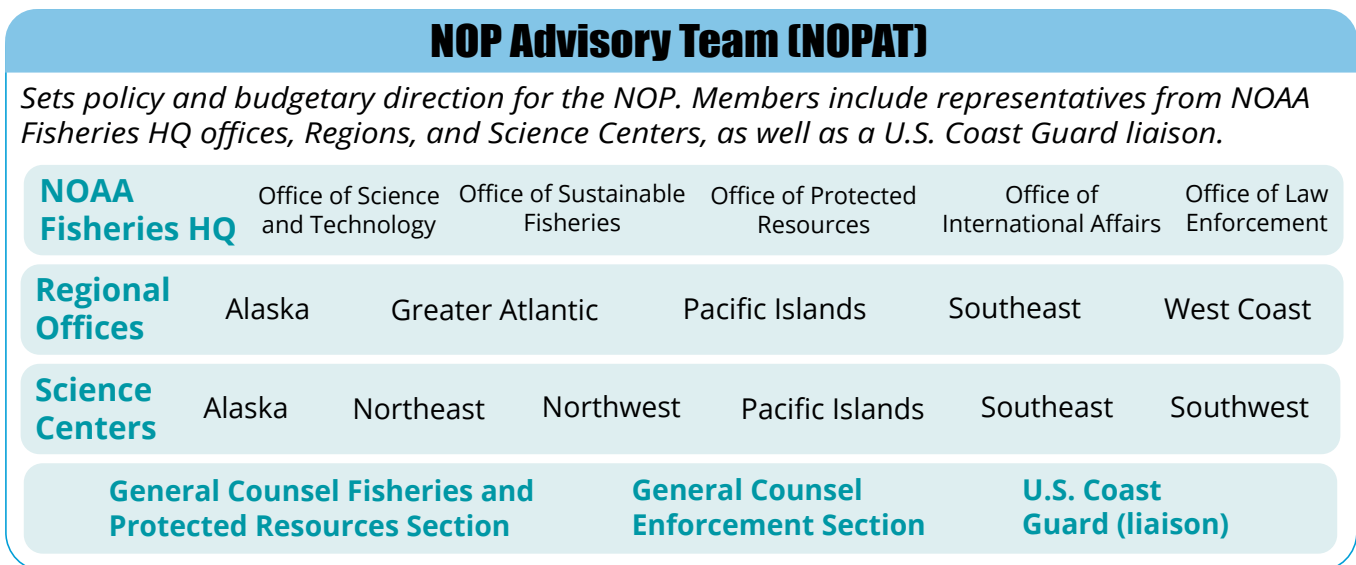


Figure 2: Organizational structure of the NOP Advisory Team.

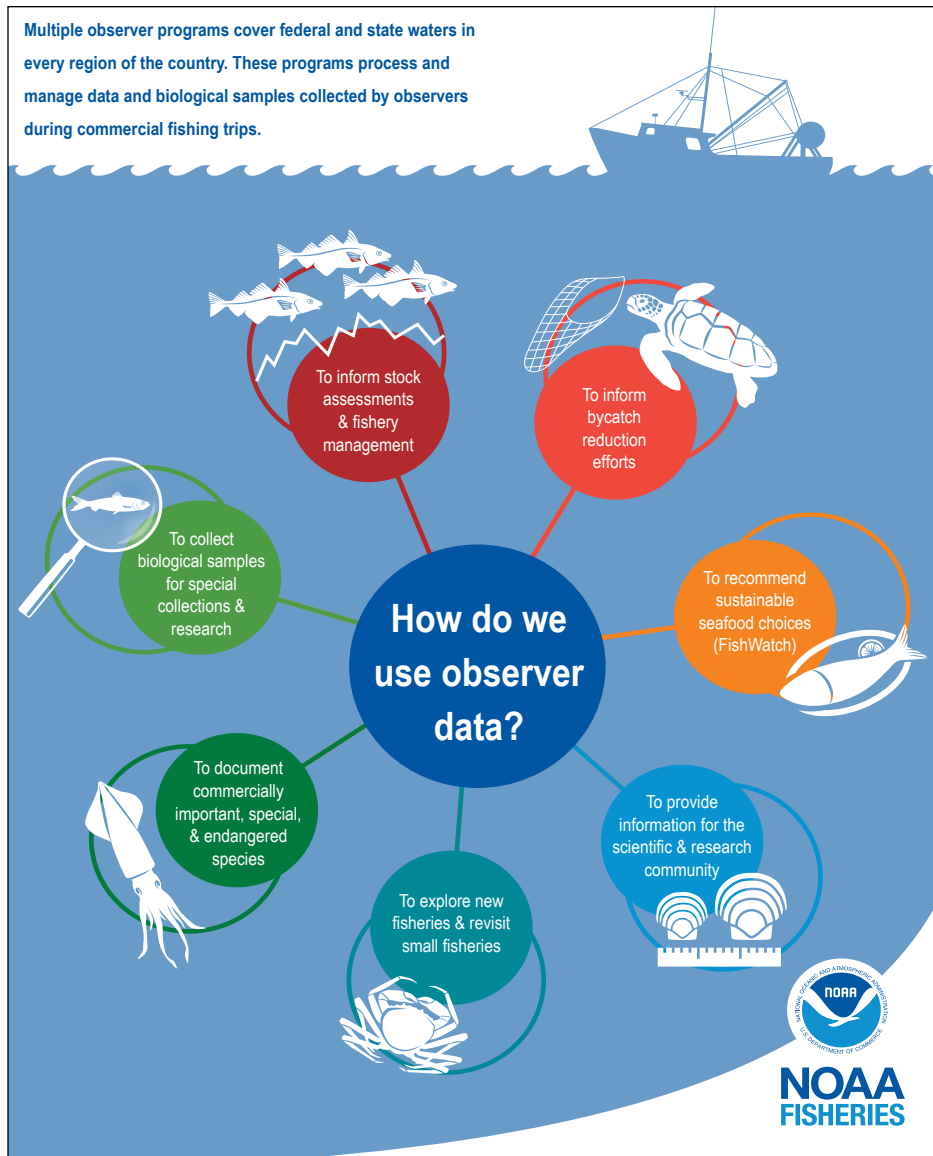


Figure 3: Uses of observer data.

Information collected by fisheries observers is used for a wide range of assessment and monitoring purposes, including the following examples:

- In some fisheries, the amount of a specific fish species that can be caught is specified by a total allowable catch (TAC) level. Observer data are used to project total catch for these species and to monitor the level of fishing activity so that the TAC is not exceeded.
- For each managed fishery or stock, the MSA requires development of an annual catch limit (ACL) that is set below the overfishing level to ensure that overfishing will not occur. Monitoring an ACL for a stock requires scientific data on catch and bycatch, which has resulted in increased observer days at sea across the country.
- Catch share programs rely on observer data to monitor catch, landings, and discards for fine-resolution quota management. In many cases these fisheries require enhanced observer coverage to document vessel-specific or sector-level quotas. Managers and fishermen rely on observer data to ensure that vessels and sectors do not exceed the authorized quota of target or discard species.
- For many fisheries, estimates of the rates of fishing mortality and/or protected species interaction based on observer data are used for monitoring fishery performance and developing stock assessments. Biological samples collected by observers are also essential inputs to stock assessments (e.g., genetic data are used for species or stock identification purposes).

- For stocks that are overfished and in a rebuilding plan, such as Atlantic cod, preseason target catch numbers are provided to the management team. When the fishing season ends, observer data are evaluated to determine total mortality and correspondingly adjust the next season’s targets.
- The MMPA requires that levels of fishery-related mortality and serious injury of marine mammals be monitored by observers and reported in annual marine mammal stock assessment reports. These data are also used to appropriately classify commercial fisheries according to their levels of incidental mortality and serious injury of marine mammals in the annual MMPA List of Fisheries (LOF) (16 U.S.C. 1387).
- Observer data are used by industry in innovative bycatch avoidance programs, such as salmon bycatch monitoring in Alaska.
- Observer data support NOAA Fisheries’ series of National Bycatch Reports (e.g., Benaka et al. 2019), which provide regular estimates of fish, marine mammal, sea turtle, and seabird bycatch for major U.S. fisheries.
- Under ESA Section 7 biological opinions, observer programs may be required or recommended to

ensure that anticipated take levels of threatened or endangered species (e.g., sea turtles and Atlantic sturgeon) are not exceeded in federal fisheries.

### 1.3 Funding History for Observer Programs

The NOP was formed in 1999 to improve regional and national coordination among the observer programs. Before 1999, the majority of funding for regional observer programs was provided through indirect sources such as congressional allocations supporting fisheries management and protected species conservation and recovery, or were funded by industry. Industry funding has increased over time as mandatory coverage requirements have increased, primarily due to the expansion of catch share fisheries.

In 1999, the first congressional funds were directly appropriated to specific regional observer program budgets or Program, Project, and Activity (PPA) lines, and the NOP was established to coordinate observer program activities. The number of observed fisheries has gradually increased as available funding provided the means to develop observer programs for new or experimental fisheries while maintaining established monitoring programs (Figure 4).

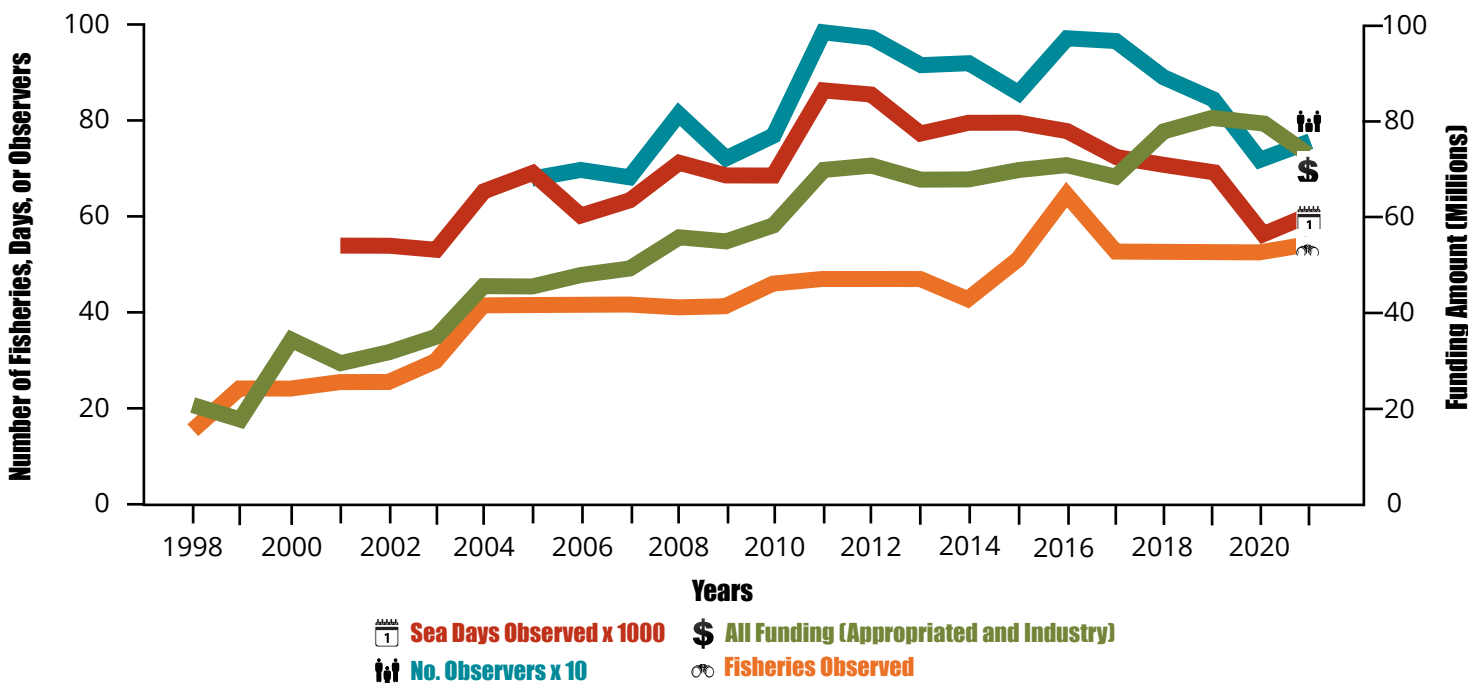


Figure 4: U.S. observer program sea days observed, appropriated and industry funding (not adjusted for inflation), and number of observed fisheries and observers from 1998 to 2021.

Although numbers of observers and sea days decreased due to COVID-19-related waivers of observer coverage in some U.S. fisheries in 2020, those numbers rebounded as NOAA Fisheries discontinued waivers and more observer programs reinstated or increased

coverage. Expenditures remained steady due to the increased expenses of providing hybrid training to observers and paying for additional COVID-19 safety measures including personal protective gear, as well as quarantine of observers before and after deployments.

## 2. Budget Summary

For FY 2021 (October 1, 2020-September 30, 2021), 779 observers provided 60,350 days of fishery observations, compared to 56,768 days of fishery observations in FY 2020. NOAA Fisheries, along with commercial fishing fleets in the Alaska, West Coast, and Greater Atlantic regions, invested a total of \$75.5 million to provide this coverage in 54 U.S. fisheries. Of this amount, congressionally appropriated funds provided \$53.1 million, and fishing industry expenditures related to monitoring totaled \$22.4 million. (See Table 1.)

The tables in Appendix A provide regional details on numbers of observers, sea days covered, observer coverage targets, and expenditures for observer coverage. Appendix B lists the 54 fisheries covered in FY 2021. Industry expenditures supported support observer coverage of fishing vessels in North Pacific and West Coast groundfish fisheries as well as Greater Atlantic scallop fisheries. (For more information

regarding industry expenditures related to monitoring of West Coast fisheries, see Steiner et al. 2021, as well as the NOAA Fisheries Northwest Fisheries Science Center’s (NWFSC) FISHEyE economic data visualization tool.<sup>1)</sup>

Observer programs are administered by NOAA Fisheries Regional Offices and Science Centers around the country. Funding received by each program is used to operate existing programs, develop observer programs for new or experimental fisheries, and conduct outreach to industry members and the public. Observer coverage levels are determined by the regional programs and are influenced by available funding, the number of active participants in the fishery, fishing conditions, fishery quotas, management needs, and program goals. Sections 4 through 8 of this report summarize the FY 2021 achievements of NOAA Fisheries regional observer programs.

Region	Appropriated	Industry	Total
Alaska	\$9.0	\$16.0	\$25.0
Greater Atlantic	\$20.7	\$3.5	\$24.2
Pacific Islands	\$8.4	\$0	\$8.4
Southeast	\$5.4	\$0	\$5.4
West Coast <sup>2</sup>	\$8.9	\$2.9	\$11.8
NOAA Fisheries Headquarters	\$0.7	\$0	\$0.7
<b>Totals</b>	<b>\$53.1</b>	<b>\$22.4</b>	<b>\$75.5</b>

Table 1: **FY 2021 Observer Funding Summary (in millions).** *Appropriated amounts shown include funds allocated to regions from FY 2021 enacted funding.*

<sup>1</sup> <https://dataexplorer.northwestscience.fisheries.noaa.gov/fisheye/PerformanceMetrics/>

<sup>2</sup> West Coast encompasses two separate observer programs administered by the NOAA Fisheries Northwest Fisheries Science Center and West Coast Regional Office, respectively.

## 3. National Office Program Activities

Several NOAA Fisheries headquarters offices play important roles in observer programs. These offices include the Office of Science and Technology, which is home to the NOP, as well as the Office of Protected Resources (OPR), the Office of Law Enforcement (OLE), and the Office of Sustainable Fisheries, which houses the Atlantic Highly Migratory Species Management Division (HMS). The following sections describe NOP, OPR, and OLE activities in 2021. Section 8 of this report describes HMS-related activities for 2021.

### 3.1 National Observer Program

In addition to coordinating policy and budget issues among the regional observer programs, the NOP facilitated and coordinated several activities that were national in scope in 2021. These activities are described below.

#### 3.1.1 National Observer Program Advisory Team

The NOPAT met twice virtually in 2021, in May and November. At these meetings, the NOPAT discussed various topics including the observer program budget, policies and standards, safety and enforcement issues, performance metrics, and electronic technologies (ET).

#### 3.1.2 Safety Advisory Committee

The NOPAT has a Safety Advisory Committee (SAC) that comprises safety representatives from each regional observer program, the OLE, and the U.S. Coast Guard. The SAC provides recommendations to the NOPAT on safety and health issues. Committee members meet over the phone regularly to a variety of issues, including conducting hands-on in-water safety training during the COVID-19 pandemic, using remote technologies to accomplish safety refresher training objectives, and identifying opportunities to better align the NOAA Fisheries Observer Safety Training Standards<sup>3</sup> with NOAA's Sexual Assault and Sexual Harassment Prevention and Response Policy.<sup>4</sup> The SAC also developed a fact sheet for observers focused on

two-way satellite communication devices.<sup>5</sup> COVID-19 travel restrictions prevented in-person marine safety instructor training and cross-training events in 2021.

#### 3.1.3 COVID-19 Policy Support

The NOP continued to conduct bimonthly virtual meetings with the NOPAT to discuss COVID-19 challenges. NOP staff members and NOPAT members also provided support to NOAA Fisheries national and regional leadership regarding observer coverage waiver policies.

On March 29, 2021, NOAA Fisheries issued an interim final rule (86 FR 16307) to continue to provide the authority to waive observer training and other program requirements on a case-by-case basis. Under this action, NOAA Fisheries Regional Administrators, Office Directors, and Science Center Directors had the ability to waive observer requirements under two criteria:

1. Placing an observer conflicts with travel restrictions or other requirements addressing COVID-19 related concerns issued by local, state, or national governments, or the private companies that deploy observers pursuant to NOAA Fisheries regulations; or
2. No qualified observer(s) is available for placement due to health, safety, or training issues related to COVID-19.

Under this rule, NOAA Fisheries would consider a trip waiver if observer providers could not meet the risk mitigation protocols imposed by a state on commercial fishing crew members or by the vessel or vessel company on its crew. Based on its regulatory and contract oversight authority, NOAA Fisheries sought to ensure that observer providers and their observers and at-sea monitors followed the same risk mitigation protocols that fishermen were following.

On June 17, 2021, NOAA Fisheries announced a revision of its 2020 policy<sup>6</sup> regarding how vessels could receive a waiver from required observer or at-sea monitor

<sup>3</sup> [https://media.fisheries.noaa.gov/dam-migration/observer\\_safety\\_training\\_standards\\_062020.pdf](https://media.fisheries.noaa.gov/dam-migration/observer_safety_training_standards_062020.pdf)

<sup>4</sup> <https://www.noaa.gov/organization/administration/nao-202-1106-noaa-sexual-assault-and-sexual-harassment-prevention-and->

<sup>5</sup> <https://media.fisheries.noaa.gov/2022-08/Two-Way%20Satellite%20Communication%20Devices.508.pdf>

<sup>6</sup> <https://www.fisheries.noaa.gov/leadership-message/noaa-fisheries-identifies-national-level-observer-waiver-criteria-will-begin>

coverage. The updated policy, in response to the wide availability of COVID-19 vaccines, stated that vessels would no longer be eligible for release from observer or monitor coverage under the March 2021 interim final rule if a fully vaccinated or quarantined/sheltered-in-place observer was available.<sup>7</sup>

### 3.1.4 Observer Safety Program Review and International Observer Safety

At the end of FY 2016, NOAA Fisheries initiated an independent audit of current observer-related policies and protocols. The resulting Observer Program Safety Review Report found national and regional observer safety programs in the United States to be robust, mature, and effective.<sup>8</sup> The report provided 118 recommendations across 7 relevant observer safety categories:

1. Safety reporting
2. Communications
3. Practices and policies
4. Training
5. Regulations
6. Equipment
7. International observers

As of 2021, many of the recommendations had been completed, and the SAC recommended closing out the Report.

In 2021, NOAA Fisheries worked to implement a 2020 final rule (85 FR 29666) that included measures to promote the safety of fisheries observers on tuna-fishing vessels. The measures required countries and vessel operators to take emergency actions to help observers if an observer is threatened, harassed, assaulted, missing, presumed fallen overboard, injured, or suffering from a serious illness. In addition, under this rule, observers aboard purse seine vessels would receive emergency communication devices and personal locator beacons before leaving port.

### 3.1.5 Observer Program and Provider Insurance Rulemaking

Following the 2020 Presidential election, the NOP and its partners were required to restart their rulemaking effort under the new Administration. The insurance rulemaking would establish a uniform, nationally consistent minimum insurance standard that would apply in regional regulatory programs that authorize an observer provider to deploy a person in any mandatory or voluntary observer program and specify responsibilities of authorized providers. The rulemaking team worked throughout 2021 to develop a proposed rule that was published on November 22, 2021 (86 FR 66259).

### 3.1.6 Electronic Technologies

ET, including electronic monitoring (EM) and electronic reporting, continued to be a major focus for NOAA Fisheries and its observer programs during FY 2021. The number of fishing vessels participating in EM programs increased from 541 at the end of FY 2020 to 569 at the end of FY 2021. Figure 5 describes the status of U.S. EM programs by region.

All five NOAA Fisheries Regions—New England/Mid-Atlantic, Southeast, West Coast, Alaska, and the Pacific Islands, as well as the HMS program—published ET Implementation Plans (ET Plans) covering five years beginning in 2015. In 2019, NOAA Fisheries published an updated ET Policy Directive that called for new content for the ET Plans and a more standardized way of collecting and tracking ET program development and implementation.<sup>9</sup> In August 2021, NOAA Fisheries published the new ET Plans, which cover 2021-2025. NOAA Fisheries posted the current ET Plans, as well as previous ET Plans, online.<sup>10</sup>

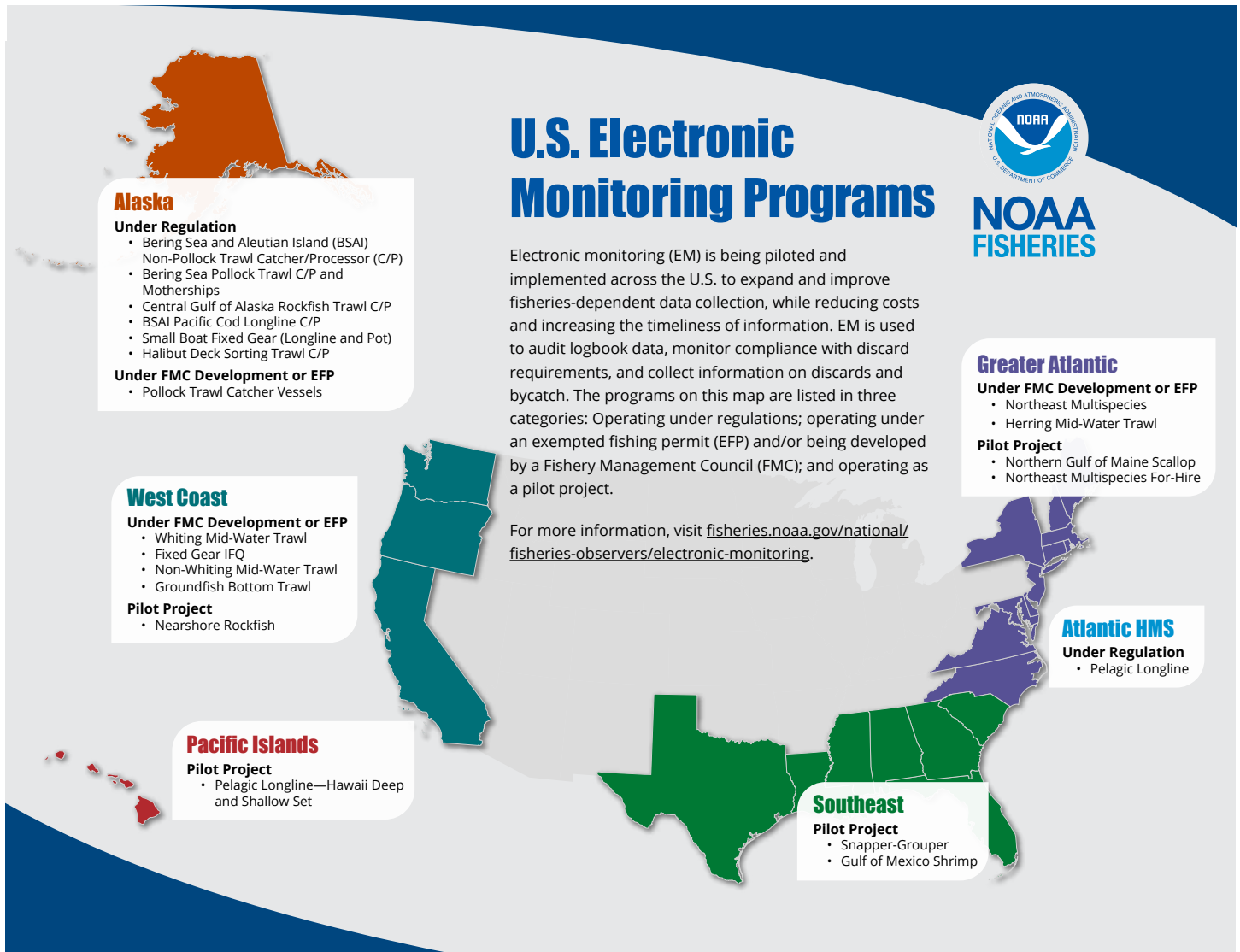
NOAA Fisheries supported eight internal EM projects in Alaska, the Southeast, the Pacific Islands, and the Northeast for a total of approximately \$2.3 million in FY 2021. These projects focused on, among other things, integrating reliable machine learning algorithms into Alaska longline EM video review, using EM to quantify mortality and serious injury of marine mammals and post-interaction mortality of sea turtles in Pacific

<sup>7</sup> <https://www.fisheries.noaa.gov/leadership-message/noaa-fisheries-updates-policy-issuance-waivers-under-emergency-rule>

<sup>8</sup> The 2018 report is available at <https://www.fisheries.noaa.gov/resource/document/observer-safety-program-review-report>

<sup>9</sup> <https://media.fisheries.noaa.gov/dam-migration/04-115.pdf>

<sup>10</sup> <https://www.fisheries.noaa.gov/national/fisheries-observers/electronic-technologies-implementation-plans>



**Figure 5: U.S. EM programs by region as of 2021.**

Islands longline fisheries, applying machine learning and EM in Gulf of Mexico commercial fisheries, and administering EM and portside sampling in the Atlantic herring fishery.

In addition, NOAA Fisheries supported seven internal ER projects in the Southeast, Northwest, Northeast, and Pacific Islands for a total of approximately \$2.0 million in FY 2021. These projects focused on, among other things, developing Southeast observer program tablet applications for electronic data collection, implementing an electronic logbook for the West Coast groundfish fishery, and establishing ER in the Pacific Islands bottomfish fisheries.

NOAA Fisheries also partnered with the National Fish and Wildlife Foundation (NFWF) and other foundations in 2021 to support the EM and Reporting Grant

Program, The program awarded over \$3.7 million for 12 projects focusing on (1) testing and deploying ET in fishery data collection and (2) modernizing data management systems in numerous fisheries including:

- Gulf of Mexico reef fish
- Alaska fixed gear
- Alaska Pollock trawl
- New England groundfish
- Washington Dungeness crab
- Mid-Atlantic recreational
- New England mobile and fixed gear

The NFWF webpage has additional information about these projects.<sup>11</sup>



NOAA Fisheries Center/Region	Project Name	Amount
Alaska Fisheries Science Center	Continuing Implementation of the Pacific Seabird Bycatch Necropsy Program	\$30,000
Southwest Fisheries Science Center	Synthesizing Seabird Data through the Seabird Atlas of the Eastern Pacific Ocean	\$20,000
Southeast Fisheries Science Center	Linking Seabird Protection to Protection of Other Bycatch Taxa in the Western North Atlantic Pelagic Longline Fishery	\$15,515
Alaska Fisheries Science Center	Training Remote Alaska Community Members to Conduct Beached Bird Surveys	\$15,000
Northwest Fisheries Science Center	Developing Capacity to Collect Ecological Data during Pacific Hake Acoustic Trawl Stock Assessment Surveys	\$8,000
Northeast Fisheries Science Center	Estimating Fishery-Seabird Interactions in the Northwest Atlantic	\$3,000
Southwest Fisheries Science Center	Digitizing Seabird Data from the Smithsonian Pacific Ocean Biology Survey Program	\$2,425
Northwest Fisheries Science Center	Establishing Food Web Links between Seabirds and Forage Fish Species in the Northern California Current	\$1,500
Northwest Fisheries Science Center	Quantifying Seabird Diet to Inform Ecosystem-Based Fisheries Management in the Salish Sea	\$1,163
<b>Total</b>		<b>\$96,603</b>

Table 2: National Seabird Program internal award recipients, FY 2021

## 3.2 National Seabird Program

The NOP continued to support NOAA Fisheries' National Seabird Program (NSP) in FY 2021 through limited financial support for observer-program-related seabird projects (Table 3). Staff members from the NOP also worked with the NSP to begin to implement the NSP five-year strategic plan (Ballance et al. 2019).

## 3.3 Office of Protected Resources

The OPR undertakes a variety of activities to support observer programs and fishery-dependent monitoring

Fishery	Years Eligible to Carry Observers
<b>Trawl Fisheries</b>	
Southeastern U.S. Atlantic, Gulf of Mexico shrimp trawl	2020-2025
Gulf of Mexico mixed species fish trawl	2020-2025
<b>Gillnet Fisheries</b>	
Mid-Atlantic gillnet	2018-2022
Chesapeake Bay inshore gillnet	2020-2025
Long Island inshore gillnet	2020-2025
<b>Pound Net/Weir/Seine Fisheries</b>	
Gulf of Mexico menhaden purse seine	2018-2022

Table 3: Annual Determination fisheries listed in the 2022 AD.

efforts. In September 2021, OPR published the 2022 Annual Determination (AD) (86 FR 52650) to implement sea turtle observer requirements under the ESA. Through the AD, NOAA Fisheries identifies U.S. fisheries operating in the Atlantic Ocean, Gulf of Mexico, and Pacific Ocean that will be required to take observers upon NOAA Fisheries' request. The purpose of observing identified fisheries is to learn more about sea turtle bycatch in a given fishery, evaluate measures to prevent or reduce sea turtle bycatch, and implement the prohibition against sea turtle takes. Fisheries identified on the 2018 and 2020 ADs (see Table 4) remain on the AD for a five-year period and are required to carry observers upon NOAA Fisheries' request until December 31, 2022, and September 29, 2025 respectively.

In January 2021, OPR published the final LOF for 2021 (86 FR 3028), as required by the MMPA. NOAA Fisheries must classify each commercial fishery on the LOF into one of three categories under the MMPA based on the level of mortality and serious injury that

<sup>11</sup> <https://www.nfwf.org/media-center/press-releases/nfwf-announces-37-million-grants-electronic-monitoring-and-reporting-program>

occurs incidental to each fishery, with Category I representing frequent mortality or serious injury, Category II occasional, and Category III as none or remote likelihood. The January 2021 notice reclassified the Alaska Bering Sea, Aleutian Islands Pacific cod pot fishery from a Category III to a Category II fishery. The notice also reclassified the Alaska Bering Sea, Aleutian Islands Pacific cod longline fishery from a Category II to a Category III fishery. The 2021 LOF also made a number of changes to the species/stocks injured/killed and updated the number of participants in many fisheries.

In August 2021, OPR published the proposed LOF for 2022 (86 FR 43491), which proposed to reclassify the Category II Bering Sea, Aleutian Islands rockfish trawl fishery to a Category III fishery due to no observed mortalities of or serious injuries to marine mammals. The proposed 2022 LOF also proposed to add four new fisheries:

1. Washington/Oregon/California other groundfish pot fishery as a Category III fishery.
2. California other crab/shellfish pot fishery as a Category III fishery.
3. California/Oregon/Washington non-albacore HMS hook and line fishery as a Category III fishery.
4. Massachusetts mixed species trap/pot fishery as a Category II fishery.

The proposed 2022 LOF also proposed to rename and combine some LOF fisheries, as well as update the estimated number of vessels/persons in various fisheries, as well as lists of species and/or stocks incidentally killed or injured in various oceans and seas.

OPR supported activities of several take reduction teams (TRTs) in FY 2021, including obtaining input on observer coverage to better inform take reduction efforts. NOAA Fisheries published a proposed rule in December 2020 to amend the regulations implementing the Atlantic Pelagic Longline Take Reduction Plan to reduce mortalities and serious injuries of short-finned pilot whales incidental to the Atlantic pelagic longline fishery (85 FR 81168). In addition, in response to recommendations by the Atlantic Large Whale TRT, NOAA Fisheries published a final rule in September 2021 to amend the Atlantic Large Whale Take Reduction Plan to reduce the incidental mortality and serious injury of whales in the northeast commercial lobster and crab trap/pot fisheries (86 FR 51970).

### 3.4 Office of Law Enforcement

The NOAA Fisheries Office of Law Enforcement continues to prioritize investigation of observer harassment allegations. In May 2021, NOAA Fisheries published an online story that described NOAA's commitment to a zero tolerance policy for observer harassment or assault.<sup>12</sup>

<sup>12</sup> <https://www.fisheries.noaa.gov/leadership-message/recent-conviction-confirms-our-commitment-observer-safety>

## 4. Alaska Program Activities

The North Pacific Groundfish and Halibut Observer Program (Observer Program) deployed 378 observers for a total of 32,672 full coverage sea days and 3,097 partial coverage sea days across 5,208 fishing trips. The following sections provide an overview of programmatic activities for the Observer Program in 2021. For more details on the Observer Program's 2021 activities, see the Observer Program's 2021 Annual Report (AFSC and ARO 2022).

The Observer Program has two components: full coverage and partial coverage. For the full-coverage component, which covers the majority of Alaska's groundfish harvest, one or two observers monitor every fishing trip. For the partial-coverage component, the Annual Deployment Plan (ADP) describes the scientific deployment design for observers and the portion of trips that are to be sampled by observers and EM. In December 2020, NOAA Fisheries released the final ADP (NMFS 2020). The 2021 Annual Report followed the 2021 ADP and provided a scientific evaluation of observer deployment and EM for that year (AFSC and ARO 2022).

More specifically, the Fisheries Monitoring and Analysis (FMA) Division of the Alaska Fisheries Science Center (AFSC) administers four monitoring programs in the federal groundfish and halibut fisheries off Alaska:

- Full-Coverage North Pacific Observer Program
- Partial-Coverage North Pacific Observer Program
- Fixed-Gear EM Observer Program
- EM Innovation Project (EMIP)

### 4.1 Regulatory Updates

In 2021, the Observer Program implemented a July 2020 final rule (85 FR 41424) to adjust the Observer Program fee from 1.25 percent to 1.65 percent of the ex-vessel value of landings subject to the fee. This rule set the stage for increased funds to support observer and EM systems development in the partial-coverage component of the Observer Program and increased the likelihood of meeting monitoring objectives.

During 2021, the FMA also collaborated with the fishing industry and the Alaska Regional Office (ARO) on an Exempted Fishing Permit (EFP) to test EM applications on the pollock pelagic trawl fishery. Specifically, NOAA Fisheries approved the EFP to help determine whether utilizing camera systems in lieu of at-sea observers proves both cost-effective and operationally effective for monitoring of catch and discards per regulatory and agency requirements. To fully test the feasibility of EM aboard pollock trawl catcher vessels for compliance monitoring, the EFP provided exemptions for participating vessels from current regulations related to onboard observer coverage and vessel discard requirements.

### 4.2 Safety and Training

Because of continuing transportation- and health-related challenges due to COVID-19, in 2021 the Observer Program deployed observers according to a port-based trip selection model. Initially in 2021, this method excluded trips from observation if they did not depart and land within a port on the list of observable ports. Observable ports were determined based on their ability to allow observers to meet and maintain applicable health mandates, as well as the volume of fishing trips that would allow for cost-effective stationing of observers at these ports. In August 2021, NOAA Fisheries expanded observer deployment to all ports beginning on September 1, 2021.<sup>13</sup>

The Observer Program supported numerous safety measures for its observers in 2021, including 14-day port-specific quarantine periods, routine testing (including participation in industry surveillance testing), remaining on vessels while in port, and routine COVID-mitigation actions like masking, distancing, and hand washing. The Observer Program conducted observer debriefings via videoconference with no deficiencies noted in data quality. Although the FMA hoped to provide in-water safety training during the annual briefing for experienced observers in 2021, it had to delay the in-water exercises. However, safety briefing staff worked to include much of the other safety refresher information through virtual briefings.

<sup>13</sup> <https://www.fisheries.noaa.gov/bulletin/ib-21-39-notice-alaska-observer-requirements-partial-coverage-fleet-effective>

When considering all types of training and briefing activities, the Observer Program held 76 trainings in 2021, including 9 trainings for new observers. In total, the Observer Program trained 141 new observers in 2021.

### 4.3 Observer Recruitment and Retention

Observer provider companies were able to recruit and retain adequate numbers of fisheries observers to cover the fisheries in 2021. However, FMA issued many extensions to deployments (which required a waiving of regulations), including extensions past the standard 90-day limit to a single deployment, as well as to the standard prohibition of being on the same vessel for more than 90 days in a 12-month period. The Observer Program received anecdotal reports that some observers experienced burnout due to longer deployments as well as isolation experienced due to quarantine periods and vessel restrictions. For example, most Alaskan fishing vessels did not allow any movement off the vessel when in port.

### 4.4 Electronic Monitoring

In 2021, the Observer Program supported the Alaska Fisheries Science Center's EMIP on multiple fronts. The EMIP attempts to develop and integrate computer vision algorithms into cost-effective EM systems in order to provide automated catch accounting data. Due to COVID-19, the EMIP's activities did not include regular deployment and maintenance of research camera systems. Instead, the team focused on using existing data to develop new algorithms based on previous deployments in chute and longline configurations on fishing vessels. The team also collaborated with University of Washington scientists to (1) develop computer vision models and algorithms to count, identify, and measure fish coming over the rail during multi-species longline fisheries, and (2) develop an automated monitoring system for salmon bycatch accounting in catcher vessel offloads to processing plants.



Credit: Northeast Fisheries Science Center

**An observer collects a biological sample.**

## 5. West Coast Program Activities

On October 1, 2014 (beginning of FY2015) the Southwest Regional Office and Northwest Regional Office merged to become the West Coast Regional Office. However, for the purposes of this report, program reporting is still organized into the two subregions in Sections 5.1 and 5.2.

### 5.1 Northwest

The NWFSC Fisheries Observation Science Program (FOS) is comprised of the At-Sea Hake Observer Program (A-SHOP) and the West Coast Groundfish Observer Program (WCGOP). The A-SHOP observes the hake fleets that process catch at sea, while the WCGOP observes a number of fleets that deliver catch shoreside for processing, including sectors that target and incidentally impact groundfish. The WCGOP specifically focuses on at-sea discard estimates, and the level of WCGOP observer coverage and sampling can vary greatly between fisheries, years, and spatial strata. For more information on FOS Program coverage rates, see Somers et al. 2022. The WCGOP and A-SHOP deployed 151 observers for a total of 4,805 days in 2021.

#### 5.1.1 Safety and Training

In the beginning of FY 2021, the FOS Program continued various COVID-19 practices, including deploying observers at a 1:1 ratio, meaning an observers or catch monitors were only deployed to the same vessel or plant. Before a new assignment to a different vessel or plant, the observer had to participate in a 14-day isolation period. By the end of FY 2021, however, the FOS Program's field operations returned to pre-pandemic protocols, with additional pre-trip screening and testing protocols where appropriate. The FOS Program conducted two WCGOP trainings, and five A-SHOP trainings, in 2021, training over 60 observers in total. The FOS Program conducted most of its trainings virtually due to NOAA Fisheries facility access and occupancy restrictions.

#### 5.1.2 Electronic Reporting and Monitoring

The FOS Program continued to deploy its Observer Program Technology Enhanced Collection System in

2021. This system replaced the use of paper forms by creating a handheld device to be used for data entry. Such devices can eliminate transcription and calculation errors and support electronic data archiving, as well as faster data processing and catch quota updates for vessels participating in catch share programs.

In 2021, NOAA Fisheries prepared an interim final rule to revise regulations in order to delay implementation of EM Program for the West Coast Groundfish Trawl Rationalization Program until at least January 1, 2024. The interim final rule was published in October 2021 (86 FR 55525). This delay was designed to increase support for the EM program by the Pacific Fishery Management Council (PFMC) and the fishing industry. In the meantime, vessels in the West Coast Trawl Catch Share Program continued to use EM outside of the framework envisioned by the delayed rule.

#### 5.1.3 Research Supported by Observer Data

Observer data collected through the FOS Program supported numerous published peer-reviewed papers and NOAA Fisheries Technical Memoranda published in 2021. Papers covered topics such as elasmobranch bycatch (Jannot et al. 2021a) and estimation of whale entanglements (Jannot et al. 2021b). Published Technical Memoranda in 2021 covered topics including seabird bycatch (Jannot et al. 2021c) and estimated catch and discards of groundfish species (Somers et al. 2021).

### 5.2 Southwest

The West Coast Regional Observer Program (WCROP) deployed 9 observers for a total of 456 sea days in 2021. NOAA Fisheries' Southwest Fisheries Science Center (SWFSC) uses observer data to estimate incidental take of marine mammals in preparation of the annual Stock Assessment Reports and to document the incidental take of sea turtles, seabirds, and target and non-target fish species. The WCROP posts catch summaries informed by observer data online.<sup>14</sup>

<sup>14</sup> [http://www.westcoast.fisheries.noaa.gov/fisheries/wc\\_observer\\_programs/sw\\_observer\\_program\\_info/data\\_summ\\_report\\_sw\\_observer\\_fish.html](http://www.westcoast.fisheries.noaa.gov/fisheries/wc_observer_programs/sw_observer_program_info/data_summ_report_sw_observer_fish.html)

## 5.2.1 Drift Gillnet

NOAA Fisheries' February 7, 2020, final rule (85 FR 7246) to implement a hard cap management program for the U.S. West Coast drift gillnet (DGN) fishery for swordfish and thresher shark prompted another round of litigation in this contentious fishery, this time by California DGN fishermen who challenged the statutory and constitutional validity of the hard caps final rule. On February 18, 2021, a court found the hard caps final rule conflicted with MSA National Standard 7 and vacated the rule without remand. In the meantime, the state of California continued to implement a transition program for the DGN fishery by providing funding to reimburse fishermen who surrender their Federal DGN permits and DGN gear. On the Congressional front, on January 1, 2021, President Donald J. Trump vetoed the Driftnet Modernization and Bycatch Reduction Act (S.906), which aimed to prohibit large-mesh DGN fishing nationwide and implement a federal program to fund transition of DGN fishermen to alternate gear types. The 116th Congress adjourned on January 3, 2021, without overriding the President's veto.

As of the end of FY 2021, the DGN comprised approximately 12 vessels, and the WCROP had provided observer coverage for 58 sea days for this fleet. The WCROP also supported a research project that used a suite of trip- and set-level fishing characteristics from an integrated set of vessel monitoring system, observer, and logbook data with depth, sea surface temperature, and landings information to facilitate quantitative comparisons between observed and unobserved behaviors by vessels in this fishery (Suter et al. 2022).

## 5.2.2 Exempted Fishing Permits and Longline

In August 2021, NOAA Fisheries announced the availability of a draft environmental impact statement

(DEIS) that included an analysis of the impacts of a proposed action to authorize fishing with deep-set buoy gear (DSBG) in federal waters of the U.S. West Coast.<sup>15</sup> This DEIS supported the development of Amendment 6 to the Fishery Management Plan for U.S. West Coast Fisheries for Highly Migratory Species (HMS FMP), which would (1) authorize DSBG as a legal gear type for targeting swordfish and catching other highly migratory species off the U.S. West Coast, and (2) establish a limited entry permitting regime for use of DSBG. The WCROP provided observer coverage for 188 sea days for this EFP fishery in FY 2021. The PFMC-approved EFPs for shortline and longline fishing saw little fishing effort in 2021.

Additionally in 2021, 3 deep-set longline vessels operated under the HMS FMP. The WCROP provided observer coverage for 210 sea days for this fishery in FY 2021.

## 5.2.3 Electronic Reporting and Training

In 2021, the WCROP continued to implement a tablet-based data collection application for the DSBG fishery. The application, called the Onboard Record Collection Application, was developed with the Pacific States Marine Fisheries Commission (PSMFC). The WCROP also continued a partnership in 2021 with several NOAA Fisheries Regional Offices and Science Centers, as well as the States of California and Oregon, to effectively coordinate and integrate data for highly migratory species off the West Coast and Pacific Islands.

The WCROP transitioned from COVID-19 safety protocols back to mostly normal pre-COVID-19 operations. Due to the departure of a few observers from the WCROP, the program conducted one training class for new observers, as well as one refresher training class, which collectively trained a total of eight observers.

<sup>15</sup> [https://media.fisheries.noaa.gov/2021-08/DraftEIS\\_Authorization-DeepSetBuoyGear.pdf](https://media.fisheries.noaa.gov/2021-08/DraftEIS_Authorization-DeepSetBuoyGear.pdf)

## 6. Pacific Islands Program Activities

The Pacific Islands Regional Observer Program (PIROP) supports observer coverage in three fisheries with the following observer coverage targets: 20 percent observer coverage (partial coverage) in the Hawaii pelagic longline deep-set tuna and American Samoa pelagic longline fisheries, and 100 percent coverage in the Hawaii pelagic longline shallow-set swordfish fishery. These high coverage targets require substantial resources to support observers who may stay at sea for extended periods of time and travel long distances. Due to continuing logistical challenges due to COVID-19, the PIROP did not quite meet its target for the Hawaii pelagic longline deep-set tuna fleet in 2021, although it improved upon its actual coverage for 2020. In addition, due to COVID-19 travel restrictions to American Samoa, the American Samoa pelagic longline fishery fell short of its coverage target for 2021, although it doubled its coverage rate compared to 2020. In 2021, the PIROP deployed 73 observers for a total of 7,892 sea days, compared to 5,159 sea days in 2020.

### 6.1 Electronic Reporting

In 2021, the PIROP continued to partner with the WCROP, the PSMFC, and the Pacific Fisheries Information Network to refine the Onboard Record Collection Application (ORCA). The PIROP began to test the ORCA software in 2021 via a virtual machine desktop application. In addition, the PIROP worked to develop ORCA-related requirements for a database at the NOAA Fisheries Pacific Islands Regional Office.

Because the WCROP and PIROP overlap in jurisdiction and responsibility to monitor and report on highly

migratory species fisheries in the Pacific Ocean, this project combined lessons learned from previous projects from the West Coast and Pacific Islands Regions to develop and implement ER into a single cross-regional ER system that will benefit both programs. When fully implemented, the ORCA will be used by the WCROP and PIROP fishery observers to collect and enter data and aid in the consolidation of redundant data management efforts.

### 6.2 Training and Debriefing

The PIROP conducted two training classes (including a safety refresher training class) in 2021, training a total of 14 observers. For the safety refresher class, the PIROP conducted hands-on sections of the class in person, with some lectures conducted virtually. For the three-week training classes, 13 of the 15 days were taught virtually, with the hands-on portion of the training condensed to 2 days. These hands-on training days included required water safety training, which was conducted at a community pool. The PIROP faced some challenges regarding observer recruitment related to COVID-19 safety procedures including required quarantine periods and the need to deploy observers multiple times to the same vessel.

In addition, PIROP staff members faced some challenges in 2021 because COVID-19 office restrictions required debriefers to spend time entering observer data. However, the PIROP worked to install computers at an alternate site so that observers could enter some of their own data in order to lessen the debriefer workload.

## 7. Greater Atlantic Program Activities

The Fisheries Monitoring Operations (FMO) Branch at NOAA Fisheries' Northeast Fisheries Science Center (NEFSC) oversees observer programs in the Greater Atlantic Region. The FMO Branch coordinates three different observer programs. The Northeast Fisheries Observer Program (NEFOP) is the longest-standing program and provided coverage for 2,582 observer days in 2021. The Industry-Funded Scallop (IFS) Observer Program provided coverage for 1,975 observer days

in 2021. The At-Sea Monitoring (ASM) Program for groundfish provides supplemental monitoring for groundfish sector catch accounting; its deployments totaled 3,060 observer days in 2021. In addition, the FMO Branch provided 123 sea days of observer coverage focusing on protected species interactions with fisheries. Overall, these programs deployed 88 unique observers in 2021.

The FMO Branch observes more than 60 fleets in the Greater Atlantic (Maine through North Carolina), including the New England multispecies groundfish, monkfish, dogfish, and skates (trawl, gillnet, hook, and pot gear); Atlantic sea scallop (dredge and trawl); lobster pot, ocean quahog, and surf clam dredge; mid-water paired and single trawl (herring, mackerel, and squid); and purse seine, shrimp trawl, and conch and crab pot fisheries. Greater Atlantic fisheries experience less than 100 percent observer coverage, and individual fishing vessels may have coverage ranging from 5 percent to 50 percent in a given year. The FMO Branch tries to meet an assortment of observer coverage targets each year. The FMO Branch meets or exceeds some targets, but other targets can be challenging due to several factors including fishing vessel non-compliance, complex coverage exemptions, and observer retention challenges.

## 7.1 Regulatory Updates

Throughout 2021, the New England Fishery Management Council (NEFMC), in consultation with the Mid-Atlantic Fishery Management Council and NOAA Fisheries, continued to develop a proposed rule to implement Northeast Multispecies Fishery Management Plan (FMP) Draft Amendment 23. NOAA Fisheries has created a website that features additional information regarding Amendment 23.<sup>16</sup> In response to the development of this proposed rule, which would implement a high coverage target for groundfish trips, the FMO Branch began to adapt its procedures to prepare for a large influx of ASM data after implementation of Amendment 23.

In addition, during 2021, the NEFMC, in consultation with NOAA Fisheries, developed a proposed rule to implement Amendment 21 to the Atlantic Sea Scallop FMP. The proposed rule was published in early October 2021 (86 FR 54903). Amendment 21 would, among other things, expand the IFS Observer Program to the Northern Gulf of Maine (NGOM) Management Area, which would include expansion of the observer call-in requirement to facilitate this observer coverage in the NGOM management area. NOAA Fisheries has created a

website that features additional information regarding Amendment 21.<sup>17</sup>

A February 2020 Final Rule implemented the NEFMC's Industry-Funded Monitoring (IFM) Omnibus Amendment (85 FR 7414). This amendment, among other things, created a process to standardize future IFM programs in New England fishery management plans and established IFM in the Atlantic herring fishery. However, NOAA Fisheries delayed implementation of IFM in the Atlantic herring fishery until July 2021 due to COVID-related health mandates and travel restrictions. Implementation of IFM in the Atlantic herring fishery is further described in Section 7.3.

## 7.2 Training, Data Quality, and Safety

The Training and Data Quality (TDQ) Branch at the NEFSC trains, certifies, and retains high-performing observers and ensures that all collected data meet the high standards necessary for effective management of Northeast and Mid-Atlantic fishery resources. The TDQ Branch began to transition back to on-site instruction for its training programs in 2021, with some training modules still being offered remotely. Nine safety training classes were completed in 2021. These classes were limited to no more than nine trainees at a time due to COVID-19 facility protocols. Overall, the TDQ Branch trained 71 observers and 2 staff members. The TDQ Branch also held its first-ever EM reviewer training course in May 2021, and it implemented an electronic pre-trip vessel safety checklist in July 2021.

In addition, the FMO and TDQ Branches decided to outsource its ASM training. This ASM training would include tablet training to transition ASM data collection to a paperless process.

The FMO and TDQ Branches implemented an electronic pre-trip vessel safety checklist in July 2021. In addition, the FMO Branch continued to adapt its deployment procedures as COVID-19 trends changed in the Greater Atlantic region, waiving vessels with vaccinated crew members displaying signs of COVID-19 infection from coverage if (1) there are no vaccinated observers available to be deployed on the vessel or (2) if a

<sup>16</sup> <https://www.fisheries.noaa.gov/new-england-mid-atlantic/commercial-fishing/northeast-groundfish-monitoring-program>

<sup>17</sup> <https://www.fisheries.noaa.gov/action/amendment-21-atlantic-sea-scallop-fishery-management-plan>



vaccinated observer is not comfortable deploying for a trip on such vessels.

### 7.3 Electronic Monitoring

On July 1, 2021, NOAA Fisheries issued an EFP authorizing participating vessels to use a combination of EM and portside sampling instead of ASM in order to satisfy their IFM coverage requirements during the 2021 IFM fishing year (July 1, 2021-March 31, 2022). The EFP required participating vessels to run their EM systems on 100 percent of declared Atlantic herring trips. Instead of ASM, participating vessels were required to secure portside sampling services from a NOAA Fisheries-approved service provider on trips that are selected for IFM coverage. The EFP did not exempt participating vessels from standardized bycatch reporting methodology (SBRM)<sup>18</sup> coverage requirements, so participants must carry a NEFOP observer in addition to running their EM systems on herring trips that are selected for SBRM coverage.

In 2021, the FMO Branch implemented a management change that allowed groundfish sectors to use an audit-model EM program as a replacement for ASM. Twenty-two vessels selected EM as a monitoring tool in 2021, and the FMO Branch approved 6 vendors to provide EM and ASM services for the groundfish sectors.

Groundfish sectors also were able to operate under a maximized retention EM model via an EFP in 2021. In this model, vessels retained and landed all undersized allocated groundfish, and the FMO Branch used EM as a discard compliance tool to ensure vessels were retaining catch as required. This approach was better suited for high-volume catch vessels that may not be able to keep up with the catch handling requirements

of the audit approach. Six bottom otter trawl vessels participated in the maximized retention EFP in 2021, and three vendors supported those vessels.

### 7.4 Retention

Retention challenges that began in 2020 with the advent of COVID-19 continued into 2021. Observer providers faced ongoing recruitment issues due to the unpredictability of the NOAA Fisheries training facility being open to training classes, as well as the length of time required to develop new hybrid and remote training approaches. Provider companies also have been challenged due to the limited number of seats available for each training class.

Observer attrition continued to be high in 2021. Of the observers who left the program since the beginning of the pandemic, the following numbers provided the following primary reasons for departing in their exit interviews:

- 18 cited COVID-19 as their primary reason for leaving.
- 24 left for career advancement in the fisheries science.
- 20 did not like the irregular schedule.
- 12 cited insufficient work.

The TDQ Branch also faced challenges due to debriefer attrition in 2021. Although the TDQ Branch was able to restore its debriefer workforce by the end of 2021, it continued to be concerned over debriefing capacity in light of new regulations that could be implemented in 2022 (see Section 7.1).

## 8. Southeast Program Activities

The Southeast Fisheries Observer Program (Observer Program) observed 3,688 sea days in 2021, as compared to 1,671 sea days in 2020, with a total of 80 observers. The program observed six fisheries in 2021:

- Shrimp trawl, with observer program based in Galveston, Texas
- Pelagic longline, with observer program based in Miami, Florida
- Gulf of Mexico reef fish, with observer program based in Galveston
- Shark bottom longline, with observer program based in Panama City, Florida

<sup>18</sup> <https://www.fisheries.noaa.gov/feature-story/standardized-bycatch-reporting-methodology-final-rule>

- Southeast gillnet, with observer program based in Panama City
- South Atlantic reef fish, with observer program based in Panama City

The Observer Program hired a new manager in 2021 to provide oversight for all of the above-listed observer programs. All programs had resumed coverage to pre-COVID-19 levels by the end of 2021. All three observer program locations (Galveston, Panama City, Miami) provided training classes for new observers in 2021. These training classes utilized a hybrid format, with two weeks of online training and one week of in-person training.

## 8.1 Southeast Shrimp Trawl Observer Program

The Shrimp Observer Program maintained an approximately 2 percent observer coverage goal for the Gulf of Mexico federal penaeid and rock shrimp otter trawl fisheries, after experiencing lower coverage levels in 2020 due to COVID-19. Observer Program data were the basis of a report on estimated bycatch mortality of marine mammals in the Gulf of Mexico shrimp otter trawl fishery during 2015 to 2019 (Soldevilla et al. 2021).

In 2021, the Observer Program participated in the continued development of a project funded by the Deepwater Horizon (DWH) oil spill settlement to develop, evaluate, and certify new bycatch reduction devices (BRDs) and BRD combinations for use in U.S. and Mexican Gulf of Mexico shrimp trawl fisheries. This project also would distribute currently certified BRDs that are underutilized in Gulf of Mexico fisheries under an incentive program. In addition, this project would develop and implement turtle excluder devices (TEDs) for Mexican Gulf of Mexico shrimp trawl fisheries. The Observer Program would place observers on vessels to evaluate BRD and TED performance during commercial trawling operations.

## 8.2 Pelagic Longline Observer Program

In 2021, the Miami-based Pelagic Longline Observer Program (POP) exceeded its 8 percent observer coverage target by providing over 11 percent coverage through all statistical areas. In August 2021, NOAA Fisheries announced the availability of its HMS

Management Division's final Amendment 12 to the 2006 Consolidated Atlantic HMS FMP. Amendment 12 was developed to, among other things, respond to a 2017 NOAA Fisheries rulemaking (82 FR 6317) on standardized bycatch reporting methodology (SBRM). Amendment 12 identified its SBRM for the Pelagic Longline Fishery to be a combination of mandatory logbook reporting, mandatory observer coverage, mandatory EM, and the use of mandatory vessel monitoring systems.

The POP deployed observers for the fifth year of a DWH settlement-funded alternative gear experimental fishing project designed to test alternative gear in the Gulf of Mexico, where vessels used a combination of green stick, buoy, and deep-drop rod and reel gear as opposed to pelagic longline gear. In addition, the POP completed a two-week training class in March 2021 for nine observers in support of this project.

## 8.3 Reef Fish Programs

In 2021, the Observer Program collaborated with the Florida-based Mote Marine Laboratory to collect data aboard reef fish vessels equipped with EM to allow for comparisons between observer and EM data quality. The Observer Program also continued to provide observer coverage for a limited number of sea days for commercial vessels targeting reef fish species in the U.S. South Atlantic vertical line fishery.

## 8.4 Shark Bottom Longline Observer Program

The Shark Bottom Longline Observer Program based out of Panama City has conducted observations of the shark-directed bottom longline fishery in the Atlantic Ocean and Gulf of Mexico since 2005. In 2007, NOAA Fisheries created a shark research fishery to continue collection of life history data and catch data from sandbar sharks for future stock assessments. A limited number of commercial shark vessels are selected annually and may land sandbar sharks, which are otherwise prohibited. Observer coverage is mandatory within this research fishery (compared to coverage level of 4 percent to 6 percent for the regular shark bottom longline fishery). In 2021, the Observer Program continued its process to develop and implement a shark longline observer tablet application, which had been delayed in 2020 due to COVID-19 restrictions. This application will utilize a variety of functions including

a digital notepad, photo renaming and storage, barcode scanning, and encrypted data syncing.

## 8.5 Menhaden Purse Seine Fishery

The Observer Program contributed to a DWH settlement-funded project to develop an observer program for the Gulf of Mexico menhaden purse seine fishery. This project built upon the past efforts by the

Observer Program to appropriately observe for sea turtles in this fishery. The project team, composed of menhaden industry representatives, an observer provider company, and NOAA Fisheries, successfully implemented an initial proof of concept on one volunteer vessel during the 2021 fishing season. The team planned to expand this project to eight vessels in 2022.

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# Appendix A: NOAA Fisheries Observer Programs Funded in FY 2021 by Region

## Alaska (Page 1 of 3)

Fisheries Observed	Fleet Size	Authority to Place Observers	Season of Operation	Funding Source	Program Duration	Target Coverage	Actual Coverage	Target Sea Days	Actual Sea Days*	Number of Observers
North Pacific Groundfish Observer Program, Alaska Fisheries Science Center, 7600 Sand Point Way NE, Seattle, WA 98115										
Program Manager: Jennifer Ferdinand, <a href="mailto:jennifer.ferdinand@noaa.gov">jennifer.ferdinand@noaa.gov</a> , website: <a href="https://fisheries.noaa.gov/alaska/fisheries-observers/north-pacific-observer-program">fisheries.noaa.gov/alaska/fisheries-observers/north-pacific-observer-program</a>										
Bering Sea and Aleutian Islands (BSAI) Groundfish Trawl Catcher Vessel-Voluntary Full Coverage Category; BSAI and Gulf of Alaska (GOA) Catcher Processors (C/P) (See Note); American Fishery Act (AFA)-Pollock Motherships (MS) and C/P; Community Development Quota (CDQ)-Pollock MS and C/P; CDQ-Groundfish Catcher Vessels (See Note); Central GOA Rockfish Catcher Vessels; Bering Sea Pollock Inshore Processors	1,418 vessels (164 in 100% coverage); 11 shoreside plants	MSFCMA (50 CFR 679.50)	Year-round	Observers & Training-North Pacific Marine Resource Observers/ North Pacific Observer Program <sup>1</sup>  National Observer Program <sup>1</sup>  Reducing Bycatch  Other Congressional Funding   Industry Funding	1973- present (Observer program); 1998-present (AFA); 2007-present (Amendment 80, CDQ); 2013-present (RP)	100%	100%	Defined by regulation	32,672 (1,849 sampled trips)	378

## Alaska (Page 2 of 3)

Fisheries Observed	Fleet Size	Authority to Place Observers	Season of Operation	Funding Source	Program Duration	Target Coverage	Actual Coverage	Target Sea Days	Actual Sea Days*	Number of Observers
BSAI and GOA Groundfish and Pacific Halibut Fishery Partial Coverage Category: 3 Gear Based Strata; EM Stratum; Trawl EM EFP; and EM Innovation Stratum	1,418 vessels (164 in 100% coverage); 11 shoreside plants	MSFCMA (50 CFR 679.50)	Year-round	Observers & Training-North Pacific Marine Resource Observers/ North Pacific Observer Program <sup>1</sup> National Observer Program <sup>1</sup> Reducing Bycatch Other Congressional Funding Industry Funding	2013-present	Trawl Gear Stratum: 16%-21%	Trawl Gear Stratum: Jan. 1-Aug. 31: 19.9%, Sept. 1-Dec. 31: 28.2%	Defined by available funds and contracts with observer providers in Annual Deployment Plan	3,097 (3,359 sampled trips)	378
						Hook and Line Stratum: 15%-18%	Hook and Line Stratum: Jan. 1-Aug. 31: 12.4%, Sept. 1-Dec. 31: 17.4%			
						Pot Gear Stratum: 15%-18%;	Pot Gear Stratum: Jan. 1-Aug. 31: 16.5%, Sept. 1-Dec. 31: 20.5%			
						Shoreside Sampling for EM-American Fisheries Act (AFA) Trawl EFP: 100%	Shoreside Sampling for EM-AFA EFP: 100%			
						Shoreside Sampling for EM-Partial Coverage Trawl EFP- 33.3%	Shoreside Sampling for EM-Partial Coverage Trawl EFP: 32.9%			
						EM Hook and Line Gear: 30%	EM Hook and Line Gear: 27.4%			
						EM Pot Gear: 30%	EM Pot Gear: 27.4%			
						EM AFA Trawl EFP: 100%	EM AFA Trawl EFP: 100%			
						EM Partial Coverage Trawl EFP: 100%	EM Partial Coverage Trawl EFP: 100%			

## Alaska (Page 3 of 3)

Fisheries Observed	Fleet Size	Authority to Place Observers	Season of Operation	Funding Source	Program Duration	Target Coverage	Actual Coverage	Target Sea Days	Actual Sea Days*	Number of Observers
Alaska Marine Mammal Observer Program, Alaska Fisheries Science Center, 7600 Sand Point Way NE, Seattle, WA 98115										
Website: <a href="https://fisheries.noaa.gov/alaska/fisheries-observers/alaska-marine-mammal-observer-program">fisheries.noaa.gov/alaska/fisheries-observers/alaska-marine-mammal-observer-program</a>										
Southeast Alaska DGN fishery	480 permits	MMPA (50 CFR 229)	May-Oct	Marine Mammals	0	0	0	0	0	0
<b>TOTAL ALASKA REGION OBSERVER PROGRAM FUNDING (CONGRESSIONAL): \$8,951,381</b>										
<b>TOTAL ALASKA REGION INDUSTRY EXPENDITURES: \$16,029,415</b>										
<b>TOTAL ALASKA REGION OBSERVER PROGRAM FUNDING (ALL SOURCES): \$24,980,796</b>										
*The Alaska Region Observer Program does not deploy observers by sea day, but rather by trip. Number of sampled trips are included in parenthesis after the rough sea day equivalent.										
<sup>1</sup> Portion of budget line used to support management activities.										



## West Coast

Fisheries Observed	Fleet Size	Authority to Place Observers	Season of Operation	Funding Source	Program Duration	Target Coverage	Actual Coverage	Target Sea Days	Actual Sea Days	Number of Observers
West Coast Region Observer Program, West Coast Regional Office, 501 West Ocean Blvd, Long Beach, CA 90802-4213										
Program Manager: Charles Villafana, <a href="mailto:charles.villafana@noaa.gov">charles.villafana@noaa.gov</a> , website: <a href="https://westcoast.fisheries.noaa.gov/fisheries/wc_observer_programs/sw_observer_program_info/observer_program_sw_fish.html">westcoast.fisheries.noaa.gov/fisheries/wc_observer_programs/sw_observer_program_info/observer_program_sw_fish.html</a>										
California Large-Mesh DGN Fishery	7 vessels	MMPA (50 CFR 229), MSFCMA (50 CFR 660)	August–January, May	National Observer Program	1990-present	20%	22.8%	55	58	9
Deep Set Buoy Gear EFP	30 vessels	MSFCMA (50 CFR 660)	June–December	National Observer Program	2017-present	10-30%	24.7%	200	188	
California Deep-Set Pelagic Longline Fishery	3 vessels	MSFCMA (50 CFR 660)	January–December	Reducing Bycatch National Observer Program	2001-present	20%	26.7%	160	210	
West Coast Groundfish Observer Program (WCGOP), Northwest Fisheries Science Center, 2725 Montlake Blvd East, Seattle, WA 98112-2097										
Program Manager: Jon McVeigh, <a href="mailto:jon.mcveigh@noaa.gov">jon.mcveigh@noaa.gov</a> , website: <a href="https://fisheries.noaa.gov/west-coast/fisheries-observers/west-coast-groundfish-trawl-catch-share-observer-program">fisheries.noaa.gov/west-coast/fisheries-observers/west-coast-groundfish-trawl-catch-share-observer-program</a>										
West Coast Trawl Catch Shares (shoreside and at-sea fleets)	140*	MSFCMA (50 CFR 660)  EM administered under an EFP in FY 2020	Shoreside: year-round; at-sea May–December	National Catch Share Program	Jan 2011 –present (Note: Includes historical fisheries Limited Entry Trawl 2001–2010 and At-Sea Hake 1975–2010)	100%	At-Sea: 100%  Shoreside: 100%  EM: 100%  Scientific observer coverage: 18%	Defined by regulation (100% coverage, shoreside 1 observer; at-sea 2 observers or EM) EM: 3,503	Shoreside: 1,994 At-Sea: 1,499  Shoreside offloads monitored: 2,102 (including EM trips)	95
				West Coast Observers						
Catch Share using EM				National Observer Program					# Vessels that used EM: 47	
West Coast Groundfish Non-Catch Share Fisheries (Limited Entry Fixed Gear, Open Access fisheries including state-managed fisheries)	Limited Entry: 190 longline, 33 trap permits; Open Access: approx 1,000	MSFCMA (50 CFR 660)	Year-round	West Coast Observers  Reducing Bycatch	2001–present	10%	Limited Entry: 34%, Open Access: 2-18%	Target coverage rate based on % of landings observed, not sea days	LE: 377 OA: 935	56
<b>TOTAL WEST COAST REGION OBSERVER PROGRAM FUNDING (CONGRESSIONAL): \$8,931,781 (\$1,219,173 of which funds the West Coast Region Observer Program)</b>										
<b>TOTAL WEST COAST REGION INDUSTRY EXPENDITURES: \$2,918,664**</b>										
<b>TOTAL WEST COAST REGION OBSERVER PROGRAM FUNDING (ALL SOURCES): \$11,850,445</b>										
* This number reflects the number of vessel permits in this fishery; however, the number of vessels that actually fished in 2021 is likely smaller.										
** This amount includes industry observer, shoreside catch monitor, and EM costs. Catch monitor costs can be charged to the vessel or the processor and include coverage for EM trips. For more information regarding industry expenditures related to monitoring of West Coast fisheries, see Steiner et al. 2021, as well as the NOAA Fisheries NWFSC's FISHEyE economic data visualization tool ( <a href="https://dataexplorer.northwestscience.fisheries.noaa.gov/fisheye/PerformanceMetrics/">dataexplorer.northwestscience.fisheries.noaa.gov/fisheye/PerformanceMetrics/</a> ).										

## Pacific Islands

Fisheries Observed	Fleet Size	Authority to Place Observers	Season of Operation	Funding Source	Program Duration	Target Coverage	Actual Coverage	Target Sea Days	Actual Sea Days*	Number of Observers
Pacific Islands Region Observer Program, Pacific Islands Regional Office, IRC, 1845 Wasp Blvd., Bldg. 176, Honolulu, HI 96818										
Program Managers: Lesley Hawn, lesley.hawn@noaa.gov, and Richard Kupfer, richard.kupfer@noaa.gov, website: <a href="https://fisheries.noaa.gov/pacific-islands/pacific-islands-region-observer-program">fisheries.noaa.gov/pacific-islands/pacific-islands-region-observer-program</a>										
Hawaii Pelagic Longline Fishery	164 vessels with permits (125 active)	MSFCMA (50 CFR 665), MMPA (50 CFR 229)	Year-round	Observers & Training-Hawaii Longline Observers, Reducing Bycatch, Hawaiian Sea Turtles, Fisheries Management, Fisheries Statistics	1994-present	20% Tuna	17.8%	N/A	6,353	73
						100% swordfish	100%	N/A	1,479	
American Samoa Pelagic Longline fishery	30	MSFCMA (50 CFR 665) in Jan 2005	Year-round	National Observer Program	2005-present	20%	4.7%	N/A	60	
Program support for the Western and Central Pacific Fisheries Commission	N/A	N/A	Year-round	Reducing Bycatch	2008	N/A	N/A	N/A	N/A	N/A
Support for PIRO Observer Data Dissemination/ Access Activities	N/A	N/A	Year-round	National Observer Program	2007- present	N/A	N/A	N/A	N/A	N/A
<b>TOTAL PACIFIC ISLANDS REGION OBSERVER PROGRAM FUNDING (CONGRESSIONAL): \$8,427,815</b>										
<b>TOTAL PACIFIC ISLANDS REGION INDUSTRY EXPENDITURES: \$0</b>										
<b>TOTAL PACIFIC ISLANDS REGION OBSERVER PROGRAM FUNDING (ALL SOURCES): \$8,427,815</b>										

## Greater Atlantic

Fisheries Observed	Fleet Size	Authority to Place Observers	Season of Operation	Funding Source	Program Duration	Target Coverage	Actual Coverage	Target Sea Days	Actual Sea Days	Number of Observers
Northeast Fisheries Observer Program (NEFOP), Northeast Fisheries Science Center, 166 Water Street, Woods Hole, MA 02543-1097										
Program Manager: Katherine McArdle, <a href="mailto:katherine.mcardle@noaa.gov">katherine.mcardle@noaa.gov</a> , website: <a href="https://nefsc.noaa.gov/femad/fsb/">nefsc.noaa.gov/femad/fsb/</a>										
New England (NE) Multispecies Groundfish Sectors At-Sea Monitoring (ASM)	123 NE Groundfish ASM vessels, 162 NE Groundfish SBRM vessels	MSFCMA (50 CFR 648); MMPA (50 CFR 229)	Year-round	National Observer Program	2010–present	40% NEFOP and ASM combined coverage May 1- April 30 (as set by the Regional Administrator).	32%	Target for NEFOP groundfish days are set by SBRM (April through March), based on coefficient of variation and adjusted for funding availability and/or resource set-aside	3,060 (ASM)	67 (ASM)
New England Multispecies Groundfish Sectors Standardized Bycatch Reporting Methodology (SBRM) prioritized fleets NEFOP Coverage				Northeast Fisheries Observer Program (NEFOP)						
SBRM prioritized fleets (non-groundfish)	2,304 vessels	MMPA (50 CFR 229); MSFCMA (50 CFR 648)	Year-round	Atlantic Coast Observers	2001–present	30% coefficient of variation on bycatch species (SBRM)	N/A	3,284	2,666	37
				Reducing Bycatch	2010–present		N/A			
Protected Species NEFOP Coverage	150 vessels	MMPA (50 CFR 229)	Year-round	Marine Mammal Observers	1994–present	30% coefficient of variation on critical marine mammal stocks	N/A	175	123	37
Atlantic Sea Scallop Fishery (Dredge and Trawl; General Category and Access Area Permits; Open and Access Areas)	500 vessels	MSFCMA (50 CFR 648)	Year-round	Industry Funding	1999–present	5.8%	3.7%	N/A	1,975	40
				National Observer Program	1999–present					
<b>TOTAL GREATER ATLANTIC REGION OBSERVER PROGRAM FUNDING (CONGRESSIONAL): \$20,663,685</b>										
<b>TOTAL GREATER ATLANTIC REGION INDUSTRY EXPENDITURES: \$3,484,682</b>										
<b>TOTAL GREATER ATLANTIC REGION OBSERVER PROGRAM FUNDING (ALL SOURCES): \$24,148,367</b>										

## Southeast and Caribbean (page 1 of 2)

Fisheries Observed	Fleet Size	Authority to Place Observers	Season of Operation	Funding Source	Program Duration	Target Coverage	Actual Coverage	Target Sea Days	Actual Sea Days*	Number of Observers
Southeast Shrimp Fishery Observer Program, Southeast Fisheries Science Center, Galveston Laboratory, 4700 Avenue U, Galveston, TX 77551										
Program Manager: Scott Leach, <a href="mailto:scott.leach@noaa.gov">scott.leach@noaa.gov</a> , website: <a href="https://fisheries.noaa.gov/southeast/fisheries-observers/gulf-mexico-reef-fish-and-shrimp-observer-program">fisheries.noaa.gov/southeast/fisheries-observers/gulf-mexico-reef-fish-and-shrimp-observer-program</a>										
Southeastern Atlantic and Gulf of Mexico Shrimp Otter Trawl Fisheries (including rock shrimp), Skimmer Trawl	1,708 vessels	Voluntary through July 2007; Mandatory–July 2007 MSFCMA (50 CFR 622)	Year-round	Observers & Training-South Atlantic and Gulf Shrimp Observers	1992–present	~2%	~2%	1,500 + Special Projects	2,103	50 (also deployed in reef fish fishery)
				Observers & Training –Atlantic Coast Observers						
Atlantic Pelagic Longline Observer Program, Southeast Fisheries Science Center, 75 Virginia Beach Dr, Miami, FL 33149-1003										
Program Manager: Scott Leach, <a href="mailto:scott.leach@noaa.gov">scott.leach@noaa.gov</a> , website: <a href="https://fisheries.noaa.gov/southeast/fisheries-observers/southeast-pelagic-observer-program">fisheries.noaa.gov/southeast/fisheries-observers/southeast-pelagic-observer-program</a>										
Atlantic, Gulf of Mexico, Caribbean Pelagic Longline Fishery	~70–80 active vessels	MSFCMA (50 CFR 635); MMPA (50 CFR 229); ATCA	Year-round	Observers & Training-Atlantic Coast Observers	1992–present	8% by vessel sets	11.4%	NA	716	13
				Observers & Training-East Coast Observers						
				Deepwater Horizon Sea Turtle Early Restoration						
Southeast Gillnet and Shark Bottom Longline Observer Program, Southeast Fisheries Science Center, Panama City Laboratory, 3500 Delwood Beach Rd, Panama City, FL 32408										
Program Manager: Scott Leach, <a href="mailto:scott.leach@noaa.gov">scott.leach@noaa.gov</a> Websites: <a href="https://fisheries.noaa.gov/southeast/fisheries-observers/southeast-gillnet-observer-program">fisheries.noaa.gov/southeast/fisheries-observers/southeast-gillnet-observer-program</a> <a href="https://fisheries.noaa.gov/southeast/fisheries-observers/southeast-shark-bottom-longline-observer-program">fisheries.noaa.gov/southeast/fisheries-observers/southeast-shark-bottom-longline-observer-program</a>										
Southeast Shark and Coastal Teleost Gillnet Fishery	40	MMPA (50 CFR 229); MSFCMA (50 CFR 635)	Year-round	Observers & Training –Atlantic Coast Observers	1998–present	5%	15/8%	112	53	17
South Atlantic Reef Fish Fishery	403 vessels	MSFCMA (50 CFR 635)	Year-round	ACCSP, MARFIN, National Observer Program	2014, 2017-2018	1.14%	0.81%	156	99	17
Atlantic and Gulf of Mexico Directed Large Coastal Shark Bottom Longline Fishery	14 vessels	MSFCMA (50 CFR 635)	Year-round-open until quota is filled	National Observer Program	1994–present	4-6%	6.52%	26	28	17
Shark Research Fishery	4 vessels	MSFCMA (50 CFR 635)	Year-round-open until quota is filled	National Observer Program	2007–present	100%	100%	120	113	17

## Southeast and Caribbean (page 2 of 2)

Fisheries Observed	Fleet Size	Authority to Place Observers	Season of Operation	Funding Source	Program Duration	Target Coverage	Actual Coverage	Target Sea Days	Actual Sea Days*	Number of Observers
Gulf of Mexico Reef Fish Fishery Observer Program, Southeast Fisheries Science Center, Galveston Laboratory, 4700 Avenue U, Galveston, TX 77551										
Program Manager: Scott Leach, <a href="mailto:scott.leach@noaa.gov">scott.leach@noaa.gov</a> , website: <a href="https://fisheries.noaa.gov/southeast/fisheries-observers/gulf-mexico-reef-fish-and-shrimp-observer-program">fisheries.noaa.gov/southeast/fisheries-observers/gulf-mexico-reef-fish-and-shrimp-observer-program</a>										
Gulf of Mexico Reef Fish Fishery-all gear types	743 vessels	Mandatory	Year-round	Reducing Bycatch National Observer Program	2006–present	~1%	~1%	333	306	50 (also deployed in shrimp fishery)
Gulf of Mexico Reef Fish Fishery-longline emphasis (Expanded Coverage)	Approx. 831 permitted USCG documented vessels	Mandatory	Year-round	Catch Shares	August 2011–2017	0%	0%	0	0	0
Gulf of Mexico Purse Seine (Menhaden) Observer Program, Southeast Fisheries Science Center, Galveston Laboratory, 4700 Avenue U, Galveston, TX 77551										
Program Manager: Scott Leach, <a href="mailto:scott.leach@noaa.gov">scott.leach@noaa.gov</a>										
Gulf of Mexico Menhaden Fishery	Approx. 41 permitted USCG documented vessels	MMPA (50 CFR 229)	April–November	Other Congressional Funding	2011	0%	0%	0	0	0
<b>TOTAL SOUTHEAST REGION OBSERVER PROGRAM FUNDING (CONGRESSIONAL): \$5,433,654</b>										
<b>TOTAL SOUTHEAST REGION INDUSTRY EXPENDITURES: \$0</b>										
<b>TOTAL SOUTHEAST REGION OBSERVER PROGRAM FUNDING (ALL SOURCES): \$5,433,654</b>										

## Office of Science & Technology

Fisheries Observed	Funding Source	Program Duration	Program Description
Science and Technology	Reducing Bycatch	1999–present	NSP support for observer program-related projects.
	Atl Coast Observers		NSP support for observer program-related projects.
	National Observer Program		Program staff salary and travel, and support for the SAC, Knauss Marine Policy Fellow, International Fishery Observer and Monitoring Conference, and communications contract.
<b>TOTAL SCIENCE AND TECHNOLOGY PROGRAM FUNDING (APPROPRIATED): \$676,626</b>			
<b>TOTAL SCIENCE AND TECHNOLOGY PROGRAM FUNDING (INDUSTRY): \$0</b>			
<b>TOTAL SCIENCE AND TECHNOLOGY PROGRAM FUNDING (ALL SOURCES): \$676,626</b>			

## Totals—All Observer Programs

<b>OBSERVER PROGRAM FUNDING (APPROPRIATED)*: \$53,084,952</b>
<b>OBSERVER PROGRAM FUNDING (INDUSTRY): \$22,432,761</b>
<b>OBSERVER PROGRAM FUNDING (ALL SOURCES): \$75,517,713</b>
<b>ACTUAL NUMBER OF SEA DAYS OBSERVED**: 60,789</b>
<b>NUMBER OF OBSERVERS***: 812</b>
*Appropriated funds include \$48.6M from the Observers and Training PPA, and \$4.5M from other PPAs, including Catch Shares, Fisheries Management, Fisheries Statistics, Hawaiian Sea Turtles, and Marine Mammal Protection. A portion of these funds are used for management activities for observers.
**Includes days deployed for shoreside offloads but not EM trips.
***Does not include deployments for EM

## Appendix B: Fisheries Observed in FY 2021

Region	Fisheries With Adequate or Near Adequate Coverage	Fisheries With Pilot or Baseline Levels of Coverage
AK	Bering Sea/Aleutian Islands Groundfish Trawl	Salmon Gillnet, Setnet, and Driftnet: Southeast Alaska DGN 6,7a, and 8; Yakutat Salmon Setnet; Kodiak Salmon Gillnet; Cook Inlet Salmon Driftnet and Setnet
AK	Bering Sea/Aleutian Islands Groundfish Longline	
AK	Bering Sea/Aleutian Islands Groundfish Pot	
AK	Gulf of Alaska Groundfish Trawl	
AK	Gulf of Alaska Groundfish Longline	
AK	Gulf of Alaska Groundfish Pot	
AK	Limited Access Privilege Program Halibut Fixed Gear	
NE	New England Large Mesh Otter Trawl (includes Ruhle and Haddock Separator Trawl)	
NE	New England Small Mesh Otter Trawl	New England Hydraulic Dredge (Surfclams, Ocean Quahogs)
NE	Mid-Atlantic Large Mesh Otter Trawl	Mid-Atlantic Hydraulic Dredge (Surfclams, Ocean Quahogs)
NE	Mid-Atlantic Small Mesh Otter Trawl	Mid-Atlantic Longline
NE	New England Twin Otter Trawl	Mid-Atlantic Purse Seine
NE	Mid-Atlantic Twin Otter Trawl	Mid-Atlantic Fish/Conch Pot/Trap
NE	Atlantic Sea Scallop Dredge	Mid-Atlantic Lobster/Crab Pot/Trap
NE	Mid-Atlantic Scallop Dredge	New England Weirs (Includes Floating Trap)
NE	Mid-Atlantic Scallop Trawl	
NE	New England Gillnet (Small, Large, Extra Large; Sink/Drift)	
NE	Mid-Atlantic Gillnet (Small, Large, Extra Large; Sink/Drift)	
NE	New England Longline	
NE	Mid-Atlantic Handline	
NE	New England Handline	
NE	New England Purse Seine	
NE	New England Paired and Single Mid-Water Trawl	
NE	Mid-Atlantic Paired and Single Mid-Water Trawl	
NE	New England Fish/Conch Pot/Trap	
NE	New England Lobster/Crab Pot/Trap	

(continued on page 34)

Region	Fisheries With Adequate or Near Adequate Coverage	Fisheries With Pilot or Baseline Levels of Coverage
NW	West Coast Groundfish Bottom Trawl Catch Shares	West Coast Groundfish Nearshore Fisheries
NW	West Coast Groundfish Limited Entry Fixed Gear	California, Oregon, and Washington Pink Shrimp Fisheries
NW	West Coast Mid-Water Trawl for Whiting (Hake), At-Sea Processing	California Halibut Trawl Fishery
NW	West Coast Mid-Water Trawl for Whiting (Hake), Shoreside Processing	West Coast Open Access Fixed Gear Fisheries
PI	American Samoa Pelagic Longline Tuna	
PI	Hawaii-Based Pelagic Longline (swordfish, tuna)	
SE	South Atlantic and Gulf of Mexico Directed Coastal Gillnet Fishery	South Atlantic and Gulf of Mexico Shrimp Otter Trawl (Including Rock Shrimp)
SE	Atlantic, Gulf of Mexico, and Caribbean Pelagic Longline (Swordfish, Tuna, Sharks)	South Atlantic Reef Fish Fishery
SE	Atlantic and Gulf of Mexico Directed Large Coastal Shark Bottom Longline	Gulf of Mexico Reef Fish Fishery
SE		Shark Research Fishery
WCR	California Large-Mesh DGN	
WCR	Deep-Set Pelagic Longline	
WCR	Deep-Set Buoy Gear EFPs	
<b>Total</b>	<b>38</b>	<b>17</b>

**Definition of adequate or near-adequate levels of observer coverage:** Observer programs that have adequate or near-adequate levels of observer coverage have observer programs that are either “mature or developing” as defined in the 2004 NOAA Fisheries report *Evaluating Bycatch: A National Approach to Standardized Bycatch Monitoring Programs*. The definition of a developing program is one in which an established stratification design has been implemented and alternative allocation schemes are being evaluated to optimize sample allocations by strata to achieve the recommended goals of precision of catch, bycatch and discard estimates for the major species of concern. The definition of a mature program is one in which an optimal sampling scheme has been implemented. A mature program is flexible enough to achieve the recommended goals of precision of catch, bycatch and discard estimates for the major species of concern considering changes in the fishery over time.







U.S. Secretary of Commerce  
**Gina M. Raimondo**

Under Secretary of Commerce  
for Oceans and Atmosphere  
**Dr. Richard W. Spinrad**

Assistant Administrator, NOAA Fisheries  
**Janet Coit**

May 2023

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