

NOAA Fisheries Reducing Bycatch 2005 Report

Introduction

NOAA Fisheries environmental stewardship responsibilities require that the agency assess the role of marine fisheries within the marine ecosystem. For this reason, minimizing bycatch has become an increasingly important priority for the National Oceanic and Atmospheric Administration's National Marine Fisheries Service (NOAA Fisheries) over the past several years and remains a central fishery management challenge for the agency today. Bycatch may be defined as the discarded catch of any living marine resource. NOAA Fisheries is also concerned with bycatch mortality, which is the mortality of the discarded catch of any living marine resource plus unobserved mortality due to a direct encounter with fishing gear. Assessing the amount and type of bycatch that occurs in marine fisheries is an essential component of NOAA Fisheries' efforts to better quantify total fisheries-associated mortality in marine fisheries.

Reduction of marine fisheries bycatch is central to several of NOAA Fisheries' governing statutes, including the Magnuson-Stevens Fishery Conservation and Management Act (MSA), the Endangered Species Act (ESA), and the Marine Mammal Protection Act (MMPA). In March 2003, NOAA Fisheries launched its National Bycatch Strategy aimed at building upon previous efforts to address bycatch to forge new ground in the areas of bycatch monitoring and reduction.

During 2005, NOAA Fisheries scientists and managers carried out a wide array bycatch monitoring and reduction programs, including regulatory measures, technology research, monitoring programs, and international efforts, including:

- At least 17 regulatory and management actions designed to reduce bycatch;
- At least \$4.4 million in agency and cooperative research to reduce bycatch;
- Bycatch reduction technology transfer and diplomatic efforts involving over 20 countries facing bycatch challenges;
- Over 30 workshops focusing on bycatch reduction techniques; and
- Over \$40 million for observer coverage for more than 67,000 days at sea in 42 fisheries to gather bycatch and other data.

Bycatch Reduction Regulations

NOAA Fisheries reduces bycatch is the implementation of regulations designed to reduce bycatch. NOAA Fisheries implemented the following regulations in 2005 to reduce bycatch:

January 1, 2005 – NOAA Fisheries implemented 2005 Federal regulations for the West Coast groundfish fisheries (69 FR 77012), which established, among other measures, a requirement that trawl vessels operating north of Cape Mendocino, California use selective flatfish trawl gear, a bycatch reduction gear type. Other bycatch reduction

measures newly established by this final rule include fishing closed areas around the Farallon Islands and Cordell Banks, both offshore of California's central coast.

April 14, 2005 – NOAA Fisheries implemented 2005 Federal regulations for the West Coast Pacific halibut fisheries (70 FR 20304), which established, among other measures, a new Yelloweye Rockfish Conservation Area (fishing closed area) off the coast of Oregon.

May 3, 2005—NOAA Fisheries implemented the 2005 Fishery Specifications for Pacific Whiting in the U.S. Exclusive Economic Zone (70 FR 22808), which established revised canary and widow rockfish bycatch limits for the whiting fisheries in order to keep the harvest of these overfished species within their optimum yields.

May 4, 2005—NOAA Fisheries implemented inseason adjustments to commercial and recreational Pacific groundfish fisheries (70 FR 23040), which contained a notification of a voluntary closed area off Washington for salmon trollers to avoid bycatch of yelloweye rockfish.

May 5, 2005—NOAA Fisheries implemented a temporary rule (70 FR 23804) to establish routine authority to reduce trip limits to incidental levels in the open access fishery for Pacific groundfish before the sector has taken its full target allocations, in order to quickly restrict the directed open access groundfish fishery if the incidental catch of an overfished species is too high.

June 1, 2005—NOAA Fisheries implemented Framework Adjustment 40B to the Northeast Multispecies Fishery Management Plan (70 FR 31323), which was designed to, among other things, collect more information regarding groundfish bycatch in the herring fishery.

June 2, 2005—NOAA Fisheries implemented the Final Rule for Amendment 22 to the Fishery Management Plan for the Reef Fish Resources of the Gulf of Mexico (70 FR 32266), which established a mandatory observer program for selected commercial and for-hire vessels in the Gulf of Mexico reef fish fishery in order to assess the amount and type of bycatch occurring in the fishery.

June 13, 2005—NOAA Fisheries implemented emergency regulations to establish an incidental haddock catch allowance for the 2005 Atlantic herring fishery (70 FR 34055), which was designed to allow the herring fleet to continue its normal fishing operations for the 2005 fishing year without providing an incentive for the industry to target haddock and without causing harm to the Georges Bank haddock resource.

August 26, 2005 – NOAA Fisheries implemented emergency regulations to establish an Ocean Salmon Conservation Zone (70 FR 51684), intended to move the 2005 whiting fishery seaward of seasonal nearshore concentrations of Chinook salmon, some of which belong to populations listed under the ESA.

October 28, 2005—NOAA Fisheries implemented the Final Rule for the comprehensive amendments to the Caribbean Reef Fish, Spiny Lobster, Queen Conch, and Coral Fishery Management Plans (70 FR 62073), which amended requirements for trap and pot construction in order to enhance fisher compliance with required bycatch-reduction features of the traps and pots.

November 1, 2005—NOAA Fisheries extended the May 5, 2005, emergency rule to establish routine authority to reduce trip limits to incidental levels in the open access fishery for Pacific groundfish before the sector has taken its full target allocations (70 FR 65861).

November 15, 2005—NOAA Fisheries implemented additional management measures to protect sea turtles in western Pacific pelagic fisheries effective (70 FR 69282), including the mandatory use of NMFS-specified dip nets, line-clippers, and bolt cutters and employment of sea turtle handling, resuscitation, and release procedures for incidentally hooked or entangled sea turtles.

November 2005—The U.S. Fish and Wildlife Service issued its Draft Recovery Plan for the Short-tailed Albatross, which was developed by an international recovery team that included NOAA Fisheries participation.

December 8, 2005—NOAA Fisheries extended the effectiveness of a haddock bycatch cap for the Atlantic herring fishery (70 FR 72934), which is intended to keep haddock possession as close to zero as practicable, while allowing the herring industry to operate.

December 12, 2005—NOAA Fisheries implemented Amendment 6 to the Fishery Management Plan for the Shrimp Fishery of the South Atlantic Region (70 FR 73383), which requires bycatch reduction devices in nets in the rock shrimp fishery and revises the bycatch reduction criteria for the certification of bycatch reduction devices.

December 19, 2005—NOAA Fisheries implemented a Final Rule for Measures to Reduce Bycatch of Seabirds in the Hawaii Pelagic Longline Fishery (70 FR 75075), which requires owners and operators of longline fishing vessels to either side-set or use a combination of other measures to prevent seabirds from being accidentally hooked, entangled, and killed during fishing operations.

December 2005—NOAA Fisheries finalized its 2005 annual List of Fisheries (published January 4, 2006), which classifies U.S. commercial fisheries into one of three categories based on the level of serious injury and mortality of marine mammals that occurs incidental to each fishery.

Bycatch Reduction Technology

NOAA Fisheries funds and carries out a wide variety of bycatch reduction technology projects dealing with fishing gear and monitoring technology. The FY2005 NOAA Fisheries budget included a \$3,745,000 Reducing Bycatch line. About \$1,300,000 of this

total was directed toward bycatch reduction technology projects, with the remainder directed toward observer programs that monitor bycatch. The Reducing Bycatch funds facilitated several key activities and accomplishments to help reduce bycatch in 2005, including:

- Building capacity to minimize seabird bycatch in Hawaii pelagic longline swordfish and tuna fisheries;
- Increasing understanding of flatfish behavior around bottom trawls;
- Successfully testing chemical means to reduce incidental capture of sharks during longline fishing operations while maintaining high target species catches;
- Conducting a pilot study to evaluate fish traps with narrow entrances designed to exclude rockfish;
- Initially documenting how turtles might interact with scallop dredges to identify gear modifications that could reduce injuries resulting from such interactions; and
- Deploying pop-up satellite tags on recreationally caught marlin to document post-release mortality.

Cooperative bycatch reduction research is also carried out through NOAA Fisheries Regional Offices. In the Southeast Region, over \$800,000 was devoted to research and activities to help reduce bycatch in 2005, including:

- Assessing methods of collecting bycatch, discard, and biological data in the commercial fisheries of St. Thomas, U.S. Caribbean;
- Assessing the capture depth, time, and hooked survival rate for bottom longline-caught large coastal sharks;
- Studying comparative hook-and-line discard mortality of vermilion snapper in the Gulf of Mexico commercial fishery;
- Deploying fisheries observers to determine the effectiveness of bycatch reduction devices; and
- Implementing gear and fishing practice modifications to reduce turtle takes in pelagic longline fisheries.

In the Northeast Region, NOAA Fisheries provided over \$460,000 through the Northeast Cooperative Research Partners Program for research to reduce bycatch in 2005, including:

- Developing gear modifications for the herring midwater trawl fishery to minimize haddock bycatch;
- Assessing escape vent selectivity, bycatch, and discard survivability in the Northeast fishery for deep-water red crab;
- Designing and testing a topless shrimp trawl to reduce finfish bycatch in the pink shrimp fishery; and
- Evaluating hook size and shape in the catch of sublegal cod and haddock in the recreational fishery.

In addition, two “Research Set Aside” projects administered by NOAA Fisheries’ Northeast Region allowed fishers to harvest over \$1,060,000 of fish and shellfish that they normally would not be able to harvest in exchange for the use of their vessels and other services to conduct the following research to reduce bycatch:

- Testing a turtle excluder dredge for the sea scallop fishery; and
- Studying squid mesh selectivity to reduce bycatch of juvenile squid and other species.

In NOAA Fisheries’ Southwest, Northwest, and Alaska Regions, NOAA Fisheries provided in 2005 over \$570,000 for the following projects to reduce bycatch:

- Developing seabird mitigation measures for pollock catcher processor trawl vessels in Alaska
- Refining fishing technology and conservation engineering research to reduce trawl bycatch
- Providing access to technology for observing gear performance and information on bycatch reduction devices to improve selectivity of fishing gear
- Conducting a bigeye tuna/swordfish bycatch-reduction experiment for longline vessels
- Obtaining information on fish behavior during interactions with bottom trawls

NOAA Fisheries carried out or facilitated over \$210,000 in domestic bycatch reduction technology projects in 2005 in the Pacific Islands Region related to sea turtles, including projects to:

- Provide mathematical models of the visual abilities of sea turtles and pelagic fishes;
- Conduct research on the behavioral performance and biomechanics of biting in loggerhead turtles;
- Develop a model loggerhead mouth and esophagus for hook testing;
- Develop possible turtle repellent devices;
- Conduct a barb and barbless circle hook performance experiment; and
- Compare longline turtle bycatch using offset circle hooks with non-offset circle hooks and distribute circle hooks to Costa Rican vessels participating in these gear trials.

NOAA Fisheries’ Pacific Islands Fisheries Science Center also continued to use pop-up archival satellite tags to estimate the post-release mortality of fish in the Hawaii-based swordfish longline fishery. NOAA Fisheries’ Southwest Fisheries Science Center and Northeast Fisheries Science Center have continued to support studies of survival rates for caught and discarded sharks.

International Bycatch Reduction

NOAA Fisheries staff, often in cooperation with their colleagues at the U.S. State Department, carried out a variety of activities in 2005 to achieve bycatch reduction internationally. Several of these activities were undertaken to reduce sea turtle bycatch, where NOAA Fisheries:

- Supported the training of observers in turtle de-hooking and resuscitation techniques in Indonesia, the Republic of the Marshall Islands, Papua New Guinea (PNG), and the Federated States of Micronesia;
- Provided support for nesting beach monitoring projects in Palau, Yap, the Commonwealth of the Northern Mariana Islands (CNMI), Guam, American Samoa, and Indonesia (including aerial surveys and satellite telemetry at some locations) and in-water turtle monitoring activities in CNMI and American Samoa;
- Assisted PNG in a phase II pilot turtle excluder device (TED) project (TEDs are expected to be deployed by local fishing companies in PNG in the near future);
- Continued in 2005 to provide support for a postdoctorate resource economist reviewing current efforts to optimize sea turtle conservation and management efforts in Indonesia, Malaysia, and PNG; and
- Provided support for additional economic studies that include Conservation International's efforts to determine the costs of creating endowed funds to support long-term agreements with local communities for nesting beach protection in the Solomon Islands, PNG, and Indonesia.

In the area of international seabird and sea turtle bycatch reduction technology transfer and outreach, NOAA Fisheries staff also actively worked with approximately 25 longlining nations in 2005 to:

- Provide information on results of gear experiments that have been conducted with the U.S. fleet;
- Convene the first "Technical Assistance Workshop on Sea Turtle Bycatch Reduction Experiments," to which Australia, Indonesia, Malaysia, Mexico, and the Philippine Islands sent national delegations;
- Test techniques to avoid seabird interactions with demersal longline gear in Russian longline fisheries and elsewhere;
- Disseminate educational and outreach materials that have been translated into multiple languages; and
- Conduct training workshops on safe handling and release practices;

NOAA Fisheries also continued in 2005 to engage in discussions and organized working sessions on seabird and sea turtle longline interactions at numerous international fishery and conservation forums and at fisheries bilateral meetings within longlining nations, including:

- The 25th Annual Symposium on Sea Turtle Conservation and Biology;
- The 1st Meeting of the Advisory Committee to the Agreement for the Conservation of Albatrosses and Petrels;

- The Third International Fishers' Forum;
- The Food and Agricultural Organization of the United Nation's Committee on Fisheries Meeting;
- The 3rd meeting of the Signatory States to the Memorandum of Understanding on the Conservation and Management of Marine Turtles of the Indian Ocean and Southeast Asia;
- The ad-hoc Working Group on the Incidental Mortality Associated with Fishing of the Commission for the Conservation of Antarctic Marine Living Resources;
- The Inter-American Tropical Tuna Commission, which in 2005 adopted new resolutions addressing seabird, tuna, and shark bycatch, including a ban on shark finning;
- The International Commission for the Conservation of Atlantic Tunas (ICCAT), which in 2005 adopted a nonbinding resolution encouraging research on circle hooks, a binding resolution prohibiting shark finning, and a nonbinding resolution requiring ICCAT members to provide information on interactions with sea turtles;
- The Western and Central Pacific Fisheries Convention;
- The Annual Trilateral Committee Meeting;
- The U.S. Brazil Common Agenda Meeting;
- The U.S. Mexico and U.S. Canada Bilaterals;
- The U.S. European Union Fisheries Bilateral; and
- An informal fisheries consultation with Vietnam.

The Pacific Islands Region of NOAA Fisheries coordinated the provision of foreign assistance for research to reduce sea turtle bycatch in longline fisheries, including over \$190,000 in assistance to Costa Rica, Brazil, Italy, and Spain. In addition, NOAA Fisheries provided hooks designed to reduce sea turtle bycatch to the Philippines, Costa Rica, Panama, and other Central American countries in 2005.

Finally, the Convention on the Conservation of Antarctica Marine Living Resources recently adopted, with the support of NOAA Fisheries, a voluntary measure asking vessels in its krill fishery to use seal excluder devices.

Additional Education and Outreach

NOAA Fisheries devoted significant resources on education and outreach regarding sea turtles and longline gear domestically as well as internationally in 2005, including:

- 18 workshops conducted for the pelagic longline, shark bottom longline, and reef fish fisheries from Galveston, Texas, to Atlantic City, New Jersey;
- A safe turtle handling and release certification training workshop for 46 pelagic longline fishers in Florida; and
- Presentations on pelagic longline technology research made to a fishing industry groups and a fishery management council.
- 4 protected species workshops conducted in Hawaii for pelagic longline fishermen covering the handling of marine turtles, seabirds, and marine mammals.

- 4 protected species workshops conducted in American Samoa for pelagic longline fishermen covering the handling of marine turtles, seabirds, and marine mammals.

Bycatch Monitoring

NOAA Fisheries utilizes data from a variety of sources, ranging from fishery-independent stock assessment surveys to commercial and recreational fishery data, in order to support its science-based stewardship of the nation's living marine resources. Of these sources, the data collected by fisheries observers placed on board commercial fishing vessels through NOAA Fisheries' National Observer Program is considered one of the best sources for data used in fisheries conservation and management. In 2005, monitoring fisheries bycatch and discard continued to be a key component of the National Observer Program.

In FY 2005, combined funding for all US commercial fisheries observer programs was over \$40 million dollars and provided observer coverage for more than 67,000 days at sea in 42 fisheries. Industry-provided funds totaled approximately \$13 million dollars and were used to provide observer coverage for fisheries in the Northwest (at-sea hake) and Alaska (groundfish).

In FY 2005, the Northeast Fisheries Observer Program provided observation of over 11,000 sea days in six fisheries:

1. New England Groundfish Trawl and Sink Gillnet Fisheries,
2. Mid-Atlantic Coastal Gillnet Fisheries,
3. NE and Mid-Atlantic Small Mesh Trawl Fisheries,
4. Mid-Atlantic Illex squid trawl,
5. NE and Mid-Atlantic Large Mesh Trawl Fisheries, and
6. Atlantic Sea Scallop Dredge Fishery.

In addition to providing data on gear performance and characteristics and monitoring experimental fisheries, in FY 2005 fisheries observers in the Northeast monitored protected resources bycatch reduction measures and collected bycatch and discard data, which allowed portions of George's Bank closed to groundfishing to be opened for a limited sea scallop fishery.

In FY 2005, a total of 2,687 sea days were observed in the Southeast Region by four programs:

1. The Southeast and Gulf of Mexico Shrimp Otter Trawl;
2. Atlantic, Gulf of Mexico, and Caribbean Pelagic Longline Fishery;
3. Southeast Shark Gillnet; and
4. Atlantic and Gulf of Mexico Directed Large Coastal Shark Bottom Longline Fishery.

With FY 2005 funds, the Southeast Region was able to implement a pilot observer program for the sink gillnet shark fishery, provide 100% observer coverage of the shark gillnet fishery during right whale calving season, and supply valuable information to fisheries managers on bycatch in the shrimp trawl fishery.

In FY 2005, the Northwest Regional observer program provided observation of a total of 6,184 sea days through the following observer programs: the West Coast Groundfish Limited Entry Trawl, Longline, Pot and Open Access Fisheries, California-designed selective trawl Exempted Fishing Permits, State-managed fisheries, Shore-based Hake Mid-Water Trawl Fishery, and the At-Sea Hake Mid-Water Trawl. Yearly observer program data reports and summary analysis for trawl, fixed gear, and nearshore fisheries are made available on the Northwest Fisheries Science Center's webpage: (<http://www.nwfsc.noaa.gov/research/divisions/fram/observer/datareport/index.cfm>).

In FY 2005, Southwest Observer Programs were able to provide observer coverage for the California/Oregon Pelagic Drift Gillnet Fishery, California Pelagic Longline Fishery, Southern California Small Mesh Drift Gillnet Fishery, California Coastal Purse Seine Fishery, Pacific Albacore Troll Fishery. FY 2005 coverage of the fisheries in this region totaled 499 observed days at sea.

Alaskan fisheries are covered by two primary observer programs: the Alaskan Marine Mammal Observer Program (AMMOP) and the North Pacific Groundfish Observer Program (NPGOP), which covers the Bering Sea/Aleutian Islands and Gulf of Alaska Groundfish Trawl, Longline and Pot Fisheries. Approximately 35,600 sea days were observed by the NPGOP in FY05, which included 100% observer coverage for vessels larger than 125 feet. The AMMOP, which collects data on incidental take of marine mammal and seabirds, targeted approximately 670 permitted fishing vessels in FY 2005. These data are used in stock assessments of marine mammal stocks and determine the impact of the fishery on specific marine mammal populations.

The funding received in FY2005 for Hawaii fisheries observer programs was split among three programs: the Hawaii Pelagic Longline, Hawaii Bottom Longline, and the American Samoan Pelagic Longline. The American Samoan Pelagic Longline Observer Program is a new program in FY 2005 and is scheduled to begin fishery coverage in 2006. These programs focus on monitoring interactions between sea turtle, sea bird, and marine mammal species (especially loggerhead, leatherback, and green sea turtles) and pelagic longline fisheries. Data collected by observers is sent to the Pacific Islands Regional Office and the Pacific Islands Fisheries Science Center so that researchers can calculate official bycatch and discard estimates for marine mammals and sea turtles (released in quarterly reports), produce technical reports, and analyze biological samples. In FY 2005, the Hawaii Pelagic Longline Observer Program and Hawaii Bottom Longline Program covered over 7,332 days at sea, including 100% coverage of pelagic longline trips targeting swordfish.

Conclusion

NOAA Fisheries and its critical partners on the Regional Fisheries Management Councils, the fishing industry, academia, and the environmental community made significant strides in reducing bycatch in 2005, although much remains to be done. NOAA Fisheries has already implemented several bycatch reduction regulations in 2006, as well as undertaken new bycatch reduction technology research. International bycatch efforts continue through the leadership of NOAA Fisheries, and monitoring of bycatch in our Nation's fisheries continues through the various NOAA Fisheries observer programs. 2006 also will see the beginning of an effort by NOAA Fisheries to develop a National Bycatch Report that should begin to help provide estimates of bycatch and discard rates in various fisheries and prioritize the bycatch reduction challenges faced by NOAA Fisheries.