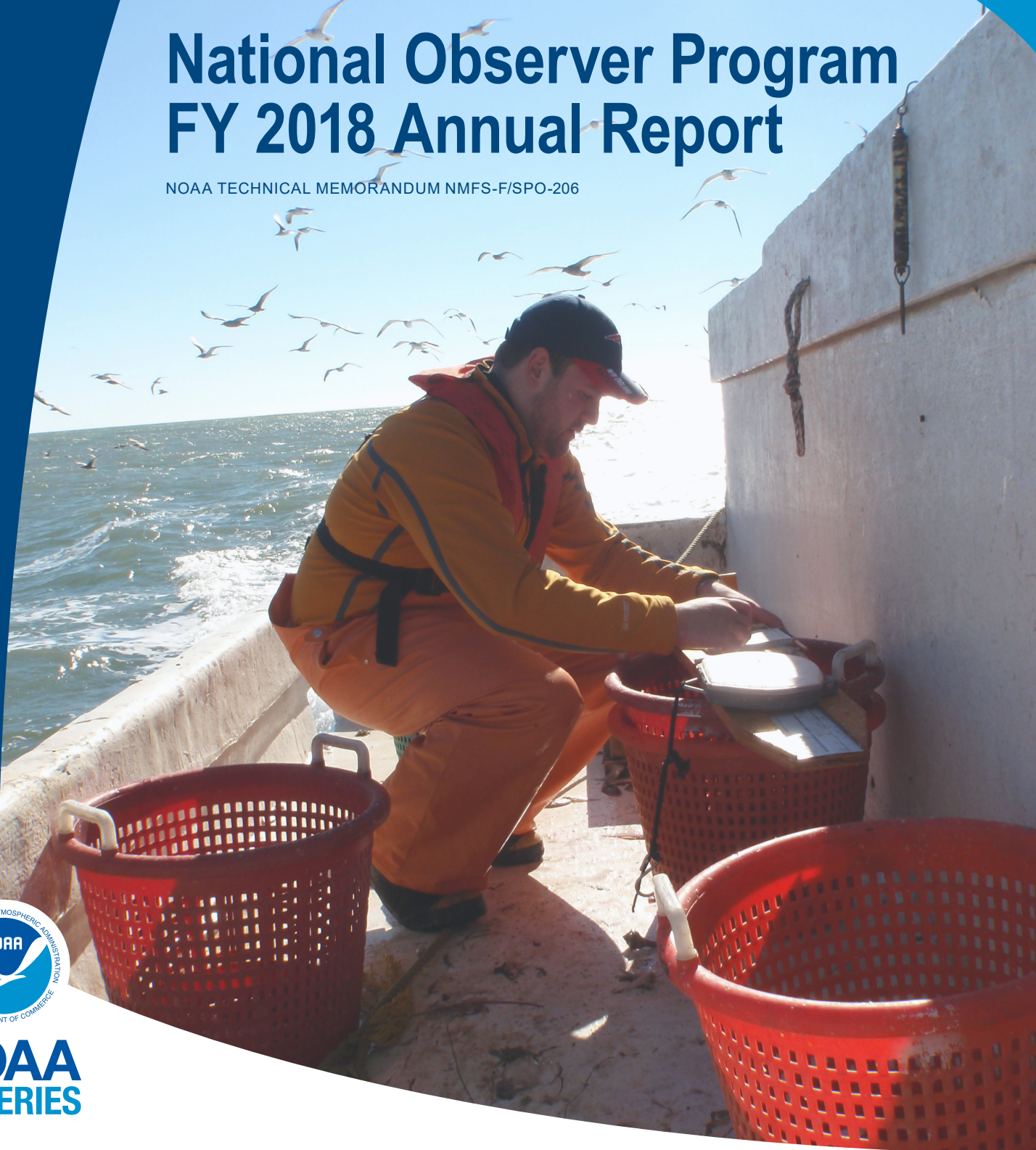


National Marine Fisheries Service

National Observer Program FY 2018 Annual Report

NOAA TECHNICAL MEMORANDUM NMFS-F/SPO-206



NOAA
FISHERIES

National Observer Program FY 2018 Annual Report

National Marine Fisheries Service

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

List of Acronyms

AAR	After-Action Reporting
ACL	Annual Catch Limit
AD	Annual Determination
ADP	Annual Deployment Plan
AFA	American Fisheries Act
AFSC	Alaska Fisheries Science Center
AMMOP	Alaska Marine Mammal Observer Program
ASM	At-Sea Monitoring
BiOp	Biological Opinion
BRD	Bycatch Reduction Devices
BSAI	Bering Sea and Aleutian Islands
CDQ	Community Development Quota
CP	Catcher Processor
DWH	Deepwater Horizon
EEZ	Exclusive Economic Zone
EFP	Exempted Fishing Permit
EM	Electronic Monitoring
ESA	Endangered Species Act
FFA	Forum Fisheries Agency
FLC	Freezer Longline Coalition
FMA	Fisheries Monitoring and Analysis Division
FMAC	Fishery Monitoring Advisory Committee
FSB	Fisheries Sampling Branch
GARFO	Greater Atlantic Regional Fisheries Office
HMS	Atlantic Highly Migratory Species Division
IFQ	Individual Fishing Quota
LL2	Lead Level 2
LOF	List of Fisheries
MMPA	Marine Mammal Protection Act
MSA, MSFCMA	Magnuson-Stevens Fishery Conservation and Management Act
NBR	National Bycatch Report

NEFMC	New England Fishery Management Council
NEFOP	Northeast Fisheries Observer Program
NEFSC	Northeast Fisheries Science Center
NFWF	National Fish and Wildlife Foundation
NIFS	National Institute of Fisheries Sciences
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
OPR	Office of Protected Resources
OPTECS	Observer Program Technology Enhanced Collection System
OSF	Office of Sustainable Fisheries
OSPR	Observer Safety Program Review
PacFIN	Pacific Fisheries Information Network
PFMC	Pacific Fishery Management Council
PIRO	Pacific Islands Regional Office
PIROP	Pacific Islands Regional Observer Program
POP	Pelagic Observer Program
PPA	Program, Project, and Activity
PTNS	Pre-Trip Notification System
SAC	Safety Advisory Committee
SBRM	Standardized Bycatch Reduction Methodology
SEFSC	Southeast Fisheries Science Center
SPTT	South Pacific Tuna Treaty
ST	Office of Science and Technology
SWFSC	Southwest Fisheries Science Center
TAC	Total Allowable Catch
TRT	Take Reduction Team
WCGOP	West Coast Groundfish Observer Program

Executive Summary

For FY 2018 (October 1, 2017–September 30, 2018), 888 observers provided 72,692 days of fishery observations. NOAA Fisheries, along with commercial fishing fleets in the Alaska, West Coast, and Greater Atlantic regions, invested \$79.5 million to provide this coverage in 54 U.S. fisheries. Of this amount, congressionally appropriated funds provided \$57.2 million, and the fishing industry provided \$22.3 million.

The National Observer Program (NOP) in NOAA Fisheries' Office of Science and Technology supported 14 regional observer programs in FY 2018. The NOP also supported the National Observer Program Advisory Team (NOPAT), which supported a successful international observer conference and provided input on observer provider insurance issues, program performance metrics, budget developments, and other topics.

The NOP and NOPAT continued to focus on safety issues to a great extent in 2018 through the work of the NOPAT's Safety Advisory Committee and through initial implementations of recommendations from an 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 providing fisheries-dependent data for stock assessments, quota monitoring, and many other critical needs in 2018, the regional observer programs achieved the following milestones:

- Alaska—Developed an annual deployment plan, transferred the lead for administering the Alaska Marine Mammal Observer Program from the Alaska Regional Office to its Alaska Fisheries Science Center, supported an exempted fishing permit for halibut deck sorting, contributed to a rulemaking related to observer certification for longline fisheries, and implemented EM in North Pacific fisheries.
- West Coast—Provided data and published reports on marine mammal and seabird interactions with fisheries, tested EM and electronic reporting

systems, researched unobserved mortality of seabirds on trawl vessels, integrated observer data with other data sets, and continued to provide observer coverage for exempted fishing permits to test deep-set buoy gear.

- Pacific Islands—Reviewed procedures for recording and reporting protected species interactions, supported a seabird bycatch workshop organized by the Western Pacific Fishery Management Council, supported monitoring programs of regional fishery management organizations, and added a new safety training module focusing on embarkation and disembarkation safety to its safety training program.
- Greater Atlantic—Partnered with fishermen and other stakeholders to implement EM technologies to augment data collection by observers, supported the New England Fishery Management Council's efforts to develop an Industry-Funded Monitoring Omnibus Amendment, upgraded a critical pre-trip notification system, and hosted a three-day workshop involving various observer data end user groups.
- Southeast—Provided inshore shrimp trawl coverage for sea turtle assessment through Deepwater Horizon oil spill restoration funding, tested an EM system on commercial shrimp trawl vessels in southwest Florida, deployed observers for an experimental fishing project designed to test alternative gear in the Gulf of Mexico, field-tested an at-sea electronic reporting tablet computer, and participated in discussions aimed at developing an observer program for the Gulf of Mexico menhaden purse seine fishery.

The preceding milestones represent only a fraction of observer activities in 2018, which are detailed elsewhere in this report. None of these achievements would be possible without the hard-working and talented scientists who work under challenging conditions as fishery observers, helping NOAA Fisheries fulfill its mission to manage and conserve our Nation's 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 deployed 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 scientists who collect data to support a wide range of conservation and management activities. During FY 2018,

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 Fisheries Conservation and Management Act (MSA), the Marine Mammal Protection Act (MMPA), and the Endangered Species Act (ESA). For more information on these federal mandates, and U.S. observer program history in general, see Brooke 2014. The National Observer Program (NOP) supports observer programs and increases their effectiveness in meeting the overall



Figure 1: Locations of the 14 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.

Under ESA regulations promulgated in 2007, NOAA Fisheries is authorized to place fisheries observers aboard commercial and recreational vessels in state and federal fisheries operating in the territorial seas or EEZ where sea turtle interactions may occur. NOAA Fisheries annually identifies which fisheries are eligible for observer coverage under this requirement. The annual determination for 2018 was published in the Federal Register on May 10, 2018 (83 FR 21738). (See Section 3.3 for more information.)

1.1 Program Structure

Within the NOAA Fisheries Office of Science and Technology (ST), the NOP nationally coordinates 14 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 2018, the NOP had three permanent staff positions: program coordinator (Elizabeth Chilton), bycatch expert (Lee Benaka), and safety expert (Dennis Hansford). The NOP hosted Noelle Olsen, a Knauss Marine Policy Fellow, for a one-year term to assist with the development of the U.S. National Bycatch Report (NBR) First Edition Update 3 (Benaka et al. 2019) and analyze NOP performance metrics in FY 2018.

The NOP also provides regional observer programs with a forum to increase collaboration and communication during biannual National Observer Program Advisory Team (NOPAT) meetings. Representatives from all regional fisheries science centers and regional offices, as well as many NOAA Fisheries Headquarters offices with observer expertise, participate on the NOPAT (Figure 2).

Regional observer programs are responsible for 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 Fiscal Year 2018 budget included funds to pay for most regional observer program costs. 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 is required in the West Coast Trawl Catch Share 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 resources, and ecosystems throughout the United States. 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:

- 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 serious injury and mortalities 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), which provide regular estimates of fish, marine mammal, sea turtle, and seabird bycatch for major U.S. fisheries.
- Under ESA Section 7 consultations, 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.
- Observer data support ESA biological opinions, as well as the ability of NOAA Fisheries to account for endangered species such as salmon that are managed under hard caps due to ESA incidental take statements.

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 3).

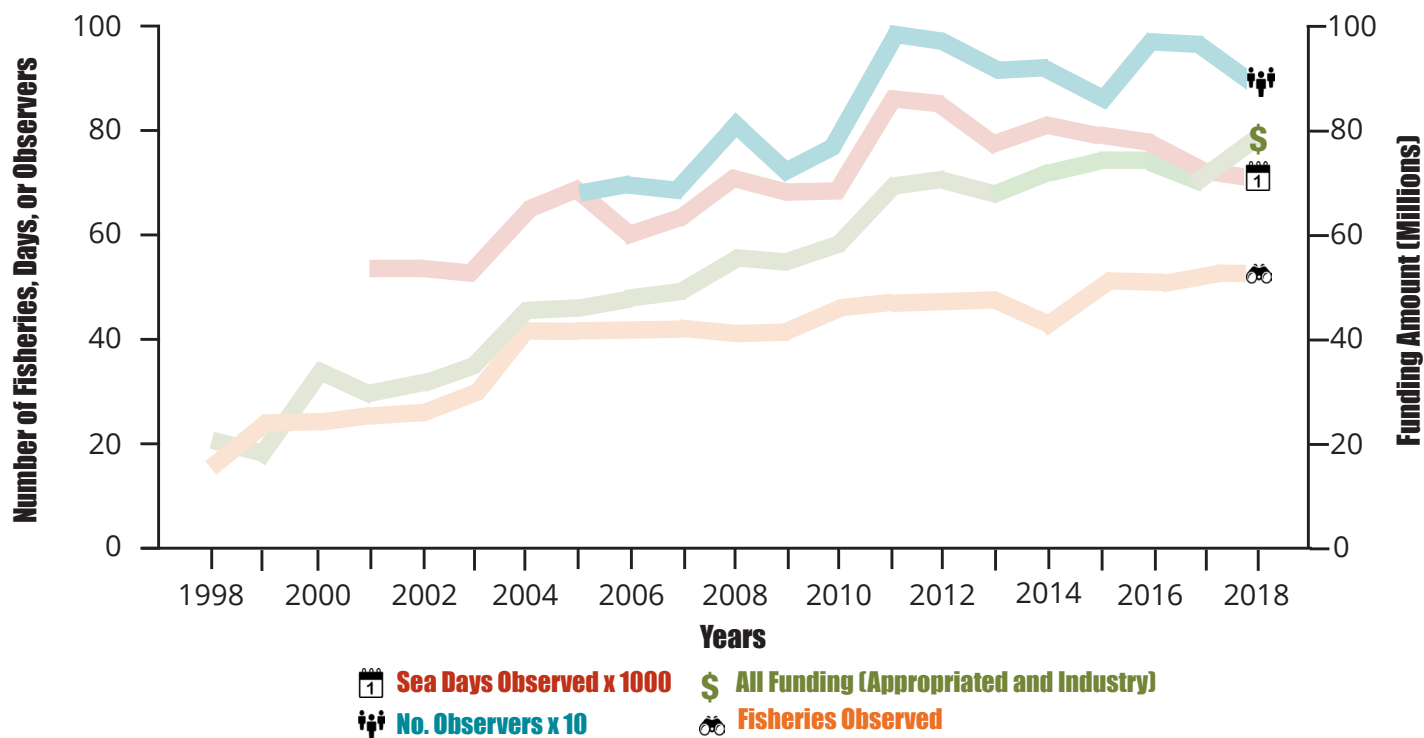


Figure 3: U.S. observer program sea days observed, appropriated and industry funding (not adjusted for inflation), and number of observed fisheries and observers from 1998 to 2018.

2. Budget Summary

For FY 2018 (October 1, 2017–September 30, 2018), 888 observers provided 72,692 days of fishery observations. NOAA Fisheries, along with commercial fishing fleets in the Alaska, West Coast, and Greater Atlantic regions, invested \$79.5 million to provide this coverage in 54 U.S. fisheries. Of this amount, congressionally appropriated funds provided \$57.2 million, and the fishing industry provided \$22.3 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 2018. 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.



Observers examine biological specimens in a lab during a training session.

Research priorities and observer coverage levels are determined by the regional programs. Coverage levels 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 2018 achievements of NOAA Fisheries regional observer programs.

Region	Appropriated	Industry	Total
Greater Atlantic	\$24.2	\$1.9	\$26.1
Alaska	\$9.2	\$17.4	\$26.7
West Coast	\$9.3	\$3.0	\$12.3
Pacific Islands	\$7.6	\$0	\$7.6
Southeast	\$6.0	\$0	\$6.0
NOAA Fisheries Headquarters	\$0.8	\$0	\$0.8
Totals	\$57.2	\$22.3	\$79.5

Table 1: FY 2018 Observer Funding Summary (in millions). *Appropriated amount shown reflects FY 2018 enacted funding. Subtotals may not sum due to rounding.*

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), and the Office of Sustainable Fisheries (OSF), which houses the Atlantic Highly Migratory Species Management Division (HMS). The following sections describe activities related to the NOP, OSF and HMS in 2018.

3.1 National Observer Program

In addition to coordinating activities among the regional observer programs and overseeing allocation of NOP funding to regional observer programs, the NOP facilitated and coordinated several activities that were national in scope. These activities are described below.

3.1.1 National Observer Program Advisory Team

The NOPAT met twice in 2018, in April and October. At these meetings, the NOPAT discussed various topics including the observer program budget, program priorities, strategic planning, provider insurance requirements, safety and enforcement issues, performance metrics, and observer deployment costs.

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 at least once every two years, coincident with a NOPAT meeting. In 2018, the SAC focused on the need for continued safety cross-training programs. The SAC also continued to support a marine safety instructor training programs. In addition, the SAC discussed best practices for incident-reporting and began to evaluate the Observer Safety Program Review report (see below).

3.1.3 Observer Safety Program Review

At the end of FY 2016, NOAA Fisheries initiated an independent audit of current observer-related policies and protocols as part of NOAA Fisheries' voluntary Observer Program Safety Review (OSPR) to examine

existing factors facing observers and at-sea monitors. Although the review found national and regional observer safety programs in the United States to be robust, mature, and effective, the report also made recommendations in seven areas: safety reporting; communications; practices and policies; training; regulations; equipment; and international observers.

Following the May 2018 release of the OSPR report, the NOP implemented a number of immediate actions to address the OSPR recommendations through the NOPAT's Safety Advisory Committee. Actions included:

- Adding representation from NOAA Fisheries' Office of International Affairs and Seafood Inspection to the NOPAT.
- Publishing a Request for Information in the Federal Register (83 FR 32829) to collect additional information for an effort to establish a uniform, nationally consistent minimum insurance standard that would apply in observer regulatory programs that permit or approve observer providers.
- Informally working with insurance providers to improve insurance service options.
- Enhancing cross-training safety programs between observer programs to share best practices.

Observer programs have been collaborating with NOAA Fisheries' Office of Law Enforcement and Office of International Affairs and Seafood Inspection to address issues related to observer deployments in international waters. In addition, the NOPAT has supported a SAC recommendation to immediately implement a standardized approach for incident reporting and comprehensive after-action reporting (AAR) for more serious incidents. In addition to the reports made pursuant to current AAR protocols, observer programs now are reporting all safety-related incidents to the NOP on a semi-annual basis in order to identify, isolate, and address these incidents more rapidly.

This initiative to improve observer safety and health will continue to be a dynamic, extensive, and ongoing process requiring collaboration with many stakeholders to generate change and enhance observer safety and health. The NOP will provide regular progress updates in addressing observer health and safety OSPR

recommendations. For more information, please visit the NOAA Fisheries OSPR recommendations website.¹

3.1.4 9th International Fisheries Observer and Monitoring Conference

NOPAT members planned, attended, and helped administer the 9th International Fisheries Observer and Monitoring Conference that took place in Vigo, Spain in June 2018 (Kennelly and Borges 2018). The conference was well-attended and included numerous interesting talks (Figure 4). NOPAT members led conference sessions on the following topics:

- Approaches to analyzing monitoring data.
- Harmonizing and standardizing monitoring programs.
- Briefing and debriefing observers.
- Observer safety, training, and mental health.
- Technology used by observers.

In addition, NOAA Fisheries staff helped lead half-day workshops on electronic monitoring and safety.

3.1.5 Bycatch Estimation

NOP staff finalized the U.S. NBR First Edition Update 3 throughout 2018. The report was published in February 2019 (Benaka et al. 2019). For more information, please visit the NOAA Fisheries National Bycatch report website.² NOP staff members organized and presented at a symposium entitled “Bycatch Estimation: The State of the Art,” which was held in August 2018 at the 148th Annual Meeting of the American Fisheries Society in Atlantic City. This symposium included presentations by scientists who use observer data to estimate bycatch in U.S. fisheries.



Figure 4: Keynote address session at the 9th International Fisheries Observer and Monitoring Conference, Vigo, Spain.

3.1.6 Electronic Monitoring and Reporting

Electronic monitoring (EM) and reporting continued to be a major focus of NOP activities during FY 2018. Top EM issues in 2018 included:

- Data access, ownership, and confidentiality.
- EM standards and policy directives, including on cost allocation.
- Automated image processing.

NOAA Fisheries supported several internal EM projects in Alaska, the Greater Atlantic, and Pacific Islands for a total of approximately \$2.5 million in FY 2018, including projects to support the transition to industry-funded EM programs, build infrastructure to implement EM programs, develop machine learning systems, build an image library, and expand capabilities of low-cost EM systems.

In addition, NOAA Fisheries partnered with the National Fish and Wildlife Foundation (NFWF) and other foundations to support another round of funding for Electronic Monitoring and Reporting Grant Program. In 2018, the program awarded approximately \$5.1 million for 11 EM projects for New England

¹ <https://www.fisheries.noaa.gov/national/fisheries-observers/action-plan-implementing-observer-safety-program-review-report>

² <https://www.fisheries.noaa.gov/resource/document/national-bycatch-report>

NMFS Center/Region	Project Name	Amount (\$)
Northwest Fisheries Science Center	Linking Population, Health, Disease, and Contaminants in Seabirds	10,000
Alaska Regional Office	Streamer Line Distribution in Alaska Longline Fisheries	7,500
Southeast Fisheries Science Center	Can Species-Specific Seabird Bycatch of the U.S. Atlantic Pelagic Longline Fleet Be Estimated Effectively?	14,500
Northeast Fisheries Science Center	Outreach Initiative to Educate Stakeholders and Mitigate Seabird Interactions with Commercial Fisheries in the Northwest Atlantic	10,000
Alaska Fisheries Science Center	Pacific Seabird Bycatch Necropsy Program	15,000
Alaska Fisheries Science Center	Seabird Training for Alaska Groundfish Observers	10,000
Southwest Fisheries Science Center	Distribution and Abundance of Seabirds in the California Current	5,000
Southwest Fisheries Science Center	Travel Support for 2018 National Seabird Program Meeting	28,000
Total		100,000

Table 2: National Seabird Program internal award recipients, FY 2018.

groundfish, scallop, and for-hire; Gulf of Mexico highly migratory species; Puerto Rico artisanal; Hawaii longline; and Alaska cod pot, pollock trawl, and fixed gear fisheries. The NFWF's Fisheries Innovation Fund webpage has additional information about these programs.³

3.2 National Seabird Program

The National Observer Program continued to support NOAA Fisheries' National Seabird Program (NSP) in FY 2018. In particular, the NOP provided limited financial support to the NSP for observer-program-related seabird projects (Table 2). The NSP also held a national workshop in 2018 to refine the NSP's mission and vision statements and develop an NSP five-year strategic plan. Ballance et al. 2019 describes discussions that took place at the workshop.

3.3 Office of Protected Resources

In February 2018, the Office of Protected Resources (OPR) published the final List of Fisheries (LOF) for 2018 (83 FR 5349), 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. For the 2018 LOF, NOAA Fisheries reclassified the California thresher shark/swordfish drift gillnet fishery from Category I to Category II. In addition, NOAA Fisheries reclassified the Category III Alaska Gulf of Alaska sablefish longline fishery to Category II. NOAA Fisheries also added the Alaska Bering Sea and Aleutian Islands halibut longline fishery as a Category III fishery, and added the Alaska Gulf of Alaska sablefish pot fishery as a Category III fishery. Finally, NOAA Fisheries removed several Alaska Category III fisheries from the LOF.

In addition, OPR in May 2018 published the 2018 Annual Determination (AD) (83 FR 21790) to implement sea 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. For 2018, the AD included two new fisheries occurring in the Atlantic Ocean and Gulf of Mexico: the mid-Atlantic gillnet fishery and the Gulf of Mexico menhaden purse seine fishery.

Also in 2018, the OPR supported activities of several MMPA take reduction teams (TRTs). These activities included a December 2017 in-person meeting of the Bottlenose Dolphin TRT, an April 2018 meeting of the False Killer Whale TRT, and an October 2018 meeting of the Atlantic Large Whale TRT.

³ <https://www.nfwf.org/fisheriesfund/Pages/home.aspx>

4. Alaska Program Activities

The North Pacific Groundfish and Halibut Observer Program (Observer Program) deployed 416 observers for a total of 39,108 sea days across the groundfish fisheries in Alaska, with an additional 2,425 days at shoreside processing plants bringing the total coverage days to 41,533 for 2018.

4.1 North Pacific Groundfish and Halibut Observer Program

In 2013, the Observer Program was restructured to reduce the potential for bias in observer data, authorize the collection of observer data in previously unobserved sectors, and assess a broad-based fee to more equitably distribute the costs of observer coverage. Restructuring also established an iterative process of reviewing and revising the program annually. In June of each year, NOAA Fisheries provides an annual report to the North Pacific Fishery Management Council 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 Fisheries Monitoring and Analysis (FMA) Division and the Alaska Regional Office released its draft 2019 ADP in September 2018. This plan, along with NOAA Fisheries' recommendations for deployment in the Partial Observer Program, were provided to the North Pacific Fishery Management Council (Council) and its associated committees in September and October 2018. (See NMFS 2018 for more information on the final ADP.) In addition, the Observer Program welcomed several new staff members in 2018, including analysts who will help develop ADPs and evaluate impacts of a possible increase to ex-vessel value fees, a database developer, and EM program researchers and developers.

4.2 Safety Activities

The FMA and its partners continued in 2018 to emphasize safety as their top priority. The Observer Program continually reviews and updates its safety procedures through annual updates to its training manual. In

September 2018, the FMA presented a summary of the national Observer Program Safety Review recommendations to the North Pacific Fishery Management Council's (NPFMC) Fishery Monitoring Advisory Committee (FMAC). The FMAC has long been integrally involved in observer safety improvements as it includes both industry and observer provider representatives. The Observer Program identified 2018 as a "water year," and experienced observers were re-trained in carrying out emergency procedures, donning survival suits, entering and exiting the water, and boarding life rafts.

4.3 Alaska Marine Mammal Observer Program

NOAA Fisheries is mandated by the Marine Mammal Protection Act (MMPA) to measure and report on the effects of commercial fisheries on marine mammal stocks. One of the ways NOAA Fisheries gathers this information is through the Alaska Marine Mammal Observer Program (AMMOP). This program is focused on marine mammal interactions that occur in fisheries managed by the State of Alaska. The purpose of the AMMOP is to:

- Obtain reliable estimates of incidental serious injury and mortality of marine mammals and seabirds.
- Determine the reliability of reports submitted by vessel owners and operators.
- Identify changes in fishing methods or technology that may increase or decrease incidental serious injury or mortality.
- Collect biological samples to support and promote scientific studies.
- Record data on bycatch and discard levels of all species.

In 2018, NOAA Fisheries transferred the lead for administering the AMMOP from its Alaska Regional Office to its Alaska Fisheries Science Center (AFSC). This transfer was designed to increase efficiency and support for AMMOP given the expertise and capacity of the AFSC's Observer Program. During FY 2018, AMMOP was inactive.

4.4 Exempted Fishing Permit for Halibut Deck Sorting

In December 2015, NOAA Fisheries received an application from the Alaska Seafood Cooperative and co-applicants for an exempted fishing permit (EFP) to allow operators of non-pelagic trawl catcher/processors in the Bering Sea and Aleutian Islands (BSAI) to sort halibut on deck rather than weighing halibut on the flow scale in the factory. The purpose of the experiment was to continue to test methods that reduce halibut mortality in flatfish fisheries by reducing the amount of halibut handling and time out of water.

The study began May 2016. In 2017, two or three NOAA Fisheries-certified observers were deployed on each participating vessel to collect halibut lengths and viabilities on a subsample of deck-sorted halibut and species composition samples in the factory. NOAA Fisheries was responsible for documenting and recording all deck-sorted halibut and estimating halibut discard mortality rates through the NOAA Fisheries Catch Accounting System, using Observer Program decksheets and random systematic sampling. EFP applicants reported a net savings for halibut mortality for 2016 as compared to 2015, and a comparison of observer program estimates of halibut in the factory and a census by EFP applicants found similar preliminary estimates.

This study continued in 2018 with the support of fishery observers. This project included the evaluation of new tools to help automate observer data collections, for example, an electronic length board and chute cameras. A proposed rule to implement new fishery requirements based on this study was published in the Federal Register on April 16, 2019 (84 CFR 15566).

4.5 Electronic Monitoring Implementation in the North Pacific

In 2018, the Observer Program continued an operational program for 141 vessels that voluntarily entered the EM strata and logged trips in the Observer Program's Observer Declare and Deploy System with a trip selection rate of 30 percent. In collaboration with the Observer Program, the Pacific States Marine Fisheries Commission (PSMFC) continued to review EM data from hook-and-line vessels from 2018 and began to work on data collection standards for pot vessels for 2019. In addition, the FMA partnered with PSMFC, 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 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.
- Fish facial recognition testing.

4.6 Regulatory Changes

Since 2012, the Observer Program has been working with the Freezer Longline Coalition (FLC) and observer provider companies to address an apparent shortage in Lead Level 2 (LL2) observers. Under regulations, catcher processor (CP) longline vessels with flowscales are only required to carry one observer, but the observer is required to be certified as LL2. To gain the certification, the observer must have deployed 60 days on two different contracts and sampled 30 hauls on a longline vessel. The FLC and observer providers have been sending a "voluntary second" observer on some of these vessels to gain the necessary experience to become LL2 certified.

The NPFMC took final action in June 2017. NOAA Fisheries subsequently developed a proposed rule based on the following recommendations:

- Modify the nontrawl LL2 observer coverage requirement and require the vessel owner operator or manager to participate in a precruise meeting if requested to do so by NOAA Fisheries.
- Modify the nontrawl LL2 endorsement to allow sampling experience on trawl CPs to count toward nontrawl LL2 endorsement with an additional training requirement.

On June 29, 2018, NOAA Fisheries published a final rule (83 FR 30528) to amend observer training and experience requirements necessary for an observer to gain a nontrawl LL2 deployment endorsement. This final rule became effective July 30, 2018.

On July 6, 2018, NOAA Fisheries published a notice (83 FR 31527) in the Federal Register to renew Office of Management and Budget approval of the Observer

Program information collections. This notice solicited comments on the burden estimates for submitting information necessary under the North Pacific Observer Program as required under the Paperwork Reduction Act. The current approval for this information collection had been set to expire on December 31, 2018.

In 2018, the NPFMC considered several changes to fishery-dependent monitoring in the groundfish and halibut fisheries off Alaska. The NPFMC prioritized development of EM for compliance monitoring and salmon prohibited species catch accounting on catcher vessels using pelagic trawl gear. Currently, trawl catcher vessels are in either the full coverage category or the partial coverage category, and EM would be developed to be used in combination with dockside monitoring and some level of observer coverage to collect biological samples at sea.

In addition, in 2018 the NPFMC began to analyze a potential increase to the observer fee assessed on

landings made by vessels in the partial coverage category. If the NPFMC decides to take final action in early 2019, a fee increase could potentially be implemented as early as the 2020 fishing year. Information on the actions and work completed by the NPFMC on these topics are available on the observer program section of the NPFMC's website.⁴

4.7 International Observer Activities

The Observer Program continues to work with South Korea's National Institute of Fisheries Sciences (NIFS) on developing a more comprehensive observer debriefing process involving both automated and interview-based quality control. To facilitate this cooperative objective, two Observer Program staff traveled to South Korea in 2018 to provide additional training for NIFS staff. In addition, researchers from the Chinese Bureau of Fisheries attended portions of the FMA's three-week training class to learn more about how the FMA trains and prepares new observers.

5. West Coast Program Activities

NOAA Fisheries administers two main observer programs on the West Coast. One program mostly covers fisheries off Oregon and Washington. The other mostly covers fisheries off California. These programs are discussed below in Sections 5.1 and 5.2.

5.1 Northwest

The activities of the Northwest Fisheries Science Center's (NWFS) West Coast Groundfish Observer Program (WCGOP) can be divided into two components: Catch Shares, where observer sea days are 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 vessels); 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 7,141 days in 2018.

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 5,261 sea days in 2018.

⁴ <https://www.npfmc.org/observer-program/>

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 1,880 sea days in 2018. Although many of these sectors may be lower volume or do not target groundfish, they all interact with groundfish and protected species and are an important component for accounting total mortality of groundfish species and stocks.

5.1.3 Biological Opinion for West Coast Groundfish

An ESA Section 7 consultation Biological Opinion (BiOp) on the West Coast Groundfish Fishery Management Plan was issued in March 2012.⁵ This BiOp impacted five West Coast protected species: green sturgeon, eulachon, humpback whales, short-tailed albatross, and leatherback sea turtles. Elements of the BiOp included new requirements for observer data and specimen collection, sampling, reporting, and elements of observer training. The WCGOP has been instrumental in implementing the new measures and conservation recommendations, and WCGOP data contributed to several publications in 2018 focusing on marine mammals and seabirds (e.g., Carretta et al. 2018, Jannot et al. 2018).

5.1.4 Electronic Monitoring EFPs

During 2018, EM in the catch share fishery continued under the same EFPs and rules as 2016. These compliance-based EM EFPs demonstrated the feasibility of using EM for compliance monitoring on selected commercial fishing vessels as an alternative to human observers. Overall, EM systems were deployed on 43 vessels for a total of 3,900 sea days in 2018. Recognizing the importance of identifying and implementing ways to reduce costs associated with the program, the EM EFPs continued to examine how an integrated EM program (cameras plus logbooks) could support catch accounting requirements in future regulations. Operation of these EFPs are designed to support regulatory changes planned for 2019 for the whiting and fixed-gear sectors of the IFQ program. The WCGOP deployed and tested the FlyWire small-vessel EM system in 2018, with the goal of evaluating the

feasibility of small, inexpensive, self-powered EM units on small West Coast vessels.

5.1.5 Electronic Reporting

The WCGOP continued to make improvements to its observer database, which contains catch and biological data. These improvements included the development of a web-based declaration and selection system modeled off of the North Pacific's Observer Declare and Deploy System. The program also made progress on its electronic back deck data collection system, called the Observer Program Technology Enhanced Collection System (OPTECS). In 2018, the tablet was tested and provided usable data in multiple fisheries, including catch share fisheries. This system should reduce transcription errors, increase front-end data validation, and decrease data processing time while increasing the efficiency and accuracy of observer data collection.

5.1.6 Protected Species

The WCGOP collaborated with Oregon Sea Grant to further study cryptic (i.e., unobserved) seabird mortality from trawl cable interactions. An Oregon Sea Grant researcher in 2018 worked on a hake catcher processor to closely monitor seabird interactions, identify mitigation strategies, and test a camera system for monitoring feasibility. The WCGOP will compare these data to observer-collected data from the past three years. In addition, the WCGOP in 2018 supplied samples and expertise to help create a latitudinal predictive model for salmon bycatch for West Coast evolutionary significant units.

5.1.7 Outreach, Communications and Safety

The WCGOP hosted a marine safety instructor refresher training class in April 2018. The WCGOP also continues to conduct quarterly outreach to observers via its "Word on the Waves" publication⁶, which has been received positively by observers.

5.2 Southwest

The West Coast Regional Observer Program (Observer Program) deployed 12 observers for a total of 753 sea days in 2018. NOAA Fisheries' Southwest Fisheries Science Center (SWFSC) uses observer data to estimate

⁵ http://www.pcouncil.org/wp-content/uploads/F3b_ATT3_BO_MAR2012BB.pdf

⁶ <https://www.fisheries.noaa.gov/west-coast/science-data/west-coast-observer-program-outreach-materials>

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.⁷

In 2018, the Pacific States Marine Fisheries Commission and the Pacific Fisheries Information Network (PacFIN) modified the observer database to support better integration of observer data with fish tickets, logbook data, and vessel monitoring system data. The new database will incorporate drift gillnet, sea gillnet, buoy gear, and purse seine observer data, as well as links to the logbook database and PacFIN.

The Observer Program continued to work with the Pacific Fishery Management Council (PFMC) to monitor the California large-mesh drift gillnet fishery.

The program also continued to provide 100 percent observer coverage for pelagic longline vessels, although that fleet only consists of a couple of vessels.

The Observer Program also worked with the PFMC to support EFPs to test deep-set buoy gear, which was developed as an alternative to draft gillnet gear. The Observer Program trained observers who monitored bycatch under these EFPs. The PFMC has continued to approve additional EFPs, which has resulted in additional support responsibilities for the Observer Program. In 2018, observers began to take photos of surface gear for this fishery to help managers and scientists understand the differences in configurations and how turtles and marine mammals might become entangled in the gear.

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 2018, the PIROP deployed 76 observers for a total of 8,175 sea days across all three fisheries.

The PIROP continued to develop and test its electronic tablet eReporting system in 2018. Observers also continued to assist with a release mortality study that involved observers deploying pop-up satellite archival tags on sharks. To help ensure observer safety, the observers do not bring sharks onboard vessels for tagging but rather use long poles to tag the sharks while the sharks are in the water.

In 2018, the PIROP reviewed its procedures for recording and reporting protected species interactions. This

review was triggered by the listing under the ESA of two new species from taxa that were historically not classified as protected, namely, oceanic white-tip sharks and giant manta rays, which were added to the list in January 2018.

The PIROP in 2017 noted an increase 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 to review seabird bycatch mitigation measures for Hawaii pelagic longline fisheries. The Council published a workshop report in November 2018.⁸ The PIROP also continued to salvage whole dead longline-caught albatross, and coordinated with Alaska and the non-governmental organization Oikonos to have necropsies performed and link Hawaii and Alaska seabird data sets. The PIROP added eight non-albatross seabird specimens to its taxidermied seabird collection for training and outreach; these additional specimens greatly improved the quality of the program's teaching collection.

The PIROP field office in American Samoa continued in 2018 to coordinate and facilitate the implementation

⁷ http://www.westcoast.fisheries.noaa.gov/fisheries/wc_observer_programs/sw_observer_program_info/data_summ_report_sw_observer_fish.html

⁸ http://www.wpcouncil.org/wp-content/uploads/2018/11/WPRFMC_2018-Seabird-bycatch-mgmt-workshop_FinalReport.pdf

of U.S. obligations and requirements under the South Pacific Tuna Treaty (SPTT) which include:

- Facilitation and orientation and placement of Forum Fisheries Agency (FFA) observers aboard U.S. vessels licensed to fish under the Treaty.
- Coordination with FFA and the Secretariat of the Pacific Community (Oceanic Fisheries Program) on the development and modification of fisheries data collection efforts.
- Coordination of fisheries data collection activities with Pacific Island Parties to the SPTT, e.g.,

transshipping in the Federated States of Micronesia and Republic of the Marshall Islands.

These activities are in addition to standard program activities such as deploying observers on longline vessels in American Samoa. In 2018, the PIROP had five observers working out of American Samoa.

The PIROP added a new safety training module in 2018 focusing on embarkation and disembarkation safety to its training curriculum. This module is designed to teach observers best safety practices for a routine activity that has led to injuries at times.

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 6,635 observer days in 2018. The Industry-Funded Scallop Observer Program branched off from the NEFOP to become its own program; this program provided 2,669 observer days in 2018. The At-Sea Monitoring Program for groundfish provides supplemental monitoring for groundfish sector catch accounting; its deployments totaled 850 observer days. Overall, these three programs deployed 205 unique observers in 2018.

The FSB observes more than 60 fleets are observed 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.

Fishery Management Plans adopted by the New England Fishery Management Council and the Mid-Atlantic Fishery Management Council include mandatory observer coverage requirements for several

fisheries. The FSB provides observer coverage for the Standardized Bycatch Reduction Methodology (SBRM)⁹ for stock assessments, and at-sea monitoring for estimating discard rates to ensure annual catch limits are not exceeded. In addition, the FSB collects data on gear performance and characteristics, protected species interactions, and monitoring of experimental fisheries. Reports from the NEFOP are posted online.¹⁰

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. To improve coverage of Mid-Atlantic fisheries in 2018, the FSB established a Mid-Atlantic observer

⁹ <http://www.nefsc.noaa.gov/fsb/SBRM/>

¹⁰ <http://www.nefsc.noaa.gov/femad/fsb/>

program lead position and developed additional outreach and compliance assistance materials.

7.1 Electronic Monitoring Projects

The FSB continued to support efforts in 2018 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, and approximately 20 fishermen in five groundfish sectors in 2018 to develop EM for discard catch accounting in the groundfish fishery and incentivize electronic vessel trip reporting. In exchange for 100 percent EM coverage, participating vessels were exempted from at-sea monitoring and provided access to some closed fishing areas. The fishermen and EM systems also collected species identification data and length data for groundfish discards.

The FSB collaborated with the Gulf of Maine Research Institute and three fishermen in one groundfish sector to test the viability of a maximized retention model for high-volume fishing vessels and implement a third-party dockside monitoring program to support catch accounting shoreside. The project used EM to verify discard compliance. Under this maximized retention model, the vessels retain and land all undersized regulated groundfish because the large catch volumes on the vessels would prevent fishermen from taking the time to handle catch that is required for the audit approach.

The FSB partnered with an EM provider to conduct a catch retention monitoring study in 2018. This project was designed to determine whether EM could detect discarding events. The FSB used costs data from this EM study to estimate industry costs for EM in the Atlantic herring fishery, and presented that

information to the NEFSC. Based on this project, NOAA Fisheries determined that EM with portside sampling is an adequate substitute for at-sea monitoring coverage in the midwater trawl fishery.

In addition, in 2018 the FSB conducted an EM comparative technology study to assess the potential benefits of still images. This study's underlying assumptions included: (1) still images have a wide angle and high resolution, which should enhance enumeration and identification of catch, and (2) still image systems have smaller total file sizes, which should reduce total data storage needs and overall program costs.

Automated image classification via machine learning is an emerging technology that could potentially enhance the efficiency of still image and video review. In light of this technology, the FSB worked with partners in 2018 to collect a set of high-quality images in order to develop machine learning algorithms and software.

7.2 Industry-Funded Omnibus Amendment and Herring and Mackerel Monitoring

In 2018, the New England Fishery Management Council (NEFMC) continued to develop an Industry-Funded Monitoring Omnibus Amendment. This amendment is designed to increase monitoring in certain fisheries to assess the amount and type of catch and reduce uncertainty around catch estimates. This amendment implements a process to standardize future industry-funded monitoring programs in NEFMC management plans and industry-funded monitoring in the Atlantic herring fishery. NOAA Fisheries and the NEFMC published a proposed rule to implement the amendment in November 2018 (83 FR 55665).

7.3 Compliance, Data Improvement, and Observer Retention

The FSB hired an observer compliance liaison in 2018. The liaison's responsibilities include supporting observers through timely follow-up of incident reports and traveling to various fishing ports to meet with commercial fishing industry members and answer questions regarding the observer program. The FSB also updated its web portal to improve incident report follow-up and consolidate information about trip deployments.

The NEFSC upgraded its Pre-Trip Notification System (PTNS) in April 2018. 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. The NEFSC designed the upgraded PTNS to be easier to use, mobile friendly, and adaptable for new management requirements as they come along.¹¹

In May 2018 the FSB hosted a three-day workshop involving various observer data end user groups. The workshop was designed to review and evaluate possible changes to observer data collection elements

and protocols, including removing hard-to-collect or outdated fields on gear logs, and creating dynamic biological sampling priorities to minimize over- and under-sampling of certain species. The FSB posts memos and other documents related to data collection online.¹²

During FY 2018, the FSB added 78 new observers through six training classes. Also during that time period, 105 observers retired or were otherwise separated from the program, for a net loss of 27 observers. A NEFOP contract change during that time period contributed to a large loss of observers.

8. Southeast Program Activities

The Southeast Fisheries Observer Program observed 3,461 sea days in 2018, with a total of 82 observers. The program observed six fisheries in 2018.

8.1 Southeast Shrimp Trawl Observer Program

The Shrimp Trawl Observer Program maintained approximately 2.5 percent observer coverage in the Gulf of Mexico federal penaeid and rock shrimp otter trawl fisheries. The program continued its inshore coverage of the shrimp trawl (otter and skimmer) fishery operating in the northern Gulf of Mexico to monitor for marine mammals through Marine Fisheries Initiative¹³ funding. The program also continued to provide inshore shrimp trawl coverage for sea turtle assessment through Deepwater Horizon (DWH) oil spill restoration funding in 2018. Through voluntary coverage observers will be placed aboard wing net vessel during FY 2019. Collectively, 1,814 sea days of observations aboard shrimp vessels were completed in 2018.

The Shrimp Trawl Observer Program and its partners completed testing of an EM system on commercial shrimp trawl vessels in southwest Florida. This project was designed to evaluate feasibility for observing interactions with endangered sawfish and other protected species. Preliminary data had shown that the EM system could detect sea turtle interactions.

Additional analysis demonstrated that the system could be used to identify larger specimens of priority species, including sharks, rays, and larger snappers. The EM systems performed well in capturing video for a total of 15 trips, consisting of 391 hauls over 203 days at sea. Of the 15 trips captured by the EM system, seven were also observed trips with a certified fishery observer on the vessel. Comparison between video and observer data confirmed that EM is a viable option for detecting protected resource interactions.

8.2 Pelagic Longline Observer Program

In addition to mandated eight percent coverage through all statistical areas, the Pelagic Observer Program (POP) completed a Gulf of Mexico enhanced coverage program in 2018. In addition, the POP deployed observers on 14 trips for the second year of an 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. In addition, the POP continued to field-test an electronic reporting tablet device.

8.3 Gulf of Mexico Reef Fish Fishery Observer Program

The Gulf of Mexico Reef Fish Observer Program based out of Galveston, Texas, provided approximately one

¹¹ <https://www.fisheries.noaa.gov/feature-story/improvements-pre-trip-notification-system>

¹² <https://www.nefsc.noaa.gov/fsb/memos/>

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

percent coverage for the Gulf of Mexico reef fish fleet in 2018. 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.

The observer program based out of Panama City, Florida, began to deploy observers on commercial vessels targeting reef fish species in the U.S. South Atlantic vertical line fishery in March 2018. This program was designed, in part, to facilitate comparisons between these data and other data sets (self-reported discards, earlier random observer sampling for year-to-year variability, and earlier non-random sampling). This program was funded by a grant from the Atlantic Coastal Cooperative Statistics Program.¹⁴

8.4 Shark Bottom Longline Observer Program

The Shark Bottom Longline Observer Program completed field-testing of the at-sea electronic reporting tablet computer. Pairwise observer coverage (i.e., one observer recording data on paper, the other using the tablet) on shark bottom longline vessels evaluated the efficacy of the tablet application compared to manual recording. The study demonstrated over 95 percent accuracy observed on most hauls. The application was developed to include in-app validations, sample barcoding for tracking, data encryption when sending data to coordinators, quick buttons that allow for

speed of entry of data, as well as the ability to select and label photos taken with an external camera. Next steps included increasing the speed of data entry and obtaining improved hardware.

8.5 Deepwater Horizon Observer-Related Activities

The Southeast Fisheries Observer Program participated 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 2018 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. 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)

¹⁴ <https://www.accsp.org/>

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

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An observer takes biological measurements while onboard a fishing vessel.

Appendix A: NOAA Fisheries Observer Programs Funded in FY 2018 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	35,422	416
				National Observer Program ¹						
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	17–20% trawl catcher vessels; 16–17% fixed gear catcher vessels 40–57.5 ft	20% trawl stratum; 35% tender trawl stratum; 16% hook and line stratum; 13% pot stratum; 28% tender pot stratum	Defined by available funds and contracts with observer providers in Annual Deployment Plan	3,686	
				National Observer Program ¹						
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 2,425 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 (APPROPRIATED): \$9,240,373										
TOTAL ALASKA REGION OBSERVER PROGRAM FUNDING (INDUSTRY): \$17,436,258										
TOTAL ALASKA REGION OBSERVER PROGRAM FUNDING (ALL SOURCES): \$26,676,631										

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%	25.3%	150	143	12
Deep Set Buoy Gear Exempted Fishing Permit	24 vessels	MSFCMA (50 CFR 660)	June–December	National Observer Program	2017–present	100%/30%	58%	500	404	
Linked Deep Set Buoy Gear Exempted Fishing Permit	5 vessels	MSFCMA (50 CFR 660)	June–December	National Observer Program	2018–present	100%	100%	64	64	
California Set Gillnet Fishery	20 vessels	MMPA (50 CFR 229) ESA	January–December	National Observer Program	2007, 2010–2013, 2017–2018	10–20%	>5%	15	15	
California Deep-Set Pelagic Longline Fishery	>3 vessels	MSFCMA (50 CFR 660)	January–December	Reducing Bycatch National Observer Program	2001–present	20%	20–100%	127	127	
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: 3237 At-Sea: 2024	97
				West Coast Observers						
Catch Share Using Electronic Monitoring				Industry Funding	EFP in FY 2018				EM: 3900	# Vessels used EM: 43
				National Observer Program						
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 Catch Share Program	2001–present	LE: 40% OA: <1–10%	LE: 53% OA: 3–26%	LE: 300 OA: 1500	LE: 324 OA: 1556	42
				West Coast Observers						
TOTAL WEST COAST OBSERVER PROGRAM FUNDING (APPROPRIATED): \$9,338,746										
TOTAL WEST COAST (NORTHWEST) OBSERVER PROGRAM FUNDING (INDUSTRY): \$2,959,681*										
TOTAL WEST COAST REGION OBSERVER PROGRAM FUNDING (ALL SOURCES): \$12,298,427										

*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, 808-725-5100										
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 ves- sels with permits (125 ac- tive)	MSFCMA (50 CFR 665), MMPA (50 CFR 229)	Year-round	Obs/Trn- Hawaii Longline Observers; Other Congressional Funding	1994– present	20% Tuna	20.4%	7,041	6,963	76
						100% swordfish	100%	1,342	729	
American Samoa Pelagic Longline Fishery	30	MSFCMA (50 CFR 665) in Jan 2005	Year-round	National Observer Program	2005– present	20%	17.5%	550	483	
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): \$7,663,804										
TOTAL PACIFIC ISLANDS REGION OBSERVER PROGRAM FUNDING (INDUSTRY): \$0										
TOTAL PACIFIC ISLANDS REGION OBSERVER PROGRAM FUNDING (ALL SOURCES): \$7,663,804										

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-sampling-northeast										
New England Multispecies Groundfish Sectors At-Sea Monitoring (ASM)	1,000 trawl vessels, 400 gillnet vessels, and 40 longline	MSFCMA (50 CFR 648); MMPA (50 CFR 229)	Year-round	National Observer Program	2010–present	30% coefficient of variation on bycatch species; 8% common pool; 16% for groundfish sectors (8% NEFOP + 8% ASM)	17%	Targets are set by SBRM (April through March), based on CV and adjusted for funding availability and/or resource set-aside	850 (ASM)	51 (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	4908	145
				Reducing Bycatch	2010–present		N/A	SBRM targets		
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	SBRM targets	451	82
Atlantic Sea Scallop Fishery (Dredge and Trawl; General Category and Access Area Permits; Open and Access Areas)	600 vessels	MSFCMA (50 CFR 648)	Year-round	Industry Funding	1999–present	10–20% by permit type/ area fished, determined by SBRM and amount of set-aside	N/A	2,741	2669	73
				National Observer Program	1999–present					
TOTAL GREATER ATLANTIC REGION OBSERVER PROGRAM FUNDING (APPROPRIATED): \$24,217,068										
TOTAL GREATER ATLANTIC REGION OBSERVER PROGRAM FUNDING (INDUSTRY): \$1,868,300										
TOTAL GREATER ATLANTIC REGION OBSERVER PROGRAM FUNDING (ALL SOURCES): \$26,085,368										

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
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	1,814	28 (also deployed in reef fish fishery)
				Obs/Tm-Atlantic Coast Observers						
Atlantic Pelagic Longline Observer Program, Southeast Fisheries Science Center, 75 Virginia Beach Dr, Miami, FL 33149-1003										
Program Manager: Larry Beerkircher, 305-361-4290, 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	13%	598 sets	1,144	15
				Obs/Trn-East Coast Observers						
				Deepwater Horizon Sea Turtle 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	100% shark strike, 38% shark drift, 5% shark and teleost sink net	100% shark strike, 38% shark drift, 5% shark and teleost sink net	75	11
South Atlantic Reeffish Fishery	450 vessels	MSFCMA (50 CFR 635)	Year-round	ACCSP, MARFIN, National Observer Program	2014, 2017–2018			1%	31	11
Atlantic and Gulf of Mexico Directed Large Coastal Shark Bottom Longline Fishery	Directed Shark Permits: 216 Indirect Shark Permits: 262 Reeffish 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% reeffish longline	112 shark research, 36 shark bottom longline, 11 mixed reeffish/shark	11

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	238	28 (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 (APPROPRIATED): \$5,954,157										
TOTAL SOUTHEAST REGION OBSERVER PROGRAM FUNDING (INDUSTRY): \$0										
TOTAL SOUTHEAST REGION OBSERVER PROGRAM FUNDING (ALL SOURCES): \$5,954,157										

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 & Technology	Reducing Bycatch	1999–present	National Seabird Program support for observer program-related projects.
	Atl 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 (APPROPRIATED): \$780,075			
TOTAL SCIENCE AND TECHNOLOGY PROGRAM FUNDING (INDUSTRY): \$0			
TOTAL SCIENCE AND TECHNOLOGY PROGRAM FUNDING (ALL SOURCES): \$780,075			

Totals - All Observer Programs

OBSERVER PROGRAM FUNDING (APPROPRIATED)*: \$57,194,223
OBSERVER PROGRAM FUNDING (INDUSTRY): \$22,264,329
OBSERVER PROGRAM FUNDING (ALL SOURCES): \$79,458,462
ACTUAL NUMBER OF SEA DAYS OBSERVED**: 72,692
NUMBER OF OBSERVERS***: 888
<p>*Appropriated funds include \$48.2 million from the Observers and Training PPA, and \$8.2 million from other PPAs, including Catch Shares, Fisheries and Ecosystem Science Programs and Services, Fisheries Management Programs and Services, and Marine Mammals, Sea Turtles, and Other Species. A portion of these funds are used for management activities for observers.</p> <p>**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.</p> <p>***Does not include deployments for electronic monitoring. Number is lower than in previous reports due to lack of double-counting observers in some regions.</p>

Appendix B: Fisheries Observed in FY 2018

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)	Gulf of Maine Shrimp 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 29)

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
Wilbur L. Ross, Jr.

Acting Under Secretary
for Oceans and Atmosphere
Dr. Neil Jacobs

NOAA Assistant Administrator
for Fisheries
Chris Oliver

September 2020

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