



**NOAA  
FISHERIES**

The background of the cover is a photograph of fishing nets. In the foreground, a large, rust-colored net is spread out on a surface, with a large fish, possibly a salmon, lying on it. In the background, several blue and green trawl nets are piled up, showing their intricate mesh structure.

# National Bycatch Reduction Strategy Implementation Plan

## 2020-2024



# **National Bycatch Reduction Strategy Implementation Plan 2020-2024**

## **Background:**

- NOAA Fisheries released the final National Bycatch Reduction Strategy (strategy) in December 2016. The implementation of the strategy will occur at the regional, national, and international levels. This implementation plan outlines tasks that the headquarters' offices, regional offices, and science centers will undertake to implement the strategy.
- Each of the sections below--Monitor and Estimate (page 3), Research and Develop (page 9), Conserve and Manage (page 12), Enforce (page 18), Communicate (page 20)--corresponds to a section of the final National Bycatch Reduction Strategy. Those actions highlighted in blue are the final actions from the strategy.
- This plan is a 5-year implementation plan, covering our activities from 2020 to 2024.
  - "Short-term" actions are those we have already started, or expect to complete within the next 2 years.
  - "Mid-term" actions are those we expect to take 2-3 years.
  - "Long-term" actions are those expected to take 5 years or more.
  - "Continuous" actions are those activities that we expect to be ongoing, such as running the Bycatch Reduction Engineering Program (BREP).

## **Acronyms and Abbreviations**

ACAP	Conservation of Albatrosses and Petrels
AFSC	Alaska Fisheries Science Center
AKRO	Alaska Regional Office
BRD	Bycatch reduction device
BREP	Bycatch Reduction Engineering Program
CFMC	Caribbean Fishery Management Council
EFP	Exempted Fishing Permit
EM	Electronic Monitoring
ESA	Endangered Species Act
GARFO	Greater Atlantic Regional Fisheries Office
GMFMC	Gulf of Mexico Fishery Management Council
HC	Office of Habitat Conservation
HQ	Headquarters
IASI	Office of International Affairs and Seafood Inspection
IATTC	Inter-American Tropical Tuna Convention
MAFMC	Mid-Atlantic Fishery Management Council
MMPA	Marine Mammal Protection Act
MSA	Magnuson-Stevens Fisheries Conservation and Management Act
NEFMC	New England Fishery Management Council
NEFSC	New England Fisheries Science Center
NBR	National Bycatch Report
NGO	Non-governmental organization
NOAA	National Oceanic and Atmospheric Administration
NPFMC	North Pacific Fishery Management Council
NWFSC	Northwest Fisheries Science Center
OLE	Office of Law Enforcement
PIFSC	Pacific Islands Fisheries Science Center
PIRO	Pacific Islands Regional Office
PR	Office of Protected Resources
RFMOs	Regional Fishery Management Organizations
SAFMC	South Atlantic Fishery Management Council
SBRM	Standardized Bycatch Reporting Methodology
SEFSC	Southeast Fisheries Science Center
SERO	Southeast Regional Office
SF	Office of Sustainable Fisheries
ST	Office of Science and Technology
SWFSC	Southwest Fisheries Science Center
TED	Turtle excluder device
WCRO	West Coast Regional Office
WPFMC	Western Pacific Fishery Management Council

## **Monitor and Estimate:**

Monitoring fisheries, domestically and internationally, is crucial to ensure our ability to assess bycatch and measure our progress towards bycatch reduction and improving utilization of fish resources. The National Oceanic and Atmospheric Administration’s (NOAA) Fisheries Service has made great strides in collecting data and monitoring our fisheries and seeks to build on and improve monitoring techniques. The activities detailed below will help us improve and build upon our monitoring and estimation programs, across the agency.

1. Action	Evaluate bycatch data collection programs comprehensively (e.g., observer programs, electronic monitoring programs) to identify data gaps, program improvements, and implement changes, as appropriate.	Lead Office/ Program
<b>Short</b>	A.) Continue to improve observer identification training to maintain the accuracy of observer data collection for all species including protected and sensitive species.	All Regions, Centers, and HQ Offices
	B.) Continue to develop and implement electronic monitoring (EM) systems to improve bycatch monitoring.	All Regions, Centers, and HQ Offices
	C.) Develop white paper on how EM could increase monitoring and supplement bycatch data collection for protected species.	ST, PR
	D.) Create, in cooperation with the North Pacific Fishery Management Council (NPFMC), the Alaska regional (state and federal) scientists, observer program, managers, and Council staff, a Bycatch Working Group, and organize a workshop with industry and the public to discuss bycatch data collection, gaps, and priorities (specifically pertaining to salmon prohibited catch).	AFSC, AKRO
	E.) Implement the Memorandum of Understanding that transferred the Alaska Marine Mammal Observer Program from AKRO to AFSC for greater efficiency and support from the AFSC Fisheries Monitoring and Analysis Division and Marine Mammal Laboratory.	AFSC, AKRO

		F.) Continue to support the New England Fishery Management Council's (NEFMC) development of Amendment 23 to include a comprehensive review of catch accounting and monitoring needs in the Northeast Multispecies fishery.	GARFO
		G.) Complete the three-year review of the Greater Atlantic Standardized Bycatch Reporting Methodology Program in collaboration with the NEFMC, Mid-Atlantic Fishery Management Council (MAFMC), NEFSC, and GARFO, and publish summary report.	GARFO
		H.) Develop national priorities for observing fisheries for protected species bycatch.	PR
	<b>Mid</b>	I.) Organize a workshop to identify best practices for collecting bycatch data for small vessels (e.g., vessels that cannot carry an observer).	ST (National Observer Program), with PR
		J.) In cooperation with the Western Pacific Fishery Management Council (WPFMC), evaluate regional data collection programs' ability to accurately capture bycatch information and recommend improvements.	PIFSC, PIRO
		K.) Assess and standardize how protected species bycatch data is collected and recorded in EM systems.	PR, ST, NEFSC
	<b>Long</b>	L.) Establish and implement a process for collection of protected species data in recreational fisheries.	ST (Protected Species Science Branch/Marine Recreational Information Program), PR, SERO/PRD
		M.) Ensure implementation of a survey of recreational fishermen on pier (or other fixed location) based sea turtle interactions.	GARFO, SERO, SEFSC
		N.) In the northeast, establish a process to evaluate and adjust as needed observer coverage of the same fisheries where there are more than one observer program (for example both state and federal programs).	NEFSC
	<b>Continuous</b>	O.) Continue evaluating the performance of Alaska commercial fisheries monitoring relative to the Annual Deployment Plan specifications through the Annual Report Process.	AFSC, AKRO
P.) Continue NOAA Fisheries' support of ongoing work by the Fisheries Monitoring and Advisory Committee to assess observer deployment and EM issues.		AFSC, AKRO	

		Q.) Explore options for incorporating uncertainty in bycatch estimates into total mortality estimates for state sampling programs.	WCRO, NWFSC, SWFSC
2. Action	<b>Review the data and analyses presented in the National Bycatch Report to ensure that the report informs national bycatch policy and understanding of national bycatch trends, and provide clarification where methodologies in the National Bycatch Report differ from those used in stock assessments.</b>		<b>Lead Office/ Program</b>
	Short	A.) Update and revise the National Bycatch Report to improve the timeliness of the report and quality of bycatch estimates.	SF, ST
3. Action	<b>Review and update, as necessary, existing guidance for estimating bycatch of all species, domestically and internationally, to ensure that it reflects the best scientific information available including that collected from electronic technologies, where appropriate.</b>		<b>Lead Office/ Program</b>
	Short	A.) Support efforts of the National Technical Working Group on Protected Species Bycatch Estimation to elevate the quality of protected species bycatch estimate methods nationally and identify challenges in various regions.	ST, PR, SWFSC
		B.) In coordination with the WPFMC, conduct post-release mortality studies.	PIFSC, PIRO
		C.) Use genetic, otolith, or other technologies (where appropriate) to estimate stock-specific impacts to species of concern or prohibited species. Where possible, extend bycatch estimation to include bycatch impacts to specific fisheries, communities, or runs (e.g., as is done with Chinook salmon bycatch impacts on western Alaska communities).	AFSC, AKRO
		D.) Report the longline seabird bycatch rate by hooks to match international standards.	AFSC, AKRO, NWFSC
	Mid	E.) Convene a workshop to review best practices for estimating damage to deep-sea coral and sponge habitat from existing bycatch data	HC, ST
	Continuous	F.) Support authorized economic activity in fisheries through developing a protocol for specifying, monitoring, and enforcing <i>de minimis</i> bycatch allowances across multiple non-target species that meet MSA, Endangered Species Act (ESA), Marine Mammal Protection Act (MMPA) and other conservation mandates.	SWFSC
G.) Continue to improve the reporting of Alaska seabird bycatch.		AFSC, AKRO	
4. Action	<b>Improve estimates of post-release mortality of fish through the implementation of the Action Plan for Fish Release Mortality Science</b>		<b>Lead Office/ Program</b>

	<b>Short</b>	A.) Collaborate with the Gulf of Mexico Fishery Management Council (GMFMC) to expand its Fishing for Our Future online clearinghouse for release mortality estimation research and priorities to include information from all regions of the United States.	ST (National Observer Program)
	<b>Continuous</b>	B.) Continue to fund projects through BREP, and other relevant NMFS grant programs, that improve estimates for post release mortality.	SF and other relevant programs
		C.) Continue to support the International Council for the Exploration of the Sea Working Group on Methods for Estimating Discard Survival.	AFSC, AKRO
<b>5. Action</b>	<b>Improve estimates of post-interaction mortality through better collection of relevant data for protected species (e.g., marine mammals, sea turtles, ESA listed fish, corals, and seabirds).</b>		<b>Lead Office/ Program</b>
	<b>Short</b>	A.) Use dedicated observers to examine seabird strikes and mortality due to cable strikes in the at-sea, catcher-processor hake trawl fishery	NWFSC
	<b>Long</b>	B.) Evaluate models for estimating cryptic mortality of protected species, including marine mammals, sea turtles, and seabirds, and include such estimates in annual stock assessment reports.	ST, PR, AFSC
	<b>Continuous</b>	C.) Evaluate models for estimating post-release mortality of protected species, including marine mammals, sea turtles, and seabirds, and include in the annual stock assessment reports, when applicable.	All Regions and Centers, as applicable
<b>6. Action</b>	<b>Assess methods to account for total catch, including discards, in all fisheries.</b>		<b>Lead Office/ Program</b>
	<b>Short</b>	A.) Work with the South Atlantic Fishery Management Council (SAFMC) to roll out the voluntary reporting application MyFishCount and promote its usage in the South Atlantic with the goal of improving recreational catch and discard estimates.	SERO, SEFSC
		B.) Continue evaluation of Alaska catch accounting methodology for estimating total catch and associated variance.	AFSC, AKRO
	<b>Mid</b>	C.) In cooperation with the WPFMC, evaluate existing data collection programs in their ability to monitor discards.	PIRO, PIFSC
	<b>Continuous</b>	D.) Continue to evaluate science center assessment of bycatch of protected species in fisheries and ecosystem research activities, and identify ways to reduce bycatch.	ST, PR
		E.) Continue efforts to use genetic methods to extend bycatch estimation to impact rates for specific stocks or regions, where appropriate (e.g., as is done for western Alaska stocks of prohibited species catch of Chinook and Chum salmon).	AFSC

		F.) Conduct research on using EM platforms for vessels that a human observer cannot work on due to space and safety issues.	NWFSC, WCRO, AFSC, AKRO
		G.) Continue the collection and support of logbooks and look towards ways to improve efficiency such as electronic data entry.	NWFSC, SWFSC, WCRO, AKRO
<b>7. Action</b>	<b>Implement Standardized Bycatch Reporting Methodology (SBRM) requirements.</b>		<b>Lead Office/ Program</b>
	<b>Mid</b>	A.) Support review of SBRMs for all FMPs in response to SBRM final rule.	All Regions and Centers, SF
	<b>Long</b>	B.) Support implementation of the SBRM regulations, and engage with Fishery Management Councils as necessary.	SF
<b>8. Action</b>	<b>Foster and strengthen state, federal, and international partnerships to facilitate data sharing and collaboration.</b>		<b>Lead Office/ Program</b>
	<b>Short</b>	A.) Increase coordination with states and U.S. territories through the Commissions and other relevant organizations to help facilitate data-sharing, especially of protected species data and effort data.	PR, SF, NWFSC
		B.) Work with Maine and Massachusetts to implement portside sampling program and bycatch avoidance efforts in the herring fishery.	GARFO
	<b>Continuous</b>	C.) Work with states to expand shore-based species composition and biological sampling because more catch is being sorted shoreside.	NWFSC
		D.) Continue development and support of the regional Fisheries Information Networks (e.g., AKFIN) to facilitate data access and centralization for use by states and federal agencies.	All Regions and Centers, as applicable
		E.) Work with the NPFMC and Alaska Department of Fish and Game on the bycatch working group to engage with industry to identify data gaps to improve cross-agency collaboration with bycatch-related data (specifically pertaining to salmon prohibited catch).	AFSC, AKRO
		F.) Support the Alaska Groundfish and Halibut Seabird Working Group as it advises NOAA Fisheries and the U.S. Fish and Wildlife Service on reducing groundfish and halibut fisheries bycatch of short-tailed albatross and other seabirds.	AFSC, AKRO
		G.) Work with Atlantic States Marine Fisheries Commission to expand trip reporting in the American lobster fishery.	GARFO



9. Action	Advocate for improved data collection and compliance with data reporting requirements within the Regional Fisheries Management Organizations and intergovernmental agreements.	Lead Office/ Program
<b>Short</b>	A.) Work within the International Commission for the Conservation of Atlantic Tunas and its Standing Committee on Research and Statistics to support full implementation by all Contracting Parties, Cooperating non-Contracting Parties, Entities or Fishing Entities of the minimum standards for scientific observer coverage and data reporting obligations.	IASI
	B.) Work with neighboring governments to support full implementation of the MMPA to report fishery bycatch and ship strikes.	IASI
<b>Continuous</b>	C.) Strengthen observer and sea turtle, marine mammal, and seabird bycatch reporting requirements in all RMFOs the U.S. is a member of, including in longline fisheries operating throughout the Inter-American Tropical Tuna Convention (IATTC) Area.	IASI
	D.) Continue partnership with the Agreement on the Conservation of Albatrosses and Petrels (ACAP) to advance exchange of information between NOAA Fisheries and other countries on seabird bycatch-related work.	National Seabird Program, IASI
	E.) Continue to share total catch estimates and onboard observer information with the International Pacific Halibut Commission.	AFSC, AKRO, IASI
	F.) Improve observer data collection on sea turtle bycatch in fisheries operating in the Western and Central Pacific Ocean and Western and Central Pacific Fisheries Commission.	PIRO
	G.) Work with Regional Fishery Management Organizations (RFMOs) to implement recommendations from the Observer Safety Program Review to enhance observer safety and training and monitor incidents and trends related to observer harassment, safety, and health internationally.	IASI, AFSC, PIRO, ST (National Observer Program)

## Research and Develop:

NOAA Fisheries has a long history of investing in bycatch reduction research. As a result, we have achieved great progress in many areas, such as bycatch reduction technologies. Across our headquarters offices there are a number of different research programs, both internal and external, that support this work. The tasks outlined below will help us to continue to advance bycatch reduction research but also help us better coordinate research needs and identify research priorities among all headquarters offices.

<b>10. Action</b>	<b>Identify and publicize priorities for national and regional research to reduce bycatch and its impacts.</b>		<b>Lead Office/ Program</b>
	<b>Short</b>	A.) Create and maintain an annual comprehensive list of all external funding opportunities and planned, ongoing, and completed gear research (commercial, recreational fishing, and aquaculture) related to bycatch.	All HQ Offices
		B.) Create and maintain a list of all projects conducted internally related to bycatch reduction to foster increased collaboration.	All HQ Offices, NWFSC
		C.) Encourage development of methods to improve estimates and reduce levels of bycatch and bycatch mortality by including these research topics in the Marine Fisheries Initiative, Southeast Region Cooperative Research Program, Council research and monitoring priorities, and SERO science priorities.	SERO, SEFSC
	<b>Mid</b>	D.) Address national high priority research needs for sea turtle bycatch.	PR
E.) Identify bycatch reduction research and development gaps that would benefit from external partner engagement [e.g., industry, non-governmental organizations (NGOs), state agencies, international governments].		SF, PR	
<b>11. Action</b>	<b>Encourage and promote the engineering, design, development and implementation of improved underwater electronic technologies to better understand bycatch and how to reduce it.</b>		<b>Lead Office/ Program</b>
	<b>Continuous</b>	A.) Continue to fund projects under relevant grant programs that address bycatch reduction such as the BREP, Cooperative Research Program, and other programs as appropriate.	All Regions, Centers, and HQ Offices
		B.) Continue to fund Activity Plans focused on conservation engineering	AFSC

		C.) Promote NOAA Fisheries research for the development of advanced technologies leading to a better understanding of methods and techniques to achieve bycatch reduction.	SEFSC
<b>12. Action</b>	<b>Improve understanding of the economic and other social factors contributing to bycatch, and identify regulatory and market incentives that might increase utilization of economic discards.</b>		<b>Lead Office/ Program</b>
	<b>Mid</b>	A.) Summarize the economic, social, and policy factors affecting utilization through a case study of example stocks.	SF, NWFSC, NEFSC, AFSC
<b>13. Action</b>	<b>Assess how technology is developed and adopted in fisheries and how technological advances can affect bycatch reduction, including improvements in post-release mortality.</b>		<b>Lead Office/ Program</b>
	<b>Short</b>	A.) Encourage and monitor the use by fishermen and managers of dynamic management tools such as EcoCast	SWFSC, WCRO
		B.) Develop methods to assess halibut discard mortality using EM or for use with data collected by EM systems	AKRO, AFSC
	<b>Mid</b>	C.) Host workshop to assess the implementation specific management priorities such as technology and approaches for reducing post-hooking mortality of sea turtles and false killer whales in the Hawaii longline fishery, reducing post-hooking mortality of oceanic whitetip sharks in Hawaii and American Samoa longline fisheries, and developing minimum standards for tori line use specific to the Hawaii longline fishery for seabirds.	PIRO, PIFSC
		D.) Define a roadmap to develop “Entanglement Free” gear for fixed gear fisheries, including buoyless and weak rope solutions	NEFSC, GARFO
		E.) Support research of buoyless fishing in fixed gear fisheries	NEFSC, GARFO, SEFSC, SERO
	<b>Continuous</b>	F.) Support and monitor experimental fisheries designed to reduce bycatch or post release mortality (e.g., deep-set buoy gear and linked buoy gear)	SWFSC, NWFSC, WCRO
<b>14. Action</b>	<b>Support regional, national, and international conservation engineering programs through coordination and collaboration across NOAA Fisheries’ bycatch reduction programs, particularly the Bycatch Reduction Engineering Program, and Cooperative Research Program.</b>		<b>Lead Office/ Program</b>
	<b>Mid</b>	A.) In cooperation with Fishery Management Councils and Commissions, ensure greater regional participation in grant programs (especially BREP).	All Regions, Centers, and HQ Offices
	<b>Long</b>	B.) Coordinate with existing gear expertise within NMFS to help inform and direct internal and externally funded bycatch reduction research.	All Regions, Centers, and HQ Offices



	<b>Continuous</b>	C.) Coordinate with broader agency efforts to allow more searchable access to NMFS grant final reports, including BREP	SF
		D.) Support BREP grant recipients to ensure project results translate to management.	All Regions, Centers, and HQ Offices
<b>15. Action</b>	<b>Review the effectiveness of NOAA Fisheries conservation engineering programs, and make improvements where necessary.</b>		<b>Lead Office/ Program</b>
	<b>Short</b>	A.) Carry out programmatic consultations for ESA research and enhancement permits to improve the efficiency of issuing research permits. This action includes completing the cetacean programmatic consultation.	PR
	<b>Mid</b>	B.) Convene a Bycatch Research Panel with internal and external representatives to review all of NOAA Fisheries conservation engineering programs and bycatch reduction work to inform future priorities. Model this after the Protected Resources Recovery Program review.	SF, ST, PR
		C.) Review BREP-funded bycatch reduction research periodically to ensure quality of research and transition to management.	SF
	<b>Long</b>	D.) Convene an internal national bycatch meeting to address cross-program coordination and effectiveness.	All HQ Offices

## Conserve and Manage:

As stated in the National Bycatch Strategy, NOAA Fisheries has three major laws (Endangered Species Act (ESA), Marine Mammal Protection Act (MMPA) and Magnuson-Stevens Fishery Conservation and Management Act (MSA)) that direct its bycatch reduction work. These laws work together to reduce bycatch of non-target and protected species bycatch. This implementation plan outlines the major actions that the relevant NOAA Fisheries programs will take to increase and improve our work to reduce bycatch in the next five years. These actions span multiple NOAA Fisheries headquarters offices and programs including the Office of Sustainable Fisheries, Office of Protected Resources, Office of Habitat Conservation, Office of Science and Technology and Office of International Affairs and Seafood Inspection. The program offices will periodically meet to assess implementation and ensure coordination on cross-cutting issues.

16. Action	<b>Work with the Regional Fishery Management Councils, fishing industry, academics, states, environmental organizations and other key stakeholders to develop, implement, and promote bycatch reduction measures that support conservation and management objectives outlined in the MSA, MMPA, and ESA.</b>	<b>Lead Office/ Program</b>
<b>Short</b>	A.) Work with the regions to coordinate regularly with the Protected Resources liaisons to the Fishery Management Councils on protected species related bycatch reduction issues.	PR, All Regions
	B.) Implement regulations to require certain vessels harvesting shrimp with skimmer trawl gear in the Southeast Region to use turtle excluder devices (TEDs) that will exclude small turtles.	SERO
	C.) Implement regulations to allow the use of additional sea turtle release devices and clarify current regulations regarding such devices in the commercial and for hire sectors of the Gulf reef fish and South Atlantic snapper-grouper fisheries.	SERO
	D.) Work with the GMFMC and SAFMC to implement and/or promote the use of best fishing practices including descending devices in the reef fish and snapper-grouper fisheries.	SERO, SEFSC
	E.) Explore the feasibility of expanding the EcoCast tool to the east coast of the United States and the Pacific Islands.	ST, SF, GARFO, NEFSC, PIFSC
	F.) Implement regulations to reduce bycatch, and serious injury/mortality resulting from bycatch, of large whales in pot/trap gear in the Atlantic.	GARFO

	<b>Mid</b>	G.) Update the National Plan of Action for Seabirds by, at a minimum, expanding its scope to fishing gear other than longline, such as trawl and gillnet.	ST, National Seabird Program, IASI, AKRO, AFSC
	<b>Continuous</b>	H.) Continue to coordinate with Fishery Management Councils on bycatch related topics, in particular development of exempted fishing permits (EFP) for bycatch reduction research.	All Regions, Centers, and HQ Offices
		I.) Continue to support and encourage the MMPA List of Fisheries and national Take Reduction Team programs to reduce bycatch of marine mammals in commercial fisheries.	PR, All Regions
		J.) Continue to support bycatch reduction outreach programs to fishermen such as the Gear Monitoring Teams and turtle release gear for hook-and-line fisheries.	SERO, SEFSC
		K.) Continue to support and encourage the reduction of seabird bycatch in commercial fisheries.	AKRO, AFSC, PIRO, PIFSC, NWFSC, WCRO, SWFSC
		L.) Find new ways to support science collaborations with industry partners.	AKRO, AFSC
		M.) Engage with fishermen through workshops, training, etc., to ensure they are familiar with requirements and guidelines related to reducing interactions with large whales.	AKRO, GARFO, NEFSC, WCRO
		N.) As appropriate, work more closely with states to mitigate bycatch in state managed fisheries where bycatch is of concern.	All Regions, Centers, and HQ offices as appropriate
<b>17. Action</b>	<b>Assist states in the development of protected species conservation plans and encourage states to apply for Incidental Take Permits for state managed fisheries that interact with ESA-listed species.</b>		<b>Lead Office/ Program</b>
<b>Short</b>	A.) Office of Protected Resources and the Protected Resources Assistant Regional Administrators will regularly discuss the status of current Incidental Take Permits, share approaches for conservation planning, and ensure national consistency.	PR, All Regions	
	B.) Assist states in developing conservation plans and applying for ESA section 10 permits to take ESA-listed species in state-managed fisheries (e.g., sturgeon and whales in Dungeness crab pot fishery).	PR, WCRO, SWFSC, NWFSC	



		C.) Ensure states are aware of ESA Section 6 funding opportunities and current priorities (e.g., research and conservation of ESA-listed species in state-managed fixed gear fisheries) and encourage states to apply for these funds.	All Regions and Centers, PR
18. Action	<b>Use bycatch monitoring data to better target management measures to reduce bycatch and adverse impacts to habitat caused by fishing and to monitor the effectiveness of such measures</b>		<b>Lead Office/ Program</b>
	Mid	A.) Assess indirect impacts of targeted or bycatch of prey species on ESA-listed species (e.g., large whales)	WCRO, SWFSC, NWFSC
	Continuous	B.) Evaluate and improve post-interaction handling requirements for protected species and best practices in management measures.	PR in consultation with Regional Offices
C.) Provide support to EFP holders to implement and test novel fishing methods aimed at reducing bycatch mortality.		AFSC, AKRO, WCRO	
19. Action	<b>Identify areas of high bycatch of deep-sea corals or sponges and work with councils and the fishing industry to close these areas to high-bycatch gears as called for in NOAA's Strategic Plan for Deep-Sea Coral and Sponge Ecosystems.</b>		<b>Lead Office/ Program</b>
	Short	A.) Review and implement, as appropriate, NEFMC Coral Amendment	GARFO
		B.) Review and implement GMFMC Coral Amendment	SERO
	Mid	C.) Work with the Alaska, Northwest, and Southwest Fisheries Science Centers to convene regional workshops to identify hot-spots of deep-sea coral and sponge bycatch for specific fisheries and provide this information to the NPFMC and Pacific Fishery Management Councils.	HC
	Continuous	D.) Continue to coordinate with relevant Fishery Management Councils about deep-sea coral bycatch.	HC, SF, NWFSC, AKRO, SERO, GARFO
		E.) Continue to monitor and evaluate MAFMC coral protection measures	GARFO
F.) Continue to support the identification of deep-sea corals, sponges, and other vulnerable marine ecosystems on the high seas, and promote the adoption and implementation of management measures for their protection in RFMOs		IASI	
20. Action	<b>Examine the potential for increased utilization of economic discards and develop best practices to encourage their use where bycatch has potential economic value, taking into account conservation and management requirements.</b>		<b>Lead Office/ Program</b>

	<b>Short</b>	A.) Examine results of a Maximum Retention Electronic Monitoring EFP to evaluate potential for increased utilization of economic or regulatory discards.	GARFO
	<b>Long</b>	B.) Engage with regions, Fishery Management Councils, and others about national best practices for increasing utilization of economic discards.	SF, AKRO, SWFSC
		C.) Collaborate with the WPFMC to increase promotion and product development of bycatch species in fisheries to maximize utilization of bycatch and reduce discards.	PIRO, PIFSC
	<b>Continuous</b>	D.) Continue to support prohibited species donation program and examine ways to make it more efficient.	AKRO
<b>21. Action</b>	<b>Continue efforts to reduce regulatory discards and discard mortality through development of appropriate management measures and implementation of more selective gear.</b>		<b>Lead Office/ Program</b>
	<b>Short</b>	A.) Continue to work with industry members who are interested in developing a jig fishery to selectively target abundant stocks like pollock over stocks like cod.	GARFO
		B.) Consider approval of a new selective trawl gear for use by commercial small-mesh groundfish vessels when subject to the Georges Bank yellowtail flounder accountability measure.	GARFO
	<b>Continuous</b>	C.) Continue to support projects through BREP that aim to develop more selective gear technologies to reduce discards and discard mortality as well as address depredation issues.	SF, AKRO, AFSC, SEFSC, SERO, SWFSC
		D.) In cooperation with the WPFMC, support the regulatory review of the fisheries to determine changes in the regulation to reduce regulatory discards.	PIRO, PIFSC
		E.) Collaborate with Council, industry, and science partners to develop experimental fishing activities/projects designed to test methods to reduce bycatch mortality.	All Regions and Centers
		F.) Continue to coordinate with Fishery Management Councils and industry to reduce regulatory discards and discard mortality.	All Regions and Centers
<b>22. Action</b>	<b>Analyze the effectiveness of incentive-based approaches to environmental management, (e.g., catch shares, risk pools, cooperatives, dynamic area management), and consider their application to bycatch reduction programs.</b>		<b>Lead Office/ Program</b>

	<b>Continuous</b>	A.) Conduct periodic reviews of catch share programs and receive annual industry cooperative reports on bycatch avoidance and improvements.	AKRO
		B.) Continue to analyze the effects of Council actions on prohibited species catch and bycatch through the normal Council analytical process.	AKRO, AFSC
<b>23. Action</b>	<b>Improve understanding of the socio-economic, and other environmental trade-offs of bycatch reduction to better inform stakeholders and to support management decisions and post regulation analyses.</b>		<b>Lead Office/ Program</b>
	<b>Mid</b>	A.) Hold a workshop on economic aspects of bycatch. Workshop participants will be researchers from multiple disciplines as well as fisheries managers and stakeholders. The focus will be on applying research to real-world bycatch problems using a case-study approach.	ST
		B.) Assess a large number of bycatch mitigation case studies to examine the cost and benefit of mitigation measures. Use the results to create a rubric for determining what combination of elements from the mitigation hierarchy will have the greatest impact at the lowest cost.	SWFSC
		C.) Conduct a survey of eco-labels in San Diego markets that carry seafood and quantify what variables influence availability and market value.	SWFSC
<b>24. Action</b>	<b>Conduct post-implementation analyses of the effectiveness of measures to reduce bycatch and bycatch mortality (e.g., circle hooks, turtle excluder devices, “hot spot” area closures, and gear modifications), and modify these measures to improve their success.</b>		<b>Lead Office/ Program</b>
	<b>Short</b>	A.) Analyze the potential for streamer lines to reduce seabird bycatch in West Coast sablefish longline fisheries. Explore potential to expand to vessels <55ft	NWFSC
	<b>Long</b>	B.) Compile a summary of the effectiveness of bycatch mitigation measures and identify possible ways to improve those measures.	SF and PR in consultation with Regional Offices
	<b>Continuous</b>	C.) Examine effectiveness of seabird mitigation measures	AKRO, AFSC
<b>25. Action</b>	<b>Advance bycatch reduction actions in international forums, Regional Fisheries Management Organizations, and multilateral environmental agreements.</b>		<b>Lead Office/ Program</b>



	<b>Short</b>	A.) Strengthen sea turtle and marine mammal resolutions in IATTC and Western Central Pacific Fisheries Commission (e.g., require circle hooks and fish bait, or a tool-box approach)	IASI, PRIO, WCRO
	<b>Continuous</b>	B.) Support U.S. delegations to RFMOs in their efforts to develop and submit proposals for adoption by the RFMO that improve mitigation requirements, including for marine mammals and seabirds, in longline and trawl fisheries consistent, to the extent practicable, with the best practice advice developed under ACAP and the Food and Agriculture Organization of the United Nations.	IASI, SF, PR, PIRO, PIFSC, AKRO, AFSC, NWFSC, WCRO
		C.) Review bycatch management measures in RFMOs in which NOAA Fisheries participates, in particular data, mitigation, and compliance measures, and, where necessary, work with international partners to adopt new or strengthen existing measures.	IASI, PIRO, PIFSC, SF, GARFO
		D.) Promote improved bycatch management – including data collection, mitigation measures, and monitoring – during bilateral meetings with international partners, as well as highlight new obligations under the Marine Mammal Protection Act and the High Seas Driftnet Fishing Moratorium Protection Act. During these discussions, explore possible partnership opportunities, such as joint scientific projects, and coordination at upcoming regional fisheries management organizations.	IASI, AKRO, AFSC, SF, GARFO
		E.) Promote the international adoption and institutional management of successful bycatch reduction technologies, such as TEDs and other bycatch reduction devices (BRDs).	PR, SEFSC, PIFSC, PIRO, IASI
<b>26. Action</b>	<b>Ensure the implementation of the MMPA imports rule to evaluate the effectiveness of bycatch reduction measures for countries exporting seafood to the United States.</b>		<b>Lead Office/ Program</b>
	<b>Short</b>	A.) Request information on marine mammal bycatch from nations that export to the United States to create a List of Foreign Fisheries. Work with nations to develop mechanisms to evaluate bycatch mitigation strategies and implement regulatory programs for commercial fisheries exporting fish and fish product to the United States.	IASI

## **Enforce:**

While many of the enforcement actions take place in regions, NOAA Fisheries Office of Law Enforcement sets the national direction at the headquarters level with significant input from the program offices. As stated in the Office of Law Enforcement 2018-2022 Enforcement Priorities, one of their priorities is enforcement efforts on bycatch reduction regulations. Further, the Office of Law Enforcement will regularly meet with the NOAA Fisheries Headquarters program offices to assess the status of implementation.

<b>27. Action</b>	<b>Identify trends, opportunities, and challenges regarding the enforceability of new and existing policies and regulations.</b>		<b>Lead Office/ Program</b>
	<b>Short</b>	A.) Periodically evaluate whether monitoring requirements enable compliance or may be challenging to enforce.	OLE
		B.) Assess whether enforcement penalties and follow-through provide an effective deterrent for non-compliance, particularly with regards to protected species bycatch regulations.	OLE
	<b>Long</b>	C.) Implement the actions in the 2018-2022 Office of Law Enforcement Priorities Document.	OLE
<b>Continuous</b>	D.) Continue efforts by the NOAA Fisheries Office of Law Enforcement to provide input on enforceability of regulations prior to their release for public review and finalization.	OLE	
<b>28. Action</b>	<b>Continue effective law enforcement coordination between NOAA Fisheries and state partners.</b>		<b>Lead Office/ Program</b>
	<b>Continuous</b>	A.) Continue efforts by NOAA Fisheries Office of Law Enforcement to train state partners in pertinent regulations, and forward observer-initiated complaints for investigation, to include complaints involving prohibited species mishandling or interference with observer sampling	OLE
<b>29. Action</b>	<b>Support data sharing between NOAA Office of Law Enforcement and the U.S. Coast Guard, and where applicable, relevant foreign nations.</b>		<b>Lead Office/ Program</b>
	<b>Short</b>	A.) Implement recommendations from observer safety program review and continue to monitor incidents and trends related to observer harassment, safety and health nationwide.	ST (National Observer Program)
	<b>Continuous</b>	B.) Continue efforts by NOAA Fisheries Office of Law Enforcement to work alongside U.S. Coast Guard to detect, investigate, and resolve incidents	OLE

		involving prohibited species mishandling, deck sorting, pre-sorting and interference with observer sampling.	
<b>30. Action</b>	<b>Work collaboratively with outreach and gear technology specialists to improve the compliance of fishermen with bycatch mitigation requirements.</b>		<b>Lead Office/ Program</b>
	<b>Short</b>	A.) Continue the implementation of the NOAA Office of Law Enforcement Priority to support compliance assistance for sustainable fisheries and protected species regulations.	OLE
	<b>Continuous</b>	B.) Work with NOAA OLE and States to provide training in procedures for checking TEDs, BRDs, sea turtle release gear, and other bycatch mitigation gears such as weak hooks in GOM pelagic longline fishery (bluefin tuna bycatch reduction) to ensure accuracy and consistency across enforcement groups.	SERO, SEFSC
<b>31. Action</b>	<b>Continue to support the working relationships with international organizations such as INTERPOL and other international enforcement bodies.</b>		<b>Lead Office/ Program</b>

## **Communicate:**

Communications is one of the biggest cross-cutting issue for the entire National Bycatch Strategy. Without strong communications many of the actions in this implementation plan will not be successful. NOAA Fisheries is working closely with its Communication professionals and headquarters program office staff to implement the actions identified below.

<b>32. Action</b>	<b>Improve the fishing industry’s understanding of existing bycatch reduction methods and requirements to facilitate compliance with current regulations and further reduce bycatch.</b>		<b>Lead Office/ Program</b>
	<b>Short</b>	A.) Across Headquarters offices, outline major bycatch activities for the year, identify messages, and coordinate any bycatch rollouts across programs.	All HQ Offices
		B.) Working with the WPFMC to enhance outreach and training to fishery participants to ensure proper application of existing mitigation methods.	PIRO, PIFSC
	<b>Mid</b>	C.) Conduct stakeholder workshops on the implementation and use of dynamic ocean management approaches.	SWFSC
	<b>Continuous</b>	D.) Educate public at outreach events on bycatch reduction methods such as descender devices.	SWFSC, WCRO, ST, SERO, AKRO, GARFO
		E.) Continue holding skipper workshops to share information on existing or new regulations and safe handling and release of protected species.	SWFSC, WCRO
		F.) Maintain presence at Council meetings to facilitate partnerships that allow better communication with industry (e.g., via WA Sea Grant)	SWFSC, WCRO, NWFSC, AKRO, AFSC
		G.) Support NMFS fisher outreach efforts such as the SEFSC Gear Monitoring Team to provide dockside and at-sea courtesy inspections of federally required bycatch reduction gear such as TEDs, BRDs, and sea turtle release equipment	SERO
<b>33. Action</b>	<b>Improve the public availability of information about regional and national bycatch reduction research and bycatch of fish and protected species.</b>		<b>Lead Office/ Program</b>
	<b>Short</b>	A.) Develop a schedule and process for annual updates of bycatch content on the NOAA Fisheries website.	SF
		B.) Migrate regional and science center bycatch content to new NOAA Fisheries website	All Regions, Centers, and HQ Offices

	<b>Mid</b>	C.) Improve bycatch research and observation priority setting between regions/centers, as well as improve communication of results.	All Regions and Centers
	<b>Long</b>	D.) Improve cross-training of staff so that they are familiar with bycatch issues for multiple taxa, particularly communications staff.	All HQ offices
	<b>Continuous</b>	E.) Continue to educate stakeholders and participate in public outreach at fishing shows, fishing clubs, and regional roundtables (e.g., demonstrating the NOAA <i>Turtle Hurdle</i> TED at schools, descending device demonstrations, and thresher shark gear).	SERO, GARFO, SWFSC, WCRO, NWFSC, AKRO, AFSC
		F.) Create infographics and brochures highlighting bycatch reduction methods and success stories, where appropriate.	All Regions, Centers, and HQ Offices
<b>34. Action</b>	<b>Encourage stakeholders to provide information on bycatch efforts they have successfully implemented.</b>		<b>Lead Office/ Program</b>
	<b>Long</b>	A.) Hold a series of roundtables around key bycatch topics (e.g., increased utilization, gear technology and improvements) to find areas to collaborate with external stakeholders.	SF
	<b>Continuous</b>	B.) Continue to invite stakeholders to share project results at annual BREP meetings.	SF
<b>35. Action</b>	<b>Improve the availability of information from bycatch program assessments/reviews to fisheries managers and stakeholders.</b>		<b>Lead Office/ Program</b>
	<b>Short</b>	A.) Develop a plan to improve internal communication of bycatch reduction research results, bycatch estimates, bycatch related requests for proposals, and lessons learned from bycatch reduction projects.	PIRO, PIFSC
	<b>Mid</b>	B.) Communicate implementation plan progress externally.	All Regions, Centers, and HQ Offices,
<b>36. Action</b>	<b>Promote greater awareness of bycatch and discard mortality issues within the fishing community.</b>		<b>Lead Office/ Program</b>
	<b>Short</b>	A.) Continue development of Recreational Cod Avoidance Project in cooperation with state and private partners to help anglers avoid cod while targeting haddock	GARFO
	<b>Continuous</b>	B.) Promote regulation prohibiting feeding marine mammals in the wild to reduce marine mammal depredation of fishing bait and catch.	All Regions, Centers, and HQ Offices, as appropriate
<b>37. Action</b>	<b>Engage recreational anglers in sharing approaches for increasing post-release survival.</b>		<b>Lead Office/ Program</b>



	<b>Short</b>	A.) Continue development of collaborative outreach project on post release mortality of cusk.	GARFO
	<b>Mid</b>	B.) Develop outreach materials and participate in trade shows and recreational fishing events to educate fishers and the public on bycatch issues including showcasing existing bycatch reduction technologies.	SERO, SEFSC, SWFSC
	<b>Long</b>	C.) Implement Deepwater Horizon oil spill restoration project to reduce post-release mortality of reef fish in the Gulf of Mexico.	HC, ST, SERO, SEFSC
	<b>Continuous</b>	D.) Promote public understanding of recreational post-release mortality and the effects of barotrauma through 'Hooked on Ethical Angling' program including at fishing trade shows.	GARFO, SWFSC
<b>38. Action</b>	<b>Use all available communication tools to ensure our message is accessible to all stakeholders (e.g., captains and crew who are not native English speakers).</b>		<b>Lead Office/ Program</b>
	<b>Continuous</b>	A.) Ensure communication tools are accessible to all constituents through developing tools in multiple languages and using plain language. For example, in Alaska, include communications tools in Yu'pik, Russian, Inupiaq, as able.	All Regions and Centers
<b>39. Action</b>	<b>Educate consumers on increased utilization of economic discards and how to make smart seafood choices using NOAA Fisheries tools, such as FishWatch.gov.</b>		<b>Lead Office/ Program</b>
	<b>Mid</b>	A.) Educate consumers about new recipes and products resulting from collaboration with fishermen, chefs, and fish mongers to reduce waste at sea and at the processors.	SWFSC, NWFSC
	<b>Continuous</b>	B.) Continue to improve availability of bycatch information on NOAA's FishWatch website.	SF, PR
<b>40. Action</b>	<b>Foster relationships with domestic and international partners and stakeholders to better understand and address bycatch concerns.</b>		<b>Lead Office/ Program</b>
	<b>Short</b>	A.) Improve collaboration with those academic institutions that have a bycatch reduction/conservation engineering program to foster the next generation of scientists/engineers.	PIRO, PIFSC, AKRO, AFSC
	<b>Mid</b>	B.) Identify and publicize areas where stakeholders (Councils, states, Take Reduction Teams, Sea Grant, fishing industry, Environmental NGOs) could collaborate in bycatch reduction efforts.	SWFSC, PIRO, PIFSC, AKRO, AFSC, PR, GARFO

		C.) Collaborate with the Long Beach Aquarium on public education related to fisheries management (e.g., storied seafood on West Coast swordfish fisheries).	SWFSC, WCRO
		D.) Engage with Fishery Management Councils and the Council Coordination Committee on key bycatch issues.	All Regions and Centers
	<b>Continuous</b>	E.) Continue to enhance outreach at Fishery Management Councils meetings, conferences, symposium, and through use of website materials to provide information about regional and national observer programs.	AFSC, AKRO, WCRO, ST (National Observer Program)