



National Marine Fisheries Service

National Observer Program FY 2019 Annual Report

NOAA TECHNICAL MEMORANDUM NMFS-F/SPO-215



NOAA
FISHERIES

National Observer Program FY 2019 Annual Report

Lee Benaka (editor)

National Marine Fisheries Service

NOAA Technical Memorandum NMFS-F/SPO-215

July 2021



U.S. Department of Commerce
Gina Raimondo, Secretary

National Oceanic and Atmospheric Administration
Richard Spinrad, NOAA Administrator

National Marine Fisheries Service
Janet Coit, Assistant Administrator for Fisheries

Recommended citation:

Benaka, L. (editor). 2021. National Observer Program FY 2019 Annual Report. NOAA Tech. Memo. NMFS-F/SPO-215, 30 p.

Copies of this report may be obtained from:

National Observer Program
Office of Science & Technology
National Marine Fisheries Service
National Oceanic and Atmospheric Administration
1315 East-West Highway
Silver Spring, MD 20910

Or online at:

<http://spo.nmfs.noaa.gov/tech-memos>

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

List of Acronyms

| | |
|----------------|--|
| A80 | Amendment 80 |
| ACL | Annual Catch Limit |
| ACTA | Atlantic Tunas Convention Act |
| AD | Annual Determination |
| ADP | Annual Deployment Plan |
| AFA | American Fisheries Act |
| AFS | American Fisheries Society |
| ASM | At-Sea Monitoring |
| BRD | Bycatch Reduction Devices |
| BSAI | Bering Sea and Aleutian Islands |
| CDQ | Community Development Quota |
| CFR | Code of Federal Regulations |
| DSBG | Deep-Set Buoy Gear |
| DWH | Deepwater Horizon |
| EBS | Eastern Bering Sea |
| EEZ | Exclusive Economic Zone |
| EFP | Exempted Fishing Permit |
| EM | Electronic Monitoring |
| EPIRB | Emergency Position Indicating Radio Beacon |
| ESA | Endangered Species Act |
| ET | Electronic Technologies |
| EVIC | EPIRB Visual Inspection Card |
| FECA | Federal Employees' Compensation Act |
| FMA | Fisheries Monitoring and Analysis Division |
| FMP | Fishery Management Plan |
| FSB | Fisheries Sampling Branch |
| GARFO | Greater Atlantic Regional Fisheries Office |
| GOA | Gulf of Alaska |
| GOM | Gulf of Mexico |
| HMS | Atlantic Highly Migratory Species Division |
| IFQ | Individual Fishing Quota |
| LE | Limited Entry |
| LOF | List of Fisheries |
| MMPA | Marine Mammal Protection Act |
| MSA, MSFCMA | Magnuson-Stevens Fishery Conservation and Management Act |

| | |
|-------|---|
| M&SI | Mortality and Serious Injury |
| MVP | Minimum Viable Product |
| NBR | National Bycatch Report |
| NEFOP | Northeast Fisheries Observer Program |
| NEFSC | Northeast Fisheries Science Center |
| NFWF | National Fish and Wildlife Foundation |
| NMFS | National Marine Fisheries Service |
| NOAA | National Oceanic and Atmospheric Administration |
| NOP | National Observer Program |
| NOPAT | National Observer Program Advisory Team |
| NPFMC | North Pacific Fishery Management Council |
| NSP | National Seabird Program |
| NWFSC | Northwest Fisheries Science Center |
| OA | Open Access |
| OLE | Office of Law Enforcement |
| OPR | Office of Protected Resources |
| PIFSC | Pacific Islands Fisheries Science Center |
| PIRO | Pacific Islands Regional Office |
| PIROP | Pacific Islands Regional Observer Program |
| PPA | Program, Project, and Activity |
| PSMFC | Pacific States Marine Fisheries Commission |
| PTNS | Pre-Trip Notification System |
| RP | Groundfish Trawl Rockfish Program |
| SA | Southeastern Atlantic |
| SAC | Safety Advisory Committee |
| SBLOP | Shark Bottom Longline Observer Program |
| SBRM | Standardized Bycatch Reduction Methodology |
| SEFSC | Southeast Fisheries Science Center |
| SEZ | Southern Economic Zone |
| ST | Office of Science and Technology |
| SWFSC | Southwest Fisheries Science Center |
| TAC | Total Allowable Catch |
| TED | Turtle Excluder Device |
| TRT | Take Reduction Team |
| WCGOP | West Coast Groundfish Observer Program |

Executive Summary

For FY 2019 (October 1, 2018-September 30, 2019), 850 observers provided 71,607 days of fishery observations. NOAA Fisheries, along with commercial fishing fleets in the Alaska, West Coast, and Greater Atlantic regions, invested \$80.1 million to provide this coverage in 54 U.S. fisheries. Of this amount, congressionally appropriated funds provided \$55.0 million, and the fishing industry provided \$25.1 million.

The National Observer Program (NOP), in NOAA Fisheries' Office of Science and Technology, supported 14 regional observer programs in FY 2019. The NOP, along with the National Observer Program Advisory Team (NOPAT), supported a successful international fisheries observer and monitoring conference and provided input on observer provider insurance issues, program performance metrics, budget developments, and other important topics pertinent to enacting monitoring programs nationwide.

The NOP and NOPAT continued to focus on safety issues to a great extent in 2019 through the work of the NOPAT's Safety Advisory Committee and through the initial implementation of recommendations from the Observer Program Safety Review. The NOP also provided leadership on national bycatch estimation efforts, electronic monitoring (EM) coordination, and seabird conservation efforts.

In addition to deploying observers to cover major U.S. fisheries across the United States in 2019, the regional observer programs achieved the following milestones:

- Alaska—Developed a draft annual deployment plan for 2020, fulfilled observer program information collection requirements authorized under the Paperwork Reduction Act, helped to analyze an exempted fishing permit for EM systems in the Eastern Bering Sea and Gulf of Alaska trawl catcher vessel fisheries, and supported the development of a draft environmental assessment/regulatory impact review to increase the observer fee percentage to fund the deployment of observers and EM in the partial-coverage program.
- West Coast—Provided data to support a proposed rule that would require certain commercial groundfish bottom longline vessels to deploy streamer lines or to set gear between civil dusk and civil dawn when fishing in federal waters north of 36° North

latitude, contributed to a final rule to implement an EM program for two sectors of the limited entry trawl fishery, and provided comprehensive observer coverage for deep-set buoy gear (DSBG) vessels fishing under exempted fishing permits.

- Pacific Islands—Monitored takes of sea turtles and false killer whales to support management measures that can trigger closed areas or fishery closures, transitioned an Oracle-based observer database housed at the NOAA Fisheries Pacific Islands Fisheries Science Center to a Microsoft-structured query language database housed at the NOAA Fisheries Pacific Islands Regional Office, provided data for a report that quantified post-release mortality rates of incidentally captured sharks, and continued to salvage dead, longline-caught seabirds for necropsy and dataset integration.
- Greater Atlantic—Provided 20 observer training sessions participating in approximately 12 different outreach events, supported efforts to implement EM technologies to augment data collection by observers, organized a workshop to evaluate the process of completing the required observer pre-trip vessel safety checklist, and hired several information technology professionals.
- Southeast—Supported a program realignment plan that would consolidate observer programs located in three separate laboratories into one program, allowing more specialized employees to perform essential program tasks; tested EM systems on shrimp trawl vessels to determine whether the systems can collect sufficient images to account for smalltooth sawfish and other large bycatch species; provided data to support a three-year review of the individual bluefin tuna quota program; and continued to provide support for developing an observer program for the Gulf of Mexico menhaden purse seine fishery.

The preceding milestones represent only a fraction of observer activities in 2019, 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 (EEZ) and high seas since 1972. Observers have monitored fishing activities on all U.S. coasts, collecting data for a range of conservation and management issues.

Fisheries observers are trained biological technicians who collect data to support a wide range of conservation and management activities. During FY 2019,

NOAA Fisheries administered observer programs in all management regions (Alaska, West Coast, Pacific Islands, Greater Atlantic, and Southeast).

NOAA Fisheries regional offices and science centers administer the various programs (Figure 1). Each observer program is authorized by one or more of the following federal authorities: the Magnuson-Stevens Fishery Conservation and Management Act (MSA), the Marine Mammal Protection Act (MMPA), and the Endangered Species Act (ESA). (For more information on these authorities, and U.S. observer program history in general, see Brooke 2014.) The National Observer Program (NOP) supports observer programs and increases their effectiveness in meeting the overall

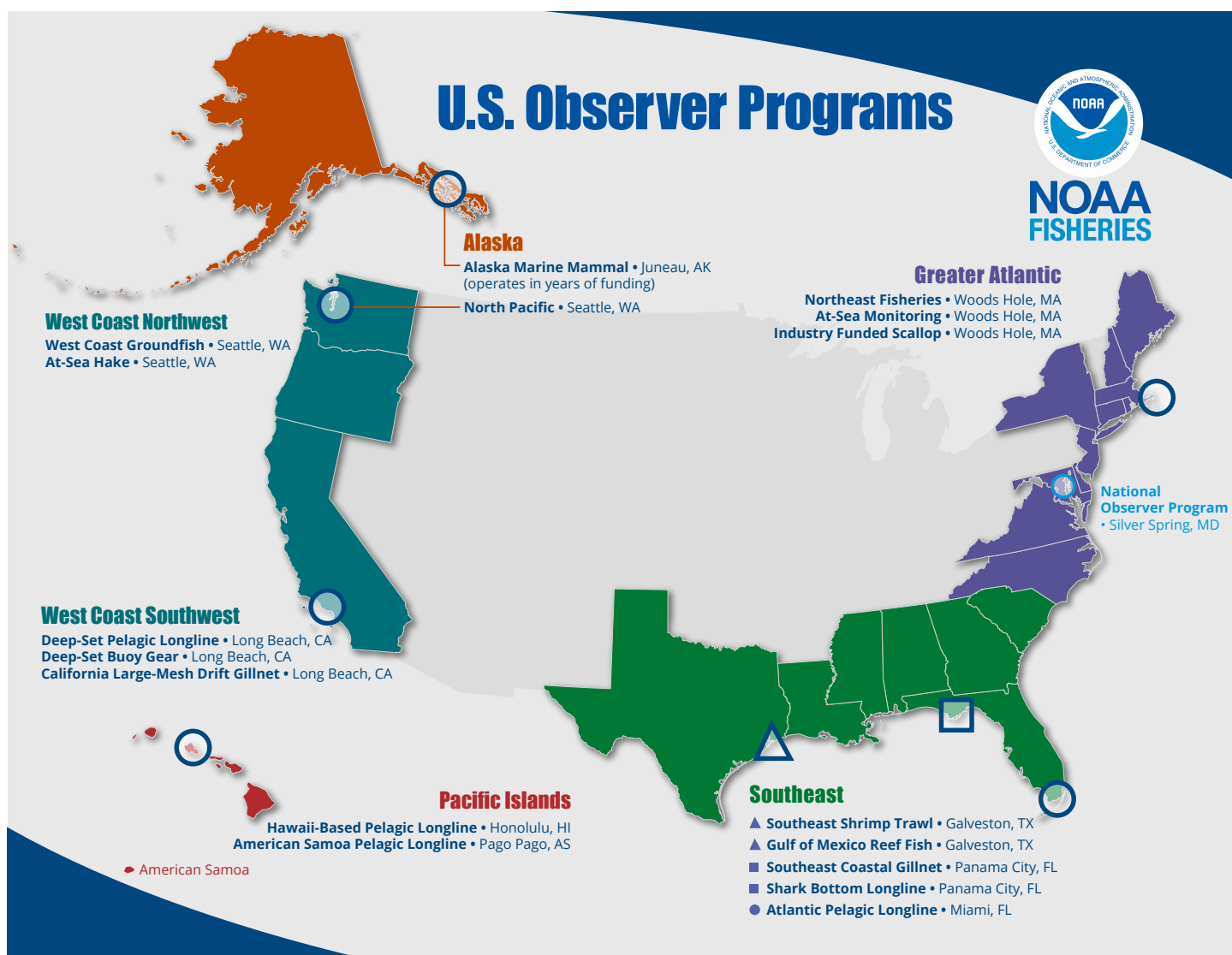


Figure 1: Locations of regional and national observer programs.

NOP Advisory Team (NOPAT)

Sets policy and budgetary direction for the NOP. Members include representatives from NOAA Fisheries HQ offices, Regions, and Science Centers, as well as a U.S. Coast Guard liaison.

| | | | | | | |
|--------------------------------------|---|---------------------------------|-----------------------------------|---------------------------------|---------------------------|-----------|
| NOAA Fisheries HQ | Office of Science and Technology | Office of Sustainable Fisheries | Office of Protected Resources | Office of International Affairs | Office of Law Enforcement | |
| Regional Offices | Alaska | Greater Atlantic | Pacific Islands | Southeast | West Coast | |
| Science Centers | Alaska | Northeast | Northwest | Pacific Islands | Southeast | Southwest |
| General Counsel for Fisheries | General Counsel for Enforcement and Litigation | | U.S. Coast Guard (liaison) | | | |

Figure 2: Organizational structure of the NOP Advisory Team.

goals of NOAA Fisheries through improvements in data collection, observer training, and integration of observer data with other research.

1.1 Program Structure

Within the NOAA Fisheries Office of Science and Technology (ST), the NOP nationally coordinates up to 17 observer programs in five regions. 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.

As of FY 2019, the NOP had three permanent staff positions: program coordinator (Elizabeth Chilton), bycatch expert (Lee Benaka), and safety expert (Dennis Hansford). The NOP hosted Andrea Chan, a Knauss Marine Policy Fellow, for a one-year term to, among other things, support the National Observer Program Advisory Team (NOPAT) and analyze data related to the U.S. National Bycatch Report's (NBR) Tier Classification System. (For more information on the Tier Classification System, see Desfosse et al. 2012.) In addition, Electronic Technologies Coordinator Brett Alger hosted Knauss Marine Policy Fellow Katherine Wilson, as well as two NOAA Fisheries employees on detail to ST: William Duffy from the Greater Atlantic Regional Office and Joshua Lee from the Pacific Islands Regional Office.

The NOP also provides regional observer programs with a forum to increase collaboration and

communication during biannual 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 their day-to-day 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 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 2019 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. Onshore infrastructure costs are covered by NOAA Fisheries. 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, contracts with an observer provider company, and receives the 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 structure, 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 regulations. Information collected by fisheries observers is used for a wide range of assessment and monitoring purposes, including the following examples:

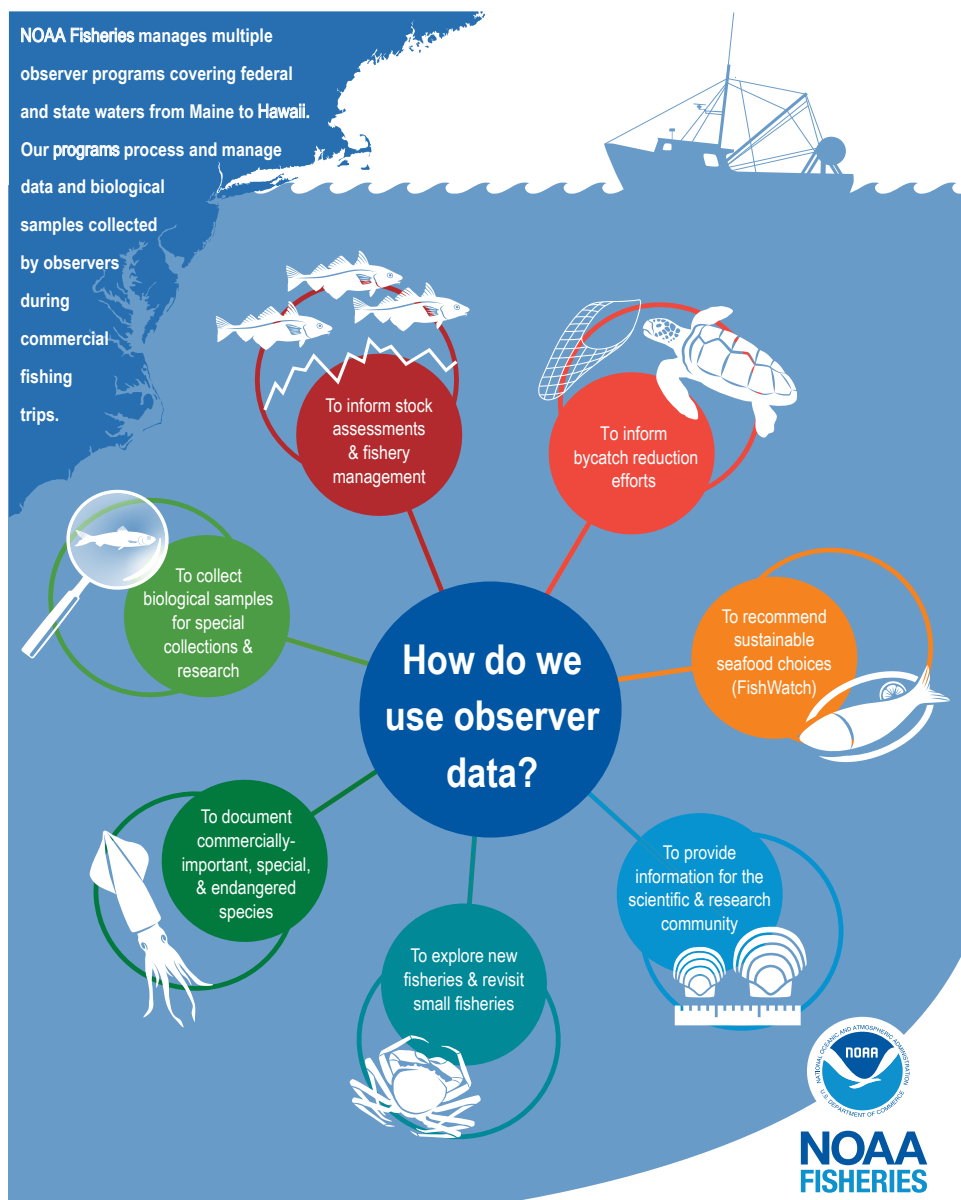


Figure 3: Uses of observer data.

- 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 catches 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. Setting 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. 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 (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),

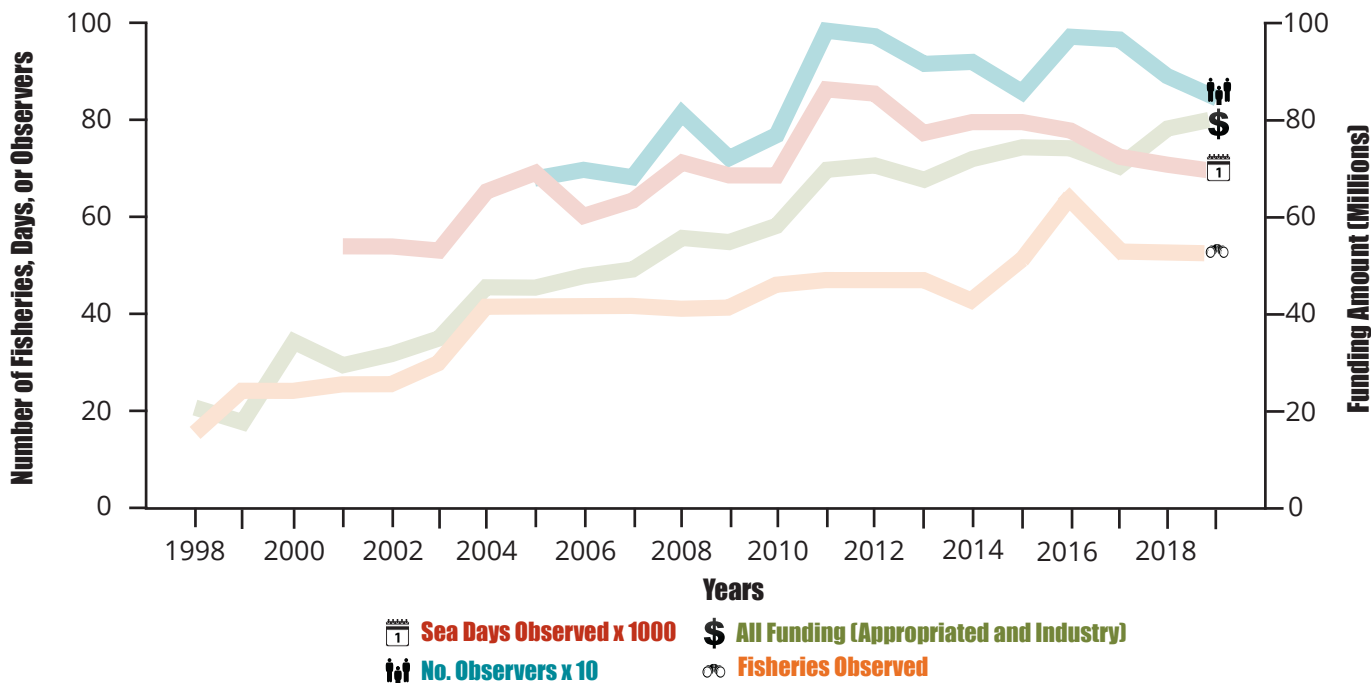


Figure 4: U.S. observer program sea days observed, appropriated and industry funding (not adjusted for inflation), and number of observed fisheries and observers from 1998 to 2019.

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.

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).

2. Budget Summary

For FY 2019 (October 1, 2018-September 30, 2019), 850 observers provided 71,607 days of fishery observations. NOAA Fisheries, along with commercial fishing fleets in the Alaska, West Coast, and Greater Atlantic regions, invested \$80.1 million to provide this coverage in 54 U.S. fisheries. Of this amount, congressionally appropriated funds provided \$55.0 million, and the fishing industry provided \$25.1 million (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 2019. Industry funds were used to support observer coverage of fishing vessels in North Pacific and West Coast groundfish fisheries as well as Greater Atlantic scallop fisheries.

As shown in Figure 1, 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 2019 achievements of NOAA Fisheries regional observer programs.

| Region | Appropriated | Industry | Total |
|-----------------------------|---------------|---------------|---------------|
| Alaska | \$8.3 | \$19.2 | \$27.5 |
| Greater Atlantic | \$22.8 | \$2.2 | \$25.0 |
| Pacific Islands | \$8.5 | \$0 | \$8.5 |
| Southeast | \$6.3 | \$0 | \$6.3 |
| West Coast | \$8.4 | \$3.7 | \$12.1 |
| NOAA Fisheries Headquarters | \$0.7 | \$0 | \$0.7 |
| Totals | \$55.0 | \$25.1 | \$80.1 |

Table 1: **FY 2019 Observer Funding Summary (in millions).** Appropriated amount shown includes funds allocated to regions from FY 2019 enacted funding.

3. National Observer Program Activities

Several NOAA Fisheries 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 2019. Section 8 of this report describes HMS-related activities for 2019.

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 2019. These activities are described below.

3.1.1 National Observer Program Advisory Team

The NOPAT met twice in 2019, in April/May and November. At these meetings, the NOPAT discussed various topics including the observer program budget, policies and standards, strategic planning, observer provider insurance requirements, safety and enforcement issues, performance metrics, and electronic technologies. In addition, NOPAT members planned a symposium for the 2019 American Fisheries Society (AFS) Annual Meeting entitled “Fishery-Dependent Observing and Monitoring.”

3.1.2 Safety Advisory Committee

The NOPAT has a Safety Advisory Committee (SAC) that comprises safety representatives from each regional observer program, the NOAA Fisheries Office of Law Enforcement, and the U.S. Coast Guard. The SAC provides recommendations to the NOPAT on safety and health issues. Committee members meet in person and over the phone regularly, with an in-person meeting in April 2019 and conference calls in July and August 2019. Also in 2019, the SAC developed a series of safety fact sheets covering topics such as practicing proper lifting techniques, detecting and mitigating bed bug infestations, donning immersion suits, and monitoring

marine pollution violations. The SAC also planned a marine safety instructor training session for September 2019, as well as developed recommendations for revised observer safety training and eligibility standards. Suggested updates to safety training standards included expanded emphasis on harassment (including assault, intimidation, and coercion) and conflict resolution.

3.1.3 2016 Observer Safety Program Review

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.¹ The report provided 118 recommendations across seven relevant observer safety categories:

- Safety reporting.
- Communications.
- Practices and policies.
- Training.
- Regulations.
- Equipment.
- International observers.

In May 2019, the NOP released an action plan that included updates on the implementation status of these recommendations, including those completed in 2018. Since the last update, more than half of the recommendations have been implemented. The remainder are in process of implementation or pending further assessment to incorporate into regional and national observer safety programs.

Many of the responses to the report equate to the initiation of practices that augment standard safety protocols or ongoing safety training activities. The process of prioritizing the work to address pending recommendations, and integrate these new measures with current safety practices, policies, and procedures, is continuing. Also continuing is the long-term goal of developing standards that address safety matters in all

¹ The 2018 report is available at <https://www.fisheries.noaa.gov/resource/document/observer-safety-program-review-report>

phases of an observer's career. After considerable review, ten of the report's recommendations were tabled as these required substantive regulatory, legislative, or policy changes.

NOAA Fisheries has completed Phase 1 of the Action Plan by assessing, categorizing, and prioritizing the numerous report recommendations, as well as implementing many of the high-priority recommendations. NOAA Fisheries continues to focus on Phase 2 and 3 of the Action Plan with the implementation of more complex recommendations such as:

- Finalizing a national rule to establish minimum insurance requirements for observer providers.
- Streamlining pre-trip vessel safety checklists appropriate to vessel size and trip length.
- Updating medical clearance checklists.
- Expanding the Observer Safety Standards framework to address safety elements throughout an observer's career.

The NOP publishes regular status updates regarding Observer Safety Program Review recommendations on its website.²

3.1.4 Observer Program and Provider Insurance Rulemaking

In 2019 the NOP analyzed public comments received in response to a Federal Register request for information (83 FR 32829) regarding a national initiative to reform and streamline observer provider insurance requirements. The NOP undertook this reform effort to:

- Ease the regulatory burden and reduce costs for private companies that provide observer staffing to NMFS observer programs through more efficient, nationally applicable insurance requirements.
- Eliminate outdated and/or inappropriate regulatory requirements.
- Reduce observer deployment risks for vessel owners and shore side processors.
- Identify insurance that could improve observer safety and facilitate full compensation for observer occupational injuries.



An Alaska observer stands on the snow-covered deck of a vessel.

To proceed with this effort, NOAA Fisheries asked the public for technical information on the types of insurance and minimum coverage amounts (in dollars) that would minimize observer deployment risks to the extent practicable considering costs and other factors. Additionally, NOAA Fisheries asked for public comment on Federal Employees Compensation Act (FECA) claims and benefits processing for observer occupational injuries and whether observer companies should carry private insurance to supplement FECA benefits for observers. Based on public input, NOAA Fisheries drafted a proposed rule to establish minimum insurance requirements for observer providers.

3.1.5 Publication of NOP Fishery Observer Attitudes and Experiences Survey

NOAA Fisheries released the results of a nationwide survey on observer attitudes and experiences in May 2019 (Wang and DiCosimo 2019). More than 550 current and former domestic observers responded to the anonymous online survey. They responded to questions on topics including demographics, education

² Status of recommendations through the end of 2019 can be seen at <https://www.fisheries.noaa.gov/resource/document/status-recommendations-observer-safety-program-review>

and work history, pre-employment motivation, observer experience, job satisfaction, job difficulties, career plans, safety (including harassment) incidents, experience in international fisheries, opinions about electronic monitoring, and issues of regional interest. The survey results provided needed clarity on factors that contribute to observer recruitment and retention and will ensure that NOAA Fisheries has the necessary information it needs to support robust science-driven observer programs.

3.1.6 Bycatch Estimation

NOP staff published the U.S. National Bycatch Report (NBR) First Edition Update 3 in February 2019 (Benaka et al. 2019). Kayleigh Somers, from NOAA Fisheries' Northwest Fisheries Science Center, assisted the NOP through a detail by creating a white paper describing options for improvements in the NBR database. In addition, in 2019 NOP staff members organized a symposium entitled "Fishery-Dependent Observing and Monitoring," which took place in October 2019 at the 149th Annual Meeting of the American Fisheries Society in Reno, Nevada. This symposium focused on observing and monitoring in commercial fisheries, with presentations on bycatch in the California halibut fishery, Gulf of Mexico reef fish fishery, Pacific halibut fishery, and Gulf of Alaska rockfish fishery, as well as talks on retention of observers and innovations in electronic technologies.³

3.1.7 Electronic Monitoring and Reporting

Electronic technologies (ET), including electronic monitoring (EM) and reporting, continued to be a major focus for NOAA Fisheries and its observer programs during FY 2019. The Electronic Technologies Working Group met in August 2019 to discuss ET roles in law enforcement, recreational fisheries, and protected species monitoring, as well as share regional updates on ET programs and innovations. The ET Program made progress on several policy and procedural directives in 2019, including a cost-allocation procedural directive and a third-party data retention procedural directive. In addition, the ET Program worked with its partners to update the ET Policy Directive in 2019; the updated directive called for annual updates rather than biannual updates, and provided new guidance on updating regional ET plans.

³ For more information, see <https://afs.confex.com/afs/2019/meetingapp.cgi/Session/8122>

⁴ <https://www.nfwf.org/fisheriesfund/Pages/home.aspx>

NOAA Fisheries supported several internal EM projects in Alaska, the West Coast, the Pacific Islands, and the Northeast for a total of approximately \$2.5 million in FY 2019, including projects to support the transition to industry-funded EM programs, build data infrastructure to implement EM programs, and build image libraries and machine learning systems to advance data-processing technologies for EM data.

In addition, NOAA Fisheries partnered with the National Fish and Wildlife Foundation (NFWF) and other foundations in 2019 to support another round of funding for the Electronic Monitoring and Reporting Grant Program, awarding almost \$4 million for 14 EM projects in the following fisheries:

- Gulf of Alaska pollock trawl.
- Gulf of Mexico reef fish.
- California swordfish deep-set buoy gear.
- New England groundfish.
- Northern Gulf of Maine scallop.
- Hawaii pelagic longline.
- Gulf of Mexico shrimp trawl.
- Alaska mid-water pollock trawl.

The NFWF's Fisheries Innovation Fund webpage has additional information about these projects.⁴

3.2 National Seabird Program

The National Observer Program continued to support NOAA Fisheries' National Seabird Program (NSP) in FY 2019 through limited financial support to the NSP for observer-program-related seabird projects (Table 2). Staff members from the NOP also worked with the NSP to develop an NSP five-year strategic plan (Ballance et al. 2019).

3.3 Office of Protected Resources

The Office of Protected Resources (OPR) undertakes a variety of activities to support observer programs and fishery-dependent monitoring efforts. These activities include actively participating in ET efforts, rulemaking, and supporting MMPA take reduction teams (TRTs).

In December 2018, OPR published the 2019 Annual Determination (AD) (83 FR 63483) to implement sea

| NMFS Center/Region | Project Name | Amount (\$) |
|---|--|----------------|
| International Affairs and Seafood Inspection | Developing International Collaborations to Reduce Seabird Bycatch in U.S. and Global Trawl Fisheries during ACAP's Seabird Bycatch Working Group Meeting | 15,000 |
| Alaska Regional Office | Streamer Line Distribution in Alaska Longline Fisheries | 15,000 |
| Alaska Fisheries Science Center | Seabird Training for Alaska Groundfish Observers | 10,000 |
| Alaska Fisheries Science Center | Pacific Seabird Bycatch Necropsy Program | 5,000 |
| Northwest Fisheries Science Center | Advancing Ecosystem-Based Fisheries Management Principles by Establishing Food Web Links between Seabirds and Forage Fish Species in the Northern California Current | 7,500 |
| Southeast Fisheries Science Center | Using a Bayesian Interactive Spatial-Temporal Approach to Estimate Full-Fleet Seabird Bycatch of the U.S. Atlantic Pelagic Longline Fleet and Link Space-Time Concentrations to Cyclical Environmental Factors | 10,000 |
| National Ocean Service/Northeast Fisheries Science Center | Plastic Ingestion and Bycatch Demographics of Great Shearwaters from the Gulf of Maine | 20,000 |
| Southwest Fisheries Science Center | Travel Support for Pacific Seabird Group Meeting and World Seabird Conference | 17,500 |
| Total | | 100,000 |

Table 2: National Seabird Program internal award recipients, FY 2019.

turtle observer requirements under the ESA. Through the AD, NOAA Fisheries identifies U.S. fisheries that will be required to take fisheries observers upon request from NOAA Fisheries. Observer coverage under the AD provides NOAA Fisheries with information needed to assess why turtle interactions occur in a given fishery, evaluate measures to prevent or reduce sea turtle takes, and implement the prohibition against sea turtle takes. For 2019, the AD did not identify additional fisheries to observe beyond those identified for the 2018 AD.

OPR supported activities of several TRTs in 2019, including obtaining input on observer coverage to better inform take reduction efforts. Other OPR activities included an April 2019 meeting of the Atlantic Large Whale TRT. At this meeting, the TRT reached near consensus on a 60 percent reduction in buoy lines in each Lobster Management Area, as well as “weak” rope gear modifications. These recommendations informed development of a proposed rule 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 (85 FR 86878).

In May 2019, OPR published the final List of Fisheries (LOF) for 2019 (84 FR 22051), 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 occurs incidental to each fishery, with Category I representing the most serious level and Category III representing the least serious level. The 2019 LOF did not include any fishery classification changes from the 2018 LOF.

In June 2019, the NOAA Fisheries Protected Resources Board convened a bycatch session to discuss how relevant NOAA Fisheries programs that contribute to the process of reducing protected species bycatch make funding decisions, as well as evaluate the need for identifying national priorities on protected species bycatch. The NOP made a presentation on its budget allocation process at this session.

3.4 Office of Law Enforcement

NOAA Fisheries Office of Law Enforcement (OLE) representatives planned a symposium for the 2019 AFS Annual Meeting entitled “Collaboration to Ensure a Safe and Secure Work Environment for Observers.” Presentation topics included safety violations, risk reduction, and biases. Observer liaison agents around the country provided enforcement training for new observers at various regional new observer training courses. These courses include guidance on evidence collection and conflict resolution.

4. Alaska Program Activities

The North Pacific Groundfish and Halibut Observer Program (Observer Program) deployed 404 observers for a total of 39,989 sea days across the groundfish fisheries in Alaska. The following sections describe programmatic activities for the Observer Program in 2019.

4.1 North Pacific Groundfish and Halibut Observer Program

In The Fisheries Monitoring and Analysis (FMA) Division of the Alaska Fisheries Science Center 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 Electronic Monitoring Observer Program.
- Electronic Monitoring Innovation Project.

In June of each year, NOAA Fisheries provides an annual report to the North Pacific Fishery Management Council (NPFMC) on the previous year's Observer Program deployment performance. Based on the analysis and recommendations in the report, a proposed Annual Deployment Plan (ADP) for the coming year is provided to the council in October. This process allows fishery managers to adapt and respond to management needs of North Pacific fisheries.

NOAA Fisheries staff from the FMA Division and the Alaska Regional Office released its draft 2020 ADP (NMFS 2019a) for the Partial-Coverage Observer Program in September and presented it to the NPFMC and its associated committees and advisory bodies. In the draft 2020 ADP, NOAA Fisheries used 2018 as the reference year and highlighted various decision points that will drive the final coverage rates that can be afforded. This draft was designed to inform a final 2020 ADP (NMFS 2019b), which updated effort estimates in the following ways:

- Using 2019 fishing effort, with last two months simulated.
- Incorporating a list of vessels opting in to Full Coverage rather than Partial Coverage for Bering Sea/Aleutian Islands trawl fisheries.

- Finalizing the size of the fixed-gear (longline and pot) Electronic Monitoring (EM) fleet.
- Completing incorporation of various exempted fishing permits.
- Confirming the list of partial coverage catcher-processors.
- Finalizing EM research vessels participating in innovation projects in lieu of carrying an observer or standard EM system.

The Office of Management and Budget approved a renewal of Observer Program information collections in March 2019. In compliance with the Paperwork Reduction Act, the approval process included the solicitation of comments on the burden estimates for submitting information required under the Observer Program's information collections.

4.2 Regulatory Updates

In 2019, NOAA Fisheries received an exempted fishing permit (EFP) application from several Alaska fishing industry groups for implementing EM systems in the Eastern Bering Sea (EBS) and Gulf of Alaska (GOA) pollock pelagic trawl catcher vessel fisheries. This EFP would exempt participating pollock pelagic trawl catcher vessels in the EBS and GOA from regulations related to vessel discard requirements and onboard observer coverage. These exemptions are necessary for participating vessels to achieve maximized retention for all harvested species and to fully test the use of EM as a compliance monitoring tool to ensure no salmon are discarded at sea. The EFP was designed to facilitate the NPFMC's long-term vision and ongoing commitment to a trawl EM program. Approximately 40 trawl catcher vessels in the pelagic pollock fisheries were carrying EM in 2019 in both the full- and partial-coverage categories. This included 12 vessels delivering to tenders and two tender vessels.

In April 2019, the NPFMC reviewed an initial review draft environmental assessment/regulatory impact review to increase the observer fee percentage to fund the deployment of observers and EM in the partial-coverage program. This analysis evaluated the potential costs and benefits and environmental impacts of

increasing the fee up to the statutory maximum of two percent.

The NPFMC's Fishery Monitoring Advisory Committee met in September 2019 to discuss a variety of topics including the Draft 2020 ADP and the Observer Fee Analysis public review draft, review the make-up and tasking of the NPFMC monitoring committees, and provide recommendations for future participation, coordination, and tasking. The Committee also discussed EM updates as well as a variety of observer safety and recruitment issues.

4.3 Safety Activities

The FMA and its partners continue to emphasize safety as its top priority. The FMA continually reviews and updates its safety procedures through annual updates to its training materials. In September 2019, the FMA presented a summary of the 2016 Observer Safety Program Review (see Section 3.1.3) recommendations to the NPMFC's Fisheries Monitoring and Analysis Committee. This committee has long been integrally involved in observer safety improvements as it includes both industry and observer provider representatives.

4.4 Observer Recruitment and Retention

The Observer Program experienced wide-spread observer shortages in 2019, leading to coverage delays for vessels in the full-coverage program. FMA staff met with representatives of all observer providers in September 2019 to discuss potential improvements,

and what role each party could play in recruitment and retention.

FMA reinstated two regulatory waiver options to help maximize observer deployments and reduce vessel delays: 90-day deployment waivers and 4-vessel waivers. Providers submit these requests, and observers are required to inform the FMA that they are amenable to this option. Waivers are granted only to willing observers in good standing when FMA inseason advisors indicate there are no data quality concerns.

4.5 Electronic Monitoring

In 2019 the Observer Program continued its EM deployment program for 168 vessels that voluntarily entered the EM strata and logged trips in the FMA's Observer Declare and Deploy System with a trip selection rate of 30 percent. In addition, in 2019 the FMA partnered with the Pacific States Marine Fisheries Commission, the University of Washington, and the commercial fishing industry to continue research and development work on the following EM systems:

- Stereo camera EM systems (rail cameras) for hook-and-line vessels.
- Chute and stereo camera systems for halibut discard information aboard trawl vessels.
- Intelligent EM systems that use algorithms to process imagery data in the field, including species identification and length.

5. West Coast Program Activities

On October 1, 2014 (beginning of FY 2015), the Southwest Region and Northwest Region merged to become the West Coast Region. 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 activities of the Northwest Fisheries Science Center's (NWFSC) West Coast Groundfish Observer Program (WCGOP) can be divided into two components: Catch Shares, which is industry funded, and Non-Catch Shares, which uses federally funded

observers. Catch share fisheries consist of the following fleets: bottom trawl; mid-water non-hake; fixed gear; at-sea hake (including catcher processors, motherships, and mothership catcher processors); and shoreside hake. Non-catch share fisheries consist of the limited-entry sablefish fixed gear; open-access fixed gear; directed 2A Pacific halibut derby fixed gear; Washington, Oregon, and California pink shrimp trawl; Oregon and California nearshore fixed gear; California halibut trawl; California ridgeback prawn trawl; and California sea cucumber trawl fisheries. The WCGOP deployed 125 observers for a total of 7,439 days in 2019.

5.1.1 West Coast Trawl Catch Share Program

The West Coast Groundfish Trawl Catch Share program was implemented January 11, 2011. Under the trawl rationalization program, the portion of total allowable catch for the fishery is divided into individual quota shares that are allocated to permit owners. Quota shares can be leased or sold, and both landed and discarded catch count against quota pounds for fishers. Individual accountability is a core component of this catch share program, and all trips and landings are monitored. At-sea observers or EM are used to account for discarded catch at-sea, and catch monitors work shoreside to verify and monitor all landings. The WCGOP provided coverage for these sectors for 5,395 sea days in 2019.

5.1.2 West Coast Non-Catch Share Fisheries

Federal funds paid 100 percent of the cost of observer coverage in the non-catch share fisheries. The WCGOP provided coverage for these sectors for 2,044 sea days in 2019. Although many of these sectors may be lower volume or do not target groundfish, they all interact with groundfish species and protected species and are an important component for accounting total mortality of groundfish species and stocks.

5.1.3 Data and Management

WCGOP data contributed to several publications in FY 2019, including Orr et al. 2018. In addition, WCGOP data supported a proposed rule (84 FR 48094) that would require commercial groundfish bottom longline vessels 26 feet length overall and longer, managed under the Pacific Coast Groundfish Fishery Management Plan (FMP), to deploy streamer lines or to set gear between civil dusk and civil dawn when fishing in federal waters north of 36° North latitude. The action was designed to fulfill terms and conditions of a 2017 United States Fish and Wildlife Service Biological Opinion to minimize incidental take of Endangered Species Act-listed short-tailed albatross by vessels in the Pacific Coast groundfish fishery. The WCGOP also continued to collaborate with Oregon Sea Grant to further study cryptic (i.e., unobserved) seabird mortality from trawl cable interactions.

5.1.4 Electronic Monitoring

In June 2019, NOAA Fisheries issued a final rule (84 FR 31146) to implement an EM program for two sectors of the limited entry trawl fishery, consistent with the Magnuson-Stevens Fishery Conservation and Management Act (MSA) and the Pacific Coast Groundfish FMP. The action allowed catcher vessels in the Pacific whiting fishery and fixed gear vessels in the shorebased Individual Fishing Quota (IFQ) fishery to use EM in place of observers to meet the requirements of the Trawl Rationalization Program for 100 percent at-sea observer coverage. This action was necessary to increase operational flexibility and reduce monitoring costs for vessels in the trawl fishery by providing an alternative to observers. EM systems were deployed on 46 vessels for a total of 3,915 sea days in 2019.

5.2 Southwest

The West Coast Regional Observer Program (Observer Program) deployed 12 observers for a total of 820 sea days in 2019. 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. A summary of observer program reports is posted online.⁵

A great deal of the Observer Program's effort in 2019 focused on a deep-set buoy gear (DSBG) fishery carried out under exempted fishing permits (EFPs) as recommended by the Pacific Fishery Management Council. Based on standard DSBG fishing activity in 2018, and other factors taken into consideration, NOAA Fisheries renewed approximately 20 DSBG EFPs through 2019. Approximately six vessels conducted 10 trips in January 2019. Protected species interactions consisted of three northern elephant seals, and one loggerhead sea turtle, all released alive. A data management plan for this fishery is being developed in cooperation with the NOAA Fisheries West Coast Regional Office, SWFSC, and Pacific States Marine Fisheries Commission.

Besides the DSBG fishery, the Observer Program also covers a few deep-set pelagic longline vessels. In 2019,

⁵ http://www.westcoast.fisheries.noaa.gov/fisheries/wc_observer_programs/sw_observer_program_info/data_summ_report_sw_observer_fish.html

five longline vessels were operating under the West Coast FMP. The Observer Program provided 20 percent coverage-based measures described in the 2014 ESA Biological Opinion on Continued Operation of the Hawaii-based Deep-set Longline Fishery.⁶ Increasingly, and for unclear reasons, Hawaiian deep-set longline vessels are leaving the Hawaii-based fishery to fish under the West Coast FMP, with more and more Hawaiian vessels operating from California.

The Observer Program also provided coverage for the drift gillnet fishery. For the 2018-2019 fishing season, the Observer Program observed 124 out of 473 total

estimated sets, resulting in a 26.2 percent coverage rate and 27 observed trips. Observers recorded protected species bycatch of two California sea lions and five short-beaked common dolphins.

On the safety front, the Observer Program held a refresher observer and staff safety training class on June 26 and 27 in Long Beach and Newport Beach, California. The Observer Program also held new observer training and refresher training from September 9-20 in La Jolla, Long Beach, and Newport Beach, California.

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 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. The PIROP has been able to meet its targets despite budgetary challenges as observers in this program stay at sea for extended periods of time and travel long distances, making deployments expensive. In 2019, the PIROP deployed 78 observers for a total of 8,796 sea days across all three fisheries.

The PIROP arranges for observer placement, logistics, and gear and data forms for both the Western and Central Pacific Fisheries Commission and Inter-American Tropical Tuna Commission Convention Areas. The Program is the primary point of contact for U.S. vessels on reporting requirements, concerns, and Treaty updates, even for the vessels that land in foreign ports. The PIROP also assists the Pacific Community⁷ with collection of biological samples and tuna tagging.

6.1 Regulatory Updates

On February 22, 2019, NOAA Fisheries closed the “Southern Exclusion Zone” (SEZ) to deep-set longline fishing for all vessels registered under the Hawaii longline limited access program, as a result of the

fishery reaching the established annual trigger of two observed false killer whale mortalities or serious injuries (M&SI) in the fishery within the U.S. Exclusive Economic Zone (EEZ) around Hawaii. This action is necessary to comply with False Killer Whale Take Reduction Plan regulations that establish the SEZ closure trigger and procedures to limit M&SI of false killer whales in the Hawaii deep-set longline fishery. This conservation measure was supported by observer data that documented two false killer whales hooked during deep-set longline trips in the U.S. EEZ, one each on January 10 and January 15, 2019. (For more information on this SEZ closure, see 84 FR 5356.)

The Hawaii pelagic longline shallow-set swordfish fishery closed for the year on March 27, 2019, due to exceeding its allotted 17 loggerhead sea turtle interactions. Due to the nature of the fishery, including lengthy fishing trips by the longline vessels, there were 20 confirmed interactions before fishing activity ceased. On June 26, 2019, the NOAA Fisheries Pacific Islands Regional Office (PIRO) published an ESA Biological Opinion on the continued authorization of the fishery.⁸ In this Biological Opinion, NOAA Fisheries determined that several reasonable and prudent measures were necessary and appropriate to minimize the impacts of the fishery on threatened and endangered species. These measures, and their associated terms and conditions, required NOAA Fisheries to (1) develop

⁶ <https://www.fisheries.noaa.gov/resource/document/biological-opinion-continued-operation-hawaii-based-deep-set-pelagic-longline>

⁷ <https://www.spc.int/>

⁸ <https://www.fisheries.noaa.gov/resource/document/final-biological-opinion-continued-authorization-hawaii-pelagic-shallow-set>

a minimization measure, or a suite of minimization measures designed to reduce the incidental capture and mortality of leatherback and loggerhead turtles; and (2) to use temporal and spatial data to inform decision-making to reduce the incidental capture and mortality of oceanic whitetip sharks. Specific terms and conditions included establishing annual fleet-wide interaction limits of 16 leatherback turtles and establishing trip limits for interactions with loggerhead and leatherback turtles. PIROP observer coverage is critical to monitor compliance with these measures.

6.2 Data and Electronic Reporting

In 2019, the PIROP transitioned its Oracle-based observer database housed at the NOAA Fisheries Pacific Islands Fisheries Science Center (PIFSC) to a Microsoft structured query language, or SQL, database housed at the Pacific Islands Regional Office. This transition occurred in part due to data-entry and data-editing issues with the Oracle-based database.

In addition, the PIROP worked with the NOAA Fisheries Office of the Chief Information Officer to develop the next iteration of the observer e-Reporting project. The primary goal of this project was to develop the minimum viable product (MVP) for the PIROP e-Reporting project and deploy it for testing with at-sea observers to collect feedback that will inform the program-wide implementation of electronic reporting. This effort supported the overall PIROP goal to develop and implement an e-Reporting platform to augment the current paper-based data collection system used by the PIROP.

6.3 Shark Release Mortality

In August 2019, PIFSC scientists completed a report entitled “Quantifying post release mortality rates of sharks incidentally captured in Pacific tuna longline

fisheries and identifying handling practices to improve survivorship.”⁹ PIROP observers made substantial contributions to this study by tagging sharks. Observers recorded additional metrics specific to the tagging event and provided detailed narratives of the handling methods including type and quantity of trailing gear, damage to animal from gear removal, how it was landed, time out of water if sharks were boarded to remove gear, time for tagging and release, sea surface temperature, sex, approximate length, and anything noteworthy regarding the interaction. Observers also recorded the tagging events using a camera so that scientists could validate data recorded by different observers. The authors submitted their report to the Western and Central Pacific Fisheries Commission to inform that organizations management and conservation practices.

6.4 Seabird Bycatch

The PIROP in 2017 noted an increasing trend in seabird bycatch in the Hawaii longline fisheries. This increase in bycatch resulted in a September 2018 workshop sponsored by the Western Pacific Regional Fishery Management Council. The workshop reviewed seabird bycatch mitigation measures for Hawaii pelagic longline fisheries and placed a high priority on tori lines. In 2019, the Council, the Hawaii Longline Association, the PIFSC, and the PIRO began a multi-year joint research project to design and test tori lines in the deep-set longline fishery. Research results indicated that they are highly effective at reducing albatross contacts and attempts with baited hooks (Gilman et al. 2021). Also in 2019, the PIROP continued to salvage whole, dead, longline-caught seabirds, and coordinated with Alaska and the non-governmental organization Oikonos to have necropsies performed and to link Hawaii and Alaska seabird data sets.

7. Greater Atlantic Program Activities

The Fisheries Sampling Branch (FSB) at NOAA Fisheries’ Northeast Fisheries Science Center oversees observer programs in the Greater Atlantic Region. The FSB coordinates three different observer programs. The Northeast Fisheries Observer Program (NEFOP)

is the longest-standing program and provided 6,655 observer days in 2019. The Industry-Funded Scallop Observer Program provided 3,171 observer days in 2019. The At-Sea Monitoring Program for groundfish provides supplemental monitoring for groundfish

⁹ <https://repository.library.noaa.gov/view/noaa/23442>

sector catch accounting; its deployments totaled 2,509 observer days. Overall, these three programs deployed 189 unique observers in 2019.

The FSB 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 surfclam 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 five percent to 50 percent in a given year. The FSB has established a variety of means to select vessels for observer deployments, and these means vary by fishery. A pre-trip notification system selects vessels in the groundfish fishery, a phone call-in system selects vessels in herring and mackerel fisheries, and an interactive voice recording call-in system selects vessels in the scallop fishery. The FSB tries to meet an assortment of observer coverage targets each year. The FSB 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 Training and Outreach

In 2019, the FSB provided 20 training sessions in total, consisting of 140 active training days. In addition, the FSB participated in approximately 12 different outreach events in 2019, including outreach port visits in New Jersey, New York, and Rhode Island, as well as the 2019 Woods Hole Science Stroll.¹⁰ The FSB also created an observer Twitter campaign in March 2019 with the hashtag #WhyObservingRocks.

7.2 Electronic Monitoring

The FSB continued to support efforts in 2019 to implement EM technologies to augment data collection by observers, working with the regional EM working group, the NOAA Fisheries Greater Atlantic Regional Office (GARFO), the fisheries management councils,

industry, EM vendors, and other stakeholders to determine how to best incorporate EM into fisheries monitoring. In particular, GARFO and NOAA Fisheries' Northeast Fisheries Science Center (NEFSC) continued work in the development of EM programs in the groundfish and herring/mackerel midwater trawl fisheries. The FSB has identified two EM models as potentially suitable for Greater Atlantic fisheries: the audit model, and the maximized retention model.

For the audit model, the FSB worked with the Nature Conservancy, the Cape Cod Commercial Fishermen's Alliance, the Maine Coast Fishermen's Association, the Gulf of Maine Research Institute, Teem Fish Monitoring, and approximately 20 vessels in four groundfish sectors in 2019 to use cameras to validate discards as reported by fishermen in logbooks. The project planned for approximately 590 trips in FY 2019.

The FSB collaborated with the Gulf of Marine Research Institute, Integrated Monitoring, Inc., and three trawl vessels from Maine, Massachusetts, and Rhode Island on the maximized retention project. The goal of this project was to use cameras to verify that fishermen retain all catch, including discards, and collect data on shore via a dockside monitoring program. The project planned for approximately 150 trips in FY 2019.

7.3 Pre-Trip Vessel Safety Checklist Workshop

Ensuring a safety culture is critical to the FSB mission. As part of this commitment, the FSB organized a workshop in August 2019 to evaluate the process of completing the required observer pre-trip vessel safety checklist. The two dozen people who attended the workshop had a combined 440 years of experience working with fishery observer programs and/or commercial fishing vessels. The resulting workshop report¹¹ described workshop discussions and actions items intended to make the checks more efficient, while also remaining an effective tool to improve safety at sea. Proposed changes resulting from the workshop included:

- Expanding the Emergency Position Indicating Radio Beacon (EPIRB) Visual Inspection Card (EVIC) to include the life raft.

¹⁰ <https://woodsholesciencestroll.org/>

¹¹ <https://www.fisheries.noaa.gov/resource/document/pre-trip-vessel-safety-checklist-workshop-report>

- Updating the safety checklist to improve formatting and organization.
- Working with industry members and training staff to ensure the EVIC cards are issued and utilized as much as possible.
- Developing a safety reminder list for observers prior to boarding.
- Creating a mentoring program to ensure new observers are completing the safety checklist and communicating with industry well.

7.4 Staffing and Observer Retention

The FSB hired several new positions in 2019, including a mobile application programmer, data processing software developer, EM database project manager, EM database developer and Pre-Trip Notification System (PTNS)¹² operations lead. Observer retention rates were lower than historic averages, with a 65 percent retention rate at the 6-month mark and a 47 percent rate at the 12-month mark.

8. Southeast Program Activities

The Southeast Fisheries Observer Program (Observer Program) observed 2,516 sea days in 2019, with a total of 45 observers. The program observed six fisheries in 2019:

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

In 2019, the Observer Program focused on a program realignment plan, led by the Southeast Fisheries Science Center (SEFSC). The Observer Program traditionally has been spread among three separate laboratories, as indicated above. The three laboratories employ permanent full-time and contract staff to support observer activities. The SEFSC determined that program consolidation could allow for smaller numbers of more specialized employees performing essential program tasks. As a result, work quality would be strengthened, and efficiencies would be realized, including:

- Safety training—Traditionally each lab maintained Alaska Marine Safety Education Association safety instructor training for at least two individuals, who conducted observer safety trainings on an average of less than twice a year. A smaller number of safety trainers, chosen based on the quality of the training they provide, training more times per year throughout the SEFSC laboratories, would result in more consistent, higher-quality observer safety training.
- Crisis management/emergency response—A small team of three or four highly trained individuals could serve as the Observer Program’s emergency response team in the case of emergencies at sea, including injuries and harassments.
- Sampling design analyses and bycatch estimation—A single analyst could be employed full time to work on design and estimation for all SEFSC programs, rather than the traditional part-time, ad-hoc involvement of assessment scientists or other SEFSC staff. This consolidation would strengthen the confidence in the estimates produced.
- Law enforcement liaisons—All programs traditionally report violations of fisheries and pollution rules in a standardized format and have staff members who act as points of contact for communicating violations, saving documentation, and ensuring observers are trained and guided on appropriate affidavit completion and related measures. A single employee, with a backup, could fulfill this task, resulting in completely standardized guidance and

¹² Before leaving on a trip to catch groundfish, Northeast groundfish vessels first notify NOAA Fisheries about the trip so a fishery monitor or observer can be assigned to the trip if needed.

feedback to the observers as well as communication with the NOAA Fisheries Office of Law Enforcement.

- Gear procurement, maintenance, and storage—Each laboratory has purchased and maintained an inventory of safety, sampling, and training gear. Consolidation of gear-related activities would allow more efficient use of gear and possibly encourage volume discounts of gear and supplies purchases.
- Database/systems maintenance—Program consolidation could facilitate creation of a single observer database/data entry and reporting system that would not only allow more efficient access for end users but also decrease information technology maintenance time demand.

8.1 Southeast Shrimp Trawl Observer Program

The Shrimp Observer Program maintained approximately two percent observer coverage in the Gulf of Mexico federal penaeid and rock shrimp otter trawl fisheries. The Shrimp Observer Program provided inshore coverage of the shrimp trawl (otter and skimmer) fishery operating in the northern Gulf of Mexico to monitor for mammal mammals through Marine Fisheries Initiative funding. In addition, the Shrimp Observer Program provided inshore coverage for sea turtle assessment through Deepwater Horizon (DWH) restoration funding (324 sea days in 2019).

Preliminary EM testing on contracted commercial Gulf of Mexico shrimp trawl vessels focused on answering the following questions:

- Can EM video provide sufficient images to account for smalltooth sawfish and other large bycatch species?
- Are EM images clear enough to allow for species-level identification?
- Are EM data similar to data collected by on-board observers?

The study found that cameras performed well in capturing video for more than 109 hauls. Pairwise comparison of EM video to data collected by onboard observers (animals >1.0 kg in size) lead investigators to conclude that EM would be an effective tool

for detecting protected resources and larger fauna interactions in the Gulf of Mexico shrimp trawl. The investigators will publish study results in the journal *Marine Fisheries Review*. Given these results, the Shrimp Observer Program is confident that new innovative systems can automate volume estimation for catch and species identification.

8.2 Pelagic Longline Observer Program

In addition to mandated eight percent coverage through all statistical areas, the Pelagic Observer Program completed a Gulf of Mexico enhanced coverage program in 2018. The Pelagic Observer Program also deployed observers on 39 trips for the third year of a DWH 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. The Pelagic Observer Program also conducted a two-week training class in March 2019 for six new observers.

Pelagic Observer Program data supported a September 2019 NOAA Fisheries report entitled *Three-Year Review of the Individual Bluefin Tuna Quota Program*. This report was conducted to evaluate this program's effectiveness in meeting its objectives, which include limiting the amount of bluefin tuna landings and dead discards in the pelagic longline fishery.

8.3 Reef Fish Observer Programs

The Gulf of Mexico Reef Fish Observer Program based out of Galveston, Texas, provided approximately one percent coverage for the Gulf of Mexico reef fish fleet in 2019. This coverage was less than in previous years, which resulted in less biological sampling (e.g., collection of gonads and otoliths) for species of interest. Currently stock assessments for Gulf of Mexico reef fish rely on discard rates and biological samples obtained through observer programs. A reduction in observer coverage has the potential to impact estimates for most stock assessments and the management advice. The exact impacts will depend on several factors including the degree of change, the level of total discards relative to total catch, the discard mortality rate, and whether there is a time trend in the discard data. Depending on the combination of factors, it has the potential to

¹³ <https://www.fisheries.noaa.gov/grant/marine-fisheries-initiative>

¹⁴ <https://www.fisheries.noaa.gov/resource/document/three-year-review-individual-bluefin-quota-program>

affect the scale of population estimates (e.g., changes in maximum sustainable yield and annual catch limit), as well as changes in relative stock status (e.g., overfished or overfishing).

The observer program based out of Panama City, Florida, continued to deploy observers on commercial vessels targeting reef fish species in the U.S. South Atlantic vertical line fishery in 2019. Seventeen vessels were observed making 467 vertical line hauls on 34 trips totaling 63 sea days. However, coverage of this fishery has been low, primarily due to low compliance. Many fishermen did not contact the observer program upon receipt of their selection letter and/or when making a fishing trip, as required. Some fishermen contacted the program at the beginning of the selection period with their fishing plans for the quarter, but then did not notify the program of any fishing trips following the initial contact.

In addition, most of this fleet reported that they switch from commercial fishing to charter fishing in the spring and summer. However, these same fishermen reported that if they did not have any charters booked, they would fish commercially, making a 24-48 hour notice of fishing difficult. Vessel owners appear to lease their permits and/or vessels in high numbers in this fishery, contributing to a delay in notifying the correct vessel operator of coverage. Some fishermen also reported that they target king mackerel only, and the observer program did not attempt to cover those vessels because vessel selection is based on snapper-grouper permits. Logbook data, however, showed that some fishermen landed king mackerel as well as other reef fish species in the same trip, in about equal amounts. To address these coverage issues, the program plans to:

- Send Office of Law Enforcement biannual non-compliance reports and continue quarterly updates to attempt to bring the fleet to compliance.
- Continue attempts by staff to contact vessel owners and operators throughout the quarter for coverage.
- Cover all vessels fishing with vertical line gear, regardless of target species.

8.4 Coastal Gillnet Observer Program

The Southeast Gillnet Observer Program, in its continuing efforts to adapt to the fishery, currently covers anchored (sink and stab), strike, or drift gillnet fishing,

regardless of target, by vessels that fish year-round from Florida to North Carolina and the Gulf of Mexico. Most observer effort has occurred in federal waters, and little is known regarding fishing effort, catch, bycatch, and interactions with protected species in gillnet vessels operating in state waters. Although many states have banned gillnets in state waters, some states still permit commercial fishing activities using gillnets to harvest their catch.

8.5 Shark Bottom Longline Observer Program

The Shark Bottom Longline Observer Program (SBLOP) 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. Currently about 219 U.S. fishermen are permitted to target sharks in the Atlantic Ocean and Gulf of Mexico, and an additional 264 fishermen are permitted to land sharks incidentally. Amendments to the Consolidated Atlantic Highly Migratory Species Fishery Management Plan implemented a shark research fishery, which allows NMFS to select a limited number of commercial shark vessels on an annual basis to collect life history and catch data for future stock assessments (NMFS 2006). Specifically, only commercial shark fishermen participating in the research fishery are allowed to land sandbar sharks, *Carcharhinus plumbeus*, and must carry an observer on 100 percent of all trips (compared to a target coverage level of five to ten percent outside the research fishery). Outside the research fishery, fishermen are permitted to land other large coastal sharks (e.g., blacktip shark, *Carcharhinus limbatus*, and bull shark, *Carcharhinus leucas*).

8.6 Deepwater Horizon Observer-Related Activities

In 2019, the Observer Program continued to participate in discussions related to development of a DWH restoration project that would create an observer program for the Gulf of Mexico menhaden purse seine fishery. This project would build upon lessons learned from a pilot observer effort that occurred in 2011 to attempt to observe sea turtle interactions in this fishery. In addition to improving understanding of sea turtle interactions and helping to inform the direction of future bycatch reduction conservation measures, this project would also benefit marine mammals.

The program also participated in discussions in 2019 regarding another DWH project that would 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 develop and implement turtle excluder devices (TEDs) for Mexican Gulf of Mexico shrimp trawl fisheries. The project would place observers on vessels to evaluate BRD performance during commercial trawling operations. (For more information about these DWH projects, see the Open Ocean Restoration Area website.¹⁵)

8.7 Electronic Monitoring

Between 2015 and 2019, the SBLOP designed and developed an Android tablet application capable of facilitating the exchange of observer data between a remote database version on a mobile device and central database located on a server at the SEFSC in Miami. Advantages of tablet applications like this include fewer personnel hours focused on data entry,

streamlined data processing, and improved validation capabilities, with an overall reduction in cost. The SEFSC is seeking to modify the current application to accommodate other fishing gears and incorporate specific program needs. Development will focus on the addition of reef fish bottom longline and vertical line, pelagic longline, and gillnet fisheries to the existing application. Although not all of the current SBLOP application is transferable to each of the other fisheries, specific design elements of the back-end database, user interface, and data importation procedure will serve as building blocks for other programs and fisheries. This project additionally will provide the Miami and Galveston observer programs with needed equipment to establish tablet testing initiatives, including water resistant tablets, cases, satellite Wi-Fi hotspots, external storage devices, and portable charging systems. This project should unify the data collection processes of the SEFSC's observer programs, while also advancing the capabilities of each program through the inclusion of electronic technology.



An observer takes notes while examining catch in a fishing net.

¹⁵ <https://www.gulfspillrestoration.noaa.gov/restoration-areas/open-ocean>

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Appendix A: NOAA Fisheries Observer Programs Funded in FY 2019 by Region

Alaska

| 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, 206-526-4076, Jennifer.Ferdinand@noaa.gov Website: www.fisheries.noaa.gov/alaska/fisheries-observers/north-pacific-observer-program | | | | | | | | | | |
| Bering Sea, Aleutian Islands (BSAI) Groundfish Trawl Cooperatives (AFA, A80), BSAI Voluntary Longline Pacific cod cooperative, Gulf of Alaska (GOA) Groundfish Trawl Rockfish Program (RP), and Catcher Processors | 1,270 vessels (172 in 100% coverage) 7 shoreside plants | MSFCMA (50 CFR 679.50) | Various | Obs/Tm-North Pacific Marine Resource Observers/North Pacific Observer Program ¹ | 1973–present (Observer program); 1998–present (AFA); 2007–present (A80, CDQ); 2013–present (RP) | 100% | 100% | Defined by regulation | 36,068 | 404 |
| | | | | National Observer Program ¹ | | | | | | |
| | | | | Reducing Bycatch | | | | | | |
| | | | | Other Congressional Funding | | | | | | |
| BSAI and GOA Groundfish Trawl, Longline and Pot Fisheries; U.S. Pacific Halibut Fishery | | | Year-round | Obs/Tm-North Pacific Marine Resource Observers/North Pacific Observer Program ¹ | 2013–present | Pot gear 15.4%; Tender pot gear 16.1%; Hook-and-line 17.7%; Trawl 23.7%; Tender trawl 27.1%; EM fixed gear 30%; Jig vessels and vessels under 40 ft. 0% | Pot gear 14%; Tender pot gear 29.5%; Hook-and-line 17.6%; Trawl 25.2%; Tender trawl 35.7%; EM hook-and-line 31.8%; EM pot 36.4%; Jig vessels and vessels under 40 ft. 0% | Defined by available funds and contracts with observer providers in Annual Deployment Plan | 3,921 | |
| | | | | National Observer Program ¹ | | | | | | |
| | | | | Reducing Bycatch | | | | | | |
| | | | | Other Congressional Funding | | | | | | |
| | | | | Industry Funding | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| Alaska Marine Mammal Observer Program, Alaska Fisheries Science Center, 7600 Sand Point Way NE, Seattle, WA 98115 | | | | | | | | | | |
| Website: www.fisheries.noaa.gov/alaska/fisheries-observers/alaska-marine-mammal-observer-program | | | | | | | | | | |
| Southeast Alaska Drift Gillnet Fishery | 480 permits | MMPA (50 CFR 229) | May–Oct | Marine Mammals | 0 | 0 | 0 | 0 | 0 | 0 |
| *Actual sea days does not include shoreside plant coverage days (some of which are also co-occur with sea-days), bringing the total coverage days to 41,533 ¹ Portion of budget line used to support management activities. | | | | | | | | | | |
| TOTAL ALASKA REGION OBSERVER PROGRAM FUNDING (CONGRESSIONAL): \$8,312,568 | | | | | | | | | | |
| TOTAL ALASKA REGION OBSERVER PROGRAM FUNDING (INDUSTRY): \$19,220,279 | | | | | | | | | | |
| TOTAL ALASKA REGION OBSERVER PROGRAM FUNDING (ALL SOURCES): \$27,532,847 | | | | | | | | | | |

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, 562-980-4033, Charles.villafana@noaa.gov | | | | | | | | | | |
| Website: www.westcoast.fisheries.noaa.gov/fisheries/wc_observer_programs/sw_observer_program_info/observer_program_sw_fish.html | | | | | | | | | | |
| California Large-Mesh Drift Gillnet Fishery | 19 vessels | MMPA (50 CFR 229), MSFCMA (50 CFR 660) | August–January, May | National Observer Program | 1990–present | 20% | 22.6% | 150 | 104 | 12 |
| Deep Set Buoy Gear Exempted Fishing Permit (EFP) | 24 vessels | MSFCMA (50 CFR 660) | June–December | National Observer Program | 2017–present | 100%/30% | 38.5% | 300 | 319 | |
| Linked Deep Set Buoy Gear EFP | 5 vessels | MSFCMA (50 CFR 660) | June–December | National Observer Program | 2018–present | 100% | 100% | 32 | 32 | |
| California Deep- and Shallow-Set Pelagic Longline EFP | 2 vessels | MMPA (50 CFR 660) | September – November | National Observer Program/Industry Funded | 2019 | 100% | 100% | 143 | 143 | |
| California Deep-Set Pelagic Longline Fishery | >3 vessels | MSFCMA (50 CFR 660) | January–December | Reducing Bycatch National Observer Program | 2001–present | 20% | 34.3% | 222 | 222 | |
| PSMFC Data Management and Bycatch Estimates | N/A | N/A | Year-round | National Observer Program | N/A | N/A | N/A | N/A | N/A | |
| West Coast Groundfish Observer Program (WCGOP), Northwest Fisheries Science Center, 2725 Montlake Blvd East, Seattle, WA 98112-2097 | | | | | | | | | | |
| Program Manager: Jon McVeigh, 206-302-2423, jon.mcveigh@noaa.gov; Website: www.nwfsc.noaa.gov/research/divisions/fram/observation/index.cfm | | | | | | | | | | |
| West Coast Trawl Catch Shares (Shoreside and at-sea fleets) | 154 | MSFCMA (50 CFR 660) | Shoreside: year-round; at-sea May–December | National Catch Share Program | Jan 2011–present (Note: Includes historical fisheries LE Trawl 2001–2010 and At-Sea Hake 1975–2010.) | 100% | 100% | Defined by regulation (100% coverage, shore-side 1 observer; at-sea 2 observers) or EM | Shore-side: 2,994 At-Sea: 1,928 | 96 |
| | | | | West Coast Observers | | | | | | |
| Industry Funding | | | | | | | | | | |
| National Observer Program | | | | | | | | | | |
| Cost Recovery | | | | | | | | | | |
| Catch Share Using Electronic Monitoring | | | | National Catch Share Program | EFP in FY 2018 | | | | EM: 3,915 | # Vessels Used EM: 46 |
| West Coast Groundfish Non-Catch Share Fisheries (Limited Entry Fixed Gear, Open Access fisheries including state-managed fisheries) | LE: 190 long-line, 33 trap permits; OA: approx 1,000 | MSFCMA (50 CFR 660) | Year-round | National Observer Program | 2001–present | LE: 40% OA: <1–10% | LE: 43% OA: 4–26% | Target coverage rate based on landings, not sea days | LE: 589 OA: 1,723 | 43 |
| | | | | West Coast Observers | | | | | | |
| | | | | Reducing Bycatch | | | | | | |
| TOTAL WEST COAST OBSERVER PROGRAM FUNDING (CONGRESSIONAL): \$8,437,647 | | | | | | | | | | |
| TOTAL WEST COAST (NORTHWEST) OBSERVER PROGRAM FUNDING (INDUSTRY): \$3,683,433* | | | | | | | | | | |
| TOTAL WEST COAST REGION OBSERVER PROGRAM FUNDING (ALL SOURCES): \$12,121,080 | | | | | | | | | | |

*This amount includes observer and shoreside catch monitor costs; catch monitor costs can be charged to the vessel or the processor and include coverage for electronic monitoring trips.

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 |
|--|---------------------------------------|--|---------------------|--|------------------|-----------------|-----------------|-----------------|-----------------|---------------------|
| Hawaii Fisheries Observer Program, Pacific Islands Regional Office, IRC, 1845 Wasp Blvd., Bldg. 176, Honolulu, HI, 96818 | | | | | | | | | | |
| Program Manager: John Kelly, 808-725-5100, john.d.kelly@noaa.gov, Website: www.fisheries.noaa.gov/pacific-islands/pacific-islands-region-observer-program | | | | | | | | | | |
| Hawaii Pelagic Longline Fishery | 164 vessels with permits (125 active) | MSFCMA (50 CFR 665), MMPA (50 CFR 229) | Year-round | Obs/Trn-Hawaii Longline Observers; Other Congressional Funding | 1994–present | 20% tuna | 20.74% | 7,041 | 7,562 | 78 |
| | | | | | | 100% swordfish | 100% | 1,342 | 759 | |
| American Samoa Pelagic Longline Fishery | 30 | MSFCMA (50 CFR 665) in Jan 2005 | Year-round | National Observer Program | 2005–present | 20% | 19.23% | 550 | 475 | |
| 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 |
| TOTAL PACIFIC ISLANDS REGION OBSERVER PROGRAM FUNDING (APPROPRIATED): \$8,462,542 | | | | | | | | | | |
| TOTAL PACIFIC ISLANDS REGION OBSERVER PROGRAM FUNDING (INDUSTRY): \$0 | | | | | | | | | | |
| TOTAL PACIFIC ISLANDS REGION OBSERVER PROGRAM FUNDING (ALL SOURCES): \$8,462,542 | | | | | | | | | | |

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: Amy Martins, 508-495-2266, amy.martins@noaa.gov | | | | | | | | | | |
| Website: www.fisheries.noaa.gov/new-england-mid-atlantic/fisheries-observers/fisheries-monitoring-operations-northeast | | | | | | | | | | |
| New England Multispecies Groundfish Sectors At-Sea Monitoring (ASM) | 1,000 trawl vessels, 400 gillnet vessels, and 40 longline (200 total vessels were active) | MSFCMA (50 CFR 648); MMPA (50 CFR 229) | Year-round | National Observer Program | 2010–present | 31.0% | 23.1% | Targets are set by SBRM (April through March), based on a target coverage set by the Regional Administrator and adjusted for funding availability and/or resource set-aside. No longer used the CV analysis due to the Amendment 23, which is working toward 100% coverage | 2,509 (ASM) | 74 (ASM) |
| New England Multispecies Groundfish Sectors Standardized Bycatch Reporting Methodology prioritized fleets NEFOP Coverage | | | | Northeast Fisheries Observer (NEFOP) | | | | | | |
| Standardized Bycatch Reporting Methodology prioritized fleets, and ASMFC NEFOP Coverage (non-groundfish) | >1,300 permits | 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 | SBRM targets | 4,812 | 110 |
| | | | | Reducing Bycatch | 2010–present | | | | | |
| Protected Species NEFOP Coverage | >600 permits | MMPA (50 CFR 229) | Year-round | Marine Mammal Observers | 1994–present | 30% coefficient of variation on critical marine mammal stocks | N/A | 546 | 431 | 63 |
| Atlantic Sea Scallop Fishery (Dredge and Trawl; General Category and Access Area Permits; Open and Access Areas) | 436 vessels | MSFCMA (50 CFR 648) | Year-round | Industry Funding | 1999–present | 5–15% by permit type/area fished, determined by SBRM and amount of set-aside | 6.3% | 2,741 | 3,171 | 69 |
| | | | | National Observer Program | 1999–present | | | | | |
| TOTAL GREATER ATLANTIC REGION OBSERVER PROGRAM FUNDING (CONGRESSIONAL): \$22,761,314 | | | | | | | | | | |
| TOTAL GREATER ATLANTIC REGION OBSERVER PROGRAM FUNDING (INDUSTRY): \$2,219,700 | | | | | | | | | | |
| TOTAL GREATER ATLANTIC REGION OBSERVER PROGRAM FUNDING (ALL SOURCES): \$24,981,014 | | | | | | | | | | |

Southeast (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: Elizabeth Scott-Denton, 409-766-3507, elizabeth.scott-denton@noaa.gov | | | | | | | | | | |
| Southeastern Atlantic and Gulf of Mexico Shrimp Otter Trawl Fisheries (Including Rock Shrimp) Skimmer Trawl | Approx. 1,467 (GOM) and 534 (SA) USCG federally permitted vessels, unknown number of state vessels, ~106 rock shrimp vessels | Voluntary through July 2007; Mandatory–July 2007 MSFCMA (50 CFR 622) | Year-round | Obs/Trn-South Atlantic and Gulf Shrimp Observers | 1992–present | ~2% | ~2% | 1,500 + Special Projects | 1,171 | 20 (also deployed in reef fish fishery) |
| | | | | Obs/Trn-Atlantic Coast Observers | | | | | | |
| Atlantic Pelagic Longline Observer Program, Southeast Fisheries Science Center, 75 Virginia Beach Dr, Miami, FL 33149-1003 | | | | | | | | | | |
| Program Manager: Larry Beerkircher, 786-489-0334, Lawrence.r.beerkircher@noaa.gov; Website: www.sefsc.noaa.gov | | | | | | | | | | |
| Atlantic, Gulf of Mexico, Caribbean Pelagic Longline Fishery | ~70–80 active vessels | MSFCMA (50 CFR 635); MMPA (50 CFR 229); ATCA | Year-round | Obs/Trn-Atlantic Coast Observers | 1992–present | 8% by vessel sets | 11% | 451 sets | 824 | 15 |
| | | | | Obs/Trn-East Coast Observers | | | | | | |
| | | | | Deepwater Horizon Early Restoration | | | | | | |
| Southeast Shark Driftnet Observer Program & Shark Bottom Longline Observer Program Southeast Fisheries Science Center, Panama City Laboratory, 3500 Delwood Beach Rd, Panama City, FL 32408 | | | | | | | | | | |
| Program Manager: Dr. John Carlson, 850-234-6541, john.carlson@noaa.gov, Website: www.fisheries.noaa.gov/southeast/fisheries-observers/southeast-shark-bottom-longline-observer-program | | | | | | | | | | |
| Southeast Shark and Coastal Teleost Gillnet Fishery | Directed Shark Permits: 216 Indirect Shark Permits: 262 | MMPA (50 CFR 229); MSFCMA (50 CFR 635) | Year-round | Obs/Trn-Atlantic Coast Observers | 1998–present | 100% shark strike, 38% shark drift, 5% shark and teleost sink net | No fishing in shark strike or shark drift-net fisheries, 44 field days in shark and teleost sink net | 100% shark strike, 38% shark drift, 5% shark and teleost sink net | 44 | 10 |
| South Atlantic Reefish Fishery | 450 vessels | MSFCMA (50 CFR 635) | Year-round | ACCSP, MARFIN, National Observer Program | 2014, 2017–2018 | 1% | <1% | 1% | 33 | 10 |
| Atlantic and Gulf of Mexico Directed Large Coastal Shark Bottom Longline Fishery | Directed Shark Permits: 216 Indirect Shark Permits: 262 Exempted Reefish Longline Exemption Permits: 65 | MSFCMA (50 CFR 635) | Year-round-open until quota is filled | National Observer Program | 1994–present | 100% shark research fishery; 4–6% non-sandbar shark fishery | 100% shark research fishery; 4–6% non-sandbar shark fishery | 100% sandbar shark research fishery; 4–6% non-sandbar shark fishery; 8–10% reefish longline | 187 shark research, 45 shark bottom longline, 22 mixed reefish/shark | 10 |

Southeast (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: Elizabeth Scott-Denton, 409-766-3507, elizabeth.scott-denton@noaa.gov | | | | | | | | | | |
| Gulf of Mexico Reef Fish Fishery—All Gear Types | Approx. 831 permitted USCG documented vessels | Mandatory | Year-round | Reducing Bycatch | 2006–present | ~1% | <1% | 257 | 190 | 20 (also deployed in shrimp fishery) |
| | | | | National Observer Program | | | | | | |
| 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: Elizabeth Scott-Denton, 409-766-3507, elizabeth.scott-denton@noaa.gov | | | | | | | | | | |
| 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 |
| TOTAL SOUTHEAST REGION OBSERVER PROGRAM FUNDING (CONGRESSIONAL): \$6,272,519 | | | | | | | | | | |
| TOTAL SOUTHEAST REGION OBSERVER PROGRAM FUNDING (INDUSTRY): \$0 | | | | | | | | | | |
| TOTAL SOUTHEAST REGION OBSERVER PROGRAM FUNDING (ALL SOURCES): \$6,272,519 | | | | | | | | | | |

Office of Science & Technology

| Fisheries Observed | Funding Source | Program Duration | Program Description |
|---|---------------------------|------------------|---|
| National Observer Program, Office of Science and Technology, 1315 East West Highway, Silver Spring, MD 20910 | | | |
| Manager: Elizabeth Chilton, 301-427-8201, Elizabeth.chilton@noaa.gov, Website: www.fisheries.noaa.gov/topic/fishery-observers | | | |
| Science and Technology | Reducing Bycatch | 1999–present | National Seabird Program support for observer program-related projects. |
| | All Coast Observers | | National Seabird Program support for observer program-related projects. |
| | National Observer Program | | Program staff salary and travel, and support for the Safety Advisory Committee, Knauss Marine Policy Fellow, International Fishery Observer and Monitoring Conference, and communications contract. |
| TOTAL SCIENCE AND TECHNOLOGY PROGRAM FUNDING (CONGRESSIONAL): \$675,779 | | | |
| TOTAL SCIENCE AND TECHNOLOGY PROGRAM FUNDING (INDUSTRY): \$0 | | | |
| TOTAL SCIENCE AND TECHNOLOGY PROGRAM FUNDING (ALL SOURCES): \$675,779 | | | |

Totals - All Observer Programs

OBSERVER PROGRAM FUNDING (CONGRESSIONAL)*: \$54,922,369

OBSERVER PROGRAM FUNDING (INDUSTRY): \$25,123,412

OBSERVER PROGRAM FUNDING (ALL SOURCES): \$80,045,781

ACTUAL NUMBER OF SEA DAYS OBSERVED: 71,607**

NUMBER OF OBSERVERS*: 850**

*Appropriated funds include \$48.6M from the Observers and Training PPA, and \$6.3M from other PPAs, including Fisheries and Ecosystem Science Programs and Services, Fisheries Data Collections, Surveys and Assessments, Fisheries Management Programs and Services, and Marine Mammals, Sea Turtles, and Other Species, as well as Deepwater Horizon restoration funds. A portion of these funds are used for management activities for observers.

**Includes days deployed for electronic monitoring and at-sea monitoring; does not include Alaska shoreside plant coverage days or programs that target permits, sets, or trips instead of sea days.

***Does not include deployments for electronic monitoring.

Appendix B: Fisheries Observed in FY 2019

| 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 drift gillnet 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 30)

| 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 |
| WC | California Large-Mesh Drift Gillnet | |
| WC | Deep-Set Pelagic Longline | |
| WC | Deep-Set Buoy Gear Exempted Fishing Permits | |
| Total | 38 | 16 |

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 NMFS 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 Raimondo

NOAA Administrator

Richard Spinrad

Assistant Administrator for Fisheries

Janet Coit

July 2021

www.fisheries.noaa.gov

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National Marine
Fisheries Service

1315 East-West Highway
Silver Spring, MD 20910