NOAA FISHERIES

National Bycatch Reduction Strategy

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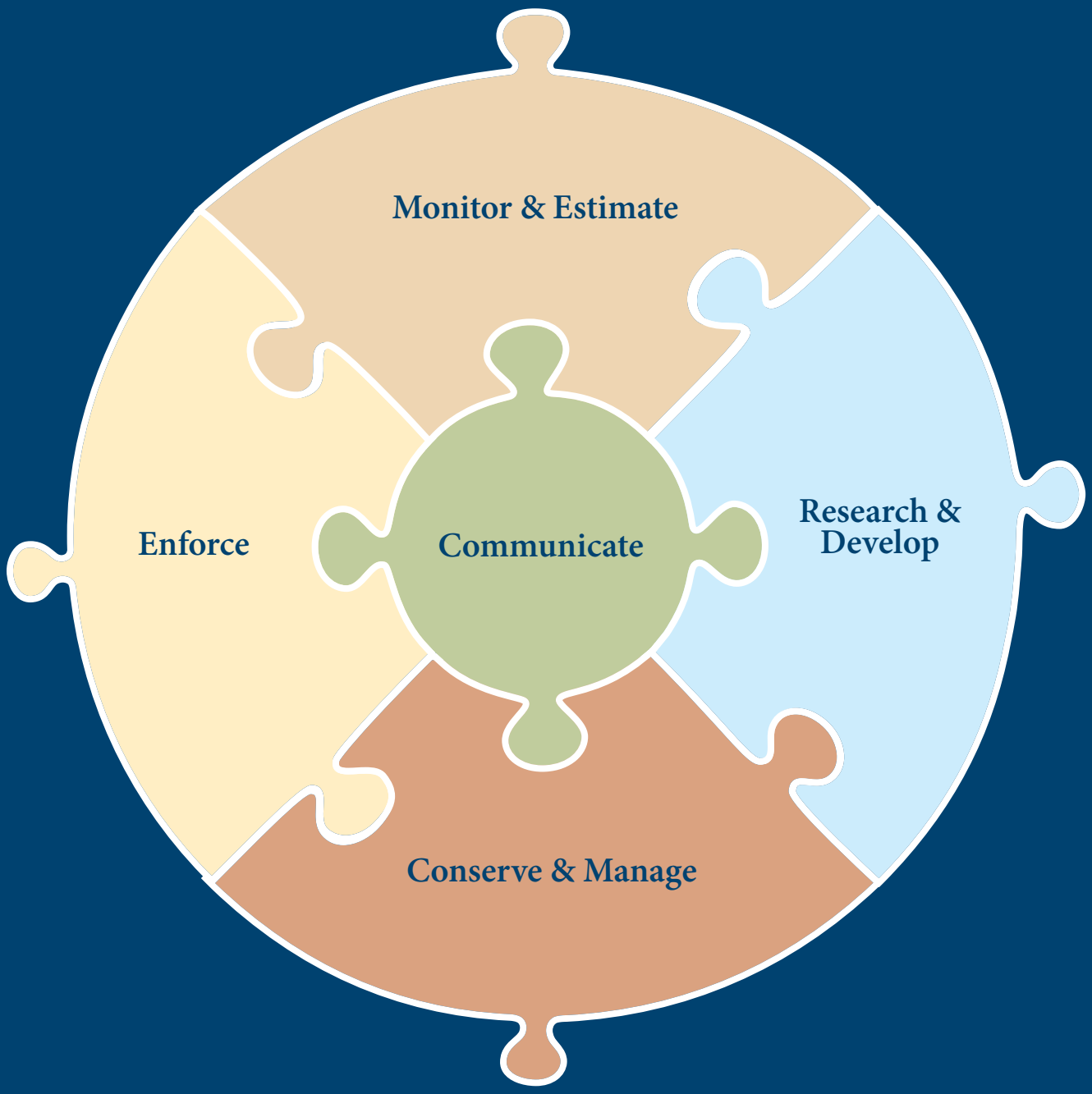
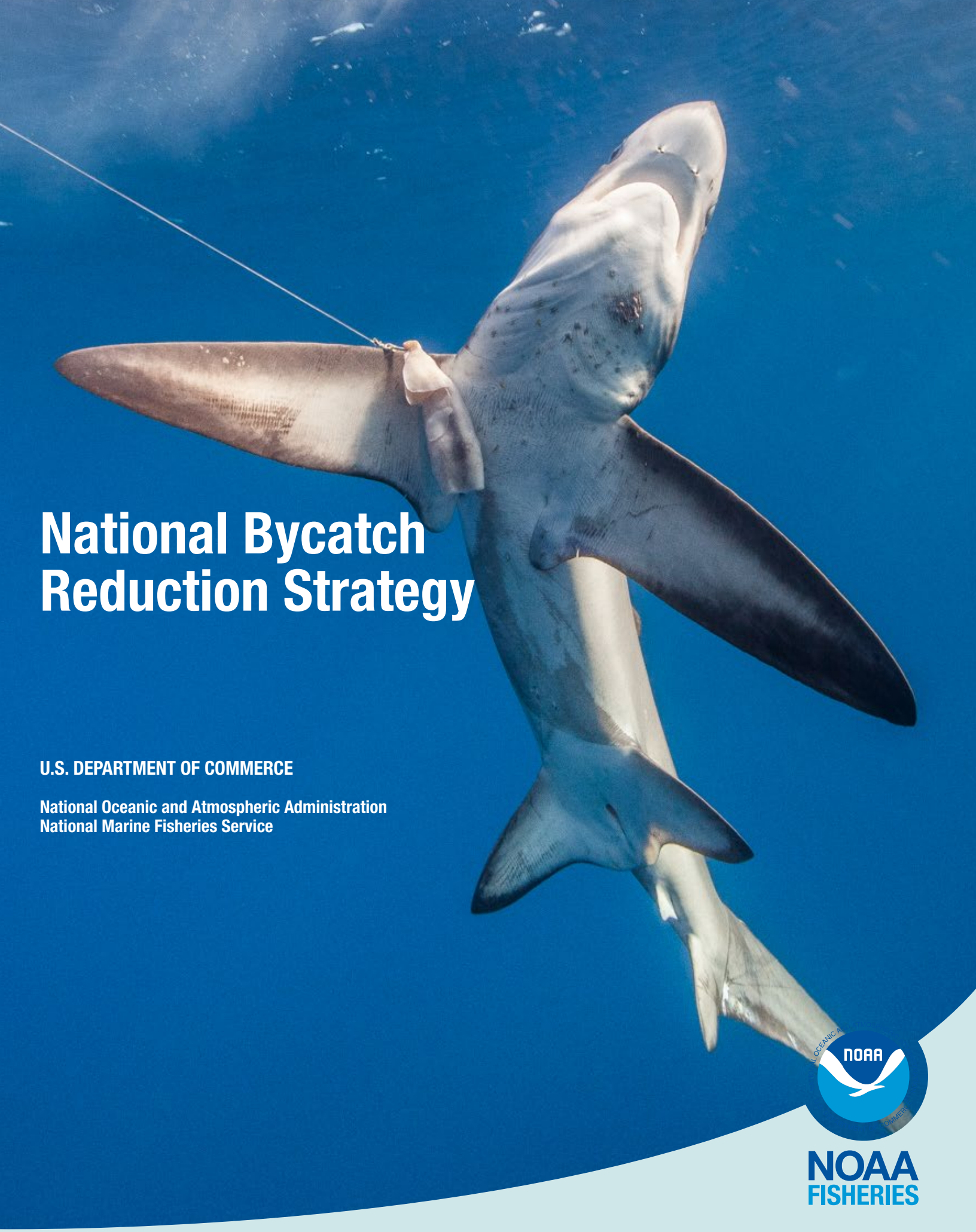


Right:
A big eye thresher shark, a frequent catch in the deep-set buoy gear fishery, caught for bycatch research by Pfleger Institute for Environmental Research. Photo © Ralph Pace.

On the cover:
A diver tests a turtle excluder device (TED).



National Bycatch Reduction Strategy

U.S. DEPARTMENT OF COMMERCE

National Oceanic and Atmospheric Administration
National Marine Fisheries Service

NOAA FISHERIES

Introduction

The United States is a global leader in sustainable fisheries management and protected species conservation. NOAA Fisheries' core mission is to promote productive and sustainable fisheries and conserve and recover protected species—all backed by sound science and an ecosystem-based approach to management. **The goal of the 2016 National Bycatch Reduction Strategy is to guide and coordinate NOAA Fisheries' efforts to reduce bycatch and bycatch mortality in support of sustainably managing fisheries and recovering and conserving protected species.** This 2016 Strategy builds on past and ongoing efforts to reduce bycatch.

Implementation of this Strategy will occur at the regional, national, and international levels. NOAA Fisheries headquarters' offices, regional offices, and science centers, in coordination with our partners and stakeholders, will develop implementation plans in 2017.

What is Bycatch?

NOAA Fisheries manages bycatch and its impacts through several authorities, including the Magnuson-Stevens Fishery Conservation and Management Act (MSA), the Marine Mammal Protection Act (MMPA), the Endangered Species Act (ESA), and other domestic laws and international agreements. Each of these authorities defines bycatch differently. For the purposes of this Strategy, **bycatch means discarded catch of marine species and unobserved mortality due to a direct encounter with fishing vessels and gear.** While this document refers to bycatch very broadly, NOAA Fisheries recognizes that the development and implementation of specific measures to address bycatch will occur in accordance with the appropriate statutory definitions and authorities.

Under the MSA, bycatch is defined as fish[1] that are harvested in a fishery, but that are not sold or kept for personal use, and includes both economic and regulatory discards. Economic discards are fish that are discarded because they are of undesirable size, sex, or quality, or for other economic reasons. Regulatory discards are fish that are caught but discarded because regulations do not allow fishermen to retain the fish; for example, fishermen may be required to discard fish under a certain size or of a specific species for conservation reasons.

The MSA requires that bycatch and bycatch mortality be minimized to the extent practicable. While fish released alive under a recreational catch and release fishery management program are exempt from the MSA's definition of, and requirements for, bycatch, the MSA does require that, to the extent practicable, the mortality of released fish be minimized to ensure the extended survival of such fish.

[1]Fish, as defined in the MSA, "means finfish, mollusks, crustaceans, and all other forms of marine animal and plant life other than marine mammals and birds." 16 U.S.C. § 1802(12)

For species protected under the ESA and MMPA, bycatch is a type of "take." The ESA and MMPA have different definitions of take; however, in general, take includes any of the following actions: capturing, collecting, harming, harassing, hunting, killing, pursuing, shooting, trapping, or wounding any species protected by the MMPA or the ESA, or attempting to engage in any such conduct. While "take" is generally prohibited for species protected under the MMPA and ESA, there are some exceptions under both laws. For example, the MMPA includes a program to authorize and control the taking of marine mammals incidental to commercial fishing operations.

STATUTORY BYCATCH PROVISIONS

Magnuson-Stevens Act	Marine Mammal Protection Act	Endangered Species Act
• Promotes sustainable domestic fisheries conservation and management based on sound science and effective enforcement. • Requires that conservation and management measures shall, to the extent practicable, minimize bycatch, and to the extent bycatch cannot be avoided, minimize the mortality of such bycatch.	• Establishes a national policy to prevent marine mammal stocks from declining beyond the point where they cease to be a significant element in the ecosystem in which they are a part. • Prohibits—with certain exceptions—the "take" of marine mammals. • Directs commercial fisheries to reduce incidental mortality/serious injury of marine mammals to insignificant levels.	• Provides for the conservation and recovery of species that are endangered or threatened throughout all or a significant portion of their range, and the conservation of the ecosystems on which they depend. • Prohibits—with certain exceptions—the "take" of those species[2] or the destruction or adverse modification of critical habitat designated for those species. • Requires all federal agencies to ensure that any action they authorize, fund, or carry out (e.g., federal fisheriesnot likely to jeopardize the continued existence of a listed species. • Requires recovery plans for listed species that identify the priority actions to conserve and recover the species, which may include bycatch reduction measures as appropriate.

[2]"Take" of endangered species is prohibited under section 9 of the Endangered Species Act; under section 4, these protections may be extended to threatened species. 16 U.S.C. §§ 1333 and 1338

Why Can Bycatch be a Problem?

Impacts from bycatch and bycatch mortality vary across fisheries, and can have adverse biological, economic, and social consequences. Bycatch can negatively affect protected species by harming individuals, contributing to population declines, and impeding population recovery. Similarly, bycatch of fish can contribute to overfishing and impede efforts to rebuild fish stocks, or have negative economic and social impacts to fishermen and communities that rely on the economic benefits from a fishery or fish for food. Bycatch can also have ecological impacts by altering the availability of predators and prey that affect marine ecosystems and fishery productivity. Further, bycatch of habitat-forming benthic species like corals and sponges can damage important habitats for fish and other species. Working with partners and stakeholders, NOAA Fisheries has made significant advancements to improve the selectivity of fishing gear and modify fishing practices to reduce bycatch. However, bycatch still occurs because numerous species often inhabit the same productive areas of the ocean.

Loggerhead turtle with a longline hook in its mouth found stranded in Georgia. Photo courtesy of Mark Dodd.

What is NOAA Fisheries Doing About Bycatch?

NOAA Fisheries has a long, productive history of working with partners, including the Regional Fishery Management Councils, Take Reduction Teams, the fishing industry, states and interstate marine fisheries commissions, academic groups, environmental organizations, international partners, and others to better understand bycatch; to develop new tools and approaches for reducing, estimating, and reporting bycatch; and to successfully implement management measures.

In 1998, NOAA Fisheries developed a report, Managing the Nation's Bycatch: Priorities, Programs and Actions for the National Marine Fisheries Service, which evaluated NOAA Fisheries' bycatch reduction efforts by region and identified national-level recommendations to further enhance bycatch reduction. In 2003, NOAA Fisheries developed our first National Bycatch Strategy, which identified concrete actions to reduce bycatch. This 2016 National Bycatch Reduction Strategy builds on the 2003 strategy and works to enhance the effectiveness of current programs—both domestically and internationally—while reflecting today's challenges, laws, regulations, and policies.

NOAA Fisheries is committed to continuing to reduce and minimize bycatch now and into the future. For the purposes of this Strategy, reducing bycatch includes efforts to minimize the amount of bycatch, as well as minimize the mortality, serious injury, and adverse impacts of bycatch that do occur. In addition, reducing bycatch can also include actions that increase utilization of fish that would otherwise be economic discards.

UTILIZING BYCATCH

This strategy seeks to support actions that increase utilization of fish that would otherwise become economic discards, taking into account conservation and management requirements.

Finding ways to use legal catch that would otherwise be discarded for economic reasons can help reduce the magnitude of bycatch and provide economic benefit to the fishing industry.

Increased utilization involves finding incentives and developing markets to help reduce economic discards and increase the portion of the catch that is landed and sold.

NOAA Fisheries already supports increased utilization in some fisheries. For example, NOAA Fisheries' 2017 Saltonstall-Kennedy Grant Program includes the following funding priority: "Support development of new products from and markets for seafood processing waste and low value species."

40 YEARS OF BYCATCH REDUCTION

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1970

1972
- Congress passes the Marine Mammal Protection Act.

1973
- New "Dolphin-Safe" standards for the tuna industry reduced dolphin bycatch by more than 99 percent.
- Congress passes the Endangered Species Act.

1980s
- NOAA works with the commercial shrimp industry to develop "Turtle Excluder Devices" (TEDs).

1982
- Chinook salmon bycatch limits put in place for foreign trawlers in the Bering Sea.

1989
- NOAA establishes federal regulations requiring the widespread use of TEDs.

1994
- Congress establishes the National Marine Marine Mammal Take Reduction Program.

1997
- NOAA Fisheries begins requiring hook-and-line vessels fishing for groundfish in the Bering Sea/Aleutian Islands and the Gulf of Alaska to use seabird avoidance measures.

1998
- NOAA Fisheries releases *Managing the Nation's Bycatch: Priorities, Programs, and Actions for the National Marine Fisheries Service.* This report identified national-level recommendations to further reduce bycatch.

1999
- NOAA establishes National Observer Program.

2003
- NOAA Fisheries releases the National Bycatch Strategy which identifies actions to address bycatch issues.

2004
- NOAA Fisheries and partners prove streamer lines to be nearly 100% effective in reducing seabird bycatch.
- Based on NOAA research, the U.S. begins requiring the use of circle hooks and finfish bait to reduce sea turtle bycatch.

2006
- Congress passes the Magnuson-Stevens Fishery Conservation and Management Reauthorization Act establishing the Bycatch Reduction Engineering Program.

2010
- "Weak" hook reduces bluefin tuna bycatch in yellowfin tuna fishery.

2011
- NOAA Fisheries releases the first edition of the National Bycatch Report: a national compilation of bycatch estimates for U.S. living marine resources at the fishery and species levels.

2014
- With funding from NOAA's Bycatch Reduction Engineering Program, the Pacific States Marine Fisheries Commission uses LED lights to reduce bycatch of threatened euchalon (Columbia River smelt) by more than 90%.

2016
- NOAA Fisheries releases new National Bycatch Reduction Strategy.

2017
- Regional implementation plans developed.

National Bycatch Reduction Objectives & Actions

This National Bycatch Reduction Strategy sets national-level objectives and actions for all of NOAA Fisheries' bycatch reduction programs across our science and management enterprise so we are better able to fulfill our statutory obligations. National and regional implementation plans will be developed in coordination with our partners. Due to the different bycatch issues across NOAA Fisheries' regions and programs, the national-level objectives and actions presented in this document will be applied to the specific priorities and needs of each region and its fisheries through the implementation plans.

The objectives and actions presented below are designed to align ongoing and future regional, national, and international bycatch-related efforts with our overall goal of reducing bycatch and bycatch mortality.

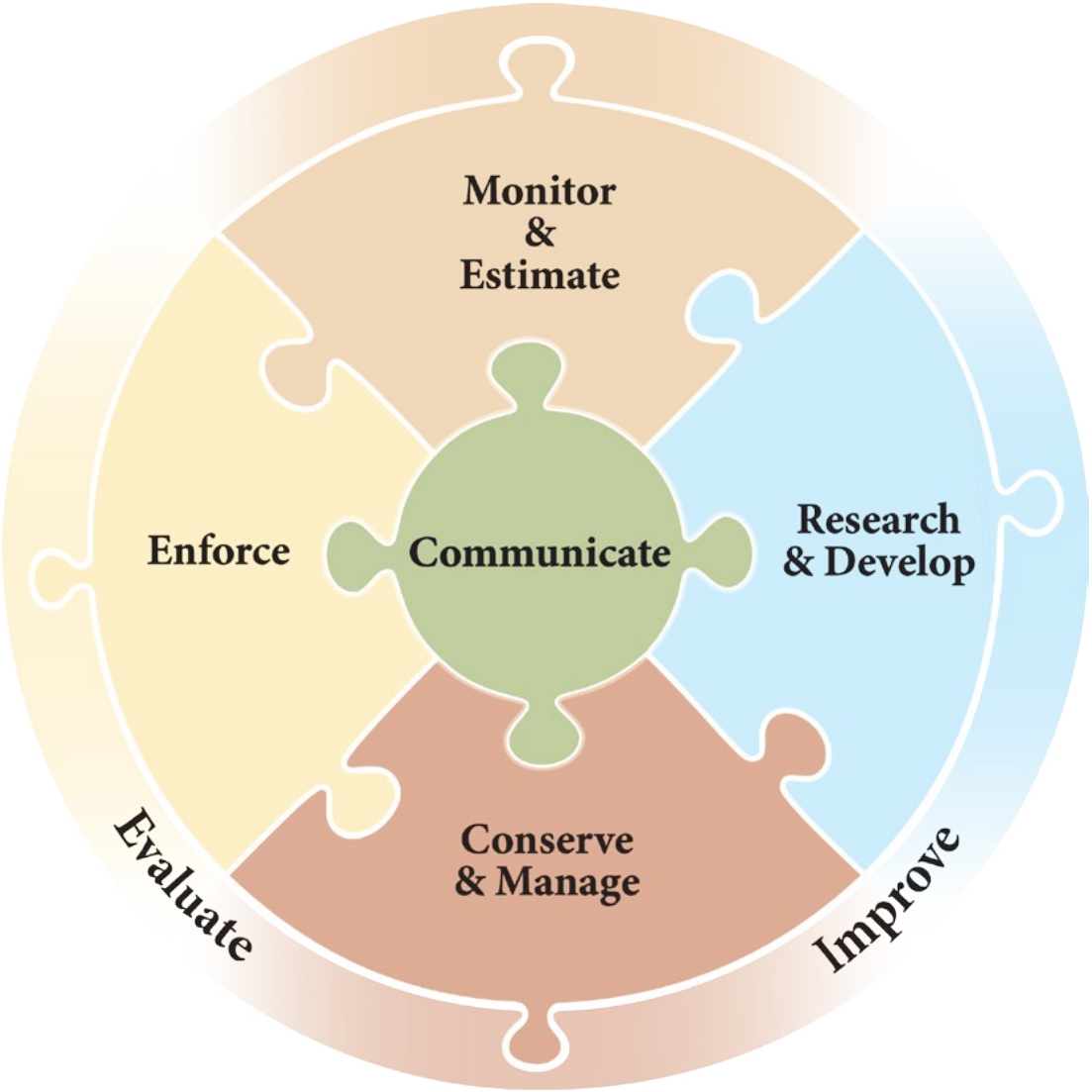
The five objectives outlined below support the goal of this Strategy, to **guide and coordinate NOAA Fisheries' efforts to reduce bycatch and bycatch mortality in support of sustainably managing fisheries and recovering and conserving protected species.**

STRATEGY OBJECTIVES

- **Monitor and estimate** the rates of bycatch and bycatch mortality in fisheries to understand the level of impact and the nature of the interaction.
- **Conduct research** to improve our bycatch estimates, understand the impacts of bycatch on species and community dynamics, and **develop** solutions to reduce bycatch and bycatch mortality.
- **Conserve and manage** fisheries and protected species by implementing measures to reduce bycatch and its adverse impacts.
- **Enforce** fishery management measures, including those aimed at reducing bycatch and bycatch mortality, to ensure compliance with applicable laws.
- **Communicate** to develop a common understanding of bycatch, to share information on our efforts to address bycatch, and to identify areas where we can improve.

This Strategy provides a framework for how these objectives work together across our programs to support bycatch reduction efforts. We are most effective in achieving our goal when we coordinate across our programs within NOAA Fisheries and with our partners and stakeholders.

Cross-cutting and embedded within these objectives is an explicit recognition of the need to regularly evaluate our programs to ensure we are achieving objectives, learning from our experiences, and then continually improving based on new information. We evaluate the effectiveness of our science and management programs to determine whether programs achieve stated goals and identify needed improvements. As new science and management approaches for bycatch are considered, and ongoing programs are evaluated, we will work to promote the most effective solutions. When appropriate, we will revise programs to better meet conservation and management goals.



MONITOR & ESTIMATE

NOAA Fisheries monitors and estimates the amount and type of bycatch and bycatch mortality in fisheries to understand the effects of bycatch on fisheries and the related ecosystem. These data inform efforts to minimize bycatch and help managers to monitor the effectiveness of their conservation actions. With this objective, we seek to strengthen monitoring programs by using existing data collection methods (e.g., logbooks and observers). We will develop and invest in new data collection techniques (e.g., electronic technologies), and improve our estimation methods.

Actions

- Evaluate bycatch data collection programs comprehensively (e.g. observer programs, electronic monitoring programs) to identify data gaps, program improvements, and implement changes, as appropriate.
- 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.
- 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.
- Improve estimates of post-release mortality of fish through the implementation of the **Action Plan for Fish Release Mortality Science**.
- 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).
- Assess methods to account for total catch, including discards, in all fisheries.
- Implement Standardized Bycatch Reporting Methodology requirements.
- Foster and strengthen state, federal, and international partnerships to facilitate data sharing and collaboration.
- Advocate for improved data collection and compliance with data reporting requirements within the regional fisheries management organizations and intergovernmental agreements.

RESEARCH & DEVELOP

NOAA Fisheries conducts and supports research to improve assessments of bycatch on population and ecosystem dynamics, to modify fishing gear and operations to reduce bycatch, and to understand the socioeconomic effects of bycatch. We are committed to supporting innovative research that reduces bycatch and increases survival of discarded or released fish and released protected species, through gear technology, bycatch avoidance programs, and increased utilization of economic discards. This research enables us to develop tools that can help us further minimize bycatch and its impacts.

Actions

- Identify and publicize priorities for national and regional research to reduce bycatch and its impacts.
- Encourage and promote the engineering, design, development and implementation of improved underwater electronic technologies to better understand bycatch and how to reduce it.
- Improve understanding of the economic and other social factors contributing to bycatch, and identify regulatory and market incentives that increase might utilization of economic discards.
- Assess how technology is developed and adopted in fisheries and how technological advances can affect bycatch reduction, including improvements in post-release mortality.
- Support regional, national, and international conservation engineering programs through coordination and collaboration across NOAA Fisheries' bycatch reduction programs, particularly the Bycatch Reduction Engineering Program, Saltonstall-Kennedy Grant Program, and Cooperative Research Program.
- Review the effectiveness of NOAA Fisheries conservation engineering programs, and make improvements where necessary.

CONSERVE & MANAGE

NOAA Fisheries works closely with partners to develop and implement targeted conservation and management measures that reduce bycatch and the impacts of bycatch through a variety of mechanisms, including best practices, national and regional guidance, improved decision-making tools, policies, and regulations. We will continue to make decisions based on the best available science and in accordance with applicable laws and regulations. In addition, we will work to promote actions that reduce bycatch by more effectively utilizing fish that would have otherwise been economic discards.

Actions

- 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.
- 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.
- 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.
- 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.**
- 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.
- Continue efforts to reduce regulatory discards and discard mortality through development of appropriate management measures and implementation of more selective gear.
- 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.
- 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.
- Conduct post-implementation analyses of the effectiveness of measures to reduce bycatch and bycatch mortality (e.g., circle hooks, turtle excluder devices, and "hot spot" area closures, and gear modifications), and modify these measures to improve their success.
- Advance bycatch reduction actions in international forums, regional fisheries management organizations, and multilateral environmental agreements.
- Ensure the implementation of the **MMPA imports rule** to evaluate the effectiveness of bycatch reduction measures for countries exporting seafood to the United States.

ENFORCE

NOAA Fisheries' Office of Law Enforcement works closely with fishery and protected species managers to develop clear and enforceable regulations. We will continue to work with state, federal, and international partners to improve compliance with all applicable laws, reach out to fishermen about the importance of regulations to reduce bycatch, and conduct enforcement that supports compliance and effective implementation of fishery and protected species management measures.

Actions

- Identify trends, opportunities, and challenges regarding the enforceability of new and existing policies and regulations.
- Continue effective law enforcement coordination between NOAA Fisheries and state partners.
- Support data sharing between NOAA Office of Law Enforcement and the U.S. Coast Guard, and where applicable, relevant foreign nations.
- Work collaboratively with outreach and gear technology specialists to improve the compliance of fishermen with bycatch mitigation requirements.
- Continue to support the working relationships with international organizations such as INTERPOL and other international enforcement bodies.

NOAA Fisheries Enforcement Officers inspect a turtle excluder device.

COMMUNICATE

NOAA Fisheries recognizes the importance of effective communication and coordination with partners and stakeholders to reduce bycatch and bycatch mortality. Fishermen and other stakeholders provide valuable information about our most pressing bycatch problems, creative ideas for possible solutions, and feedback about what is—and is not—working on the water. We will continue to improve our collaboration with partners and stakeholders to build a common understanding of bycatch, efforts to reduce bycatch and its impacts, and lessons learned. We will work to better communicate successes and stimulate similar activity in other areas.

Actions

- Improve the fishing industry's understanding of existing bycatch reduction methods and requirements to facilitate compliance with current regulations and further reduce bycatch.
- Improve the public availability of information about regional and national bycatch reduction research and bycatch of fish and protected species.
- Encourage stakeholders to provide information on bycatch efforts they have successfully implemented.
- Improve the availability of information from bycatch program assessments/reviews to fisheries managers and stakeholders.
- Promote greater awareness of bycatch and discard mortality issues within the fishing community.
- Engage recreational anglers in sharing approaches for increasing post-release survival.
- 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).
- Educate consumers on increased utilization of economic discards and how to make smart seafood choices using NOAA Fisheries tools, such as **FishWatch.gov**.
- Foster relationships with domestic and international partners and stakeholders to better understand and address bycatch concerns.

Fisheries observer Sean Sullivan sorts and samples the day's catch.

U.S. Secretary of Commerce
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December 2016

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