

**NOAA Fisheries Bycatch Reduction Engineering Program
2012 Grant Awards**

Alaska

Project Title: Using combined video/acoustic recordings of marine mammal/fishing gear interactions to evaluate utility of passive acoustic monitoring

Applicant: [University of California, San Diego](#)

Funding Amount: \$202,476

Continuation of Previous BREP research? No

Location: Eastern Gulf of Alaska, Prince William Sound (also off Alaska), and ocean waters off Hawaii

Description: Problematic marine mammal interactions with longline fishing gear involve whales removing catch or bait off fishing gear, or depredation. Reducing depredation is a challenge because there is a lack of knowledge about how it works. Using sound recorders may be a cost-effective tool for detecting the presence of marine mammals around fishing gear and gaining insight into depredation rates. The investigators will design special sound and video recorders to be deployed on fishing gear, test these recorders to document sperm whale and killer whale interactions off the coast of Alaska, review and analyze data, and deploy the recorder on a Hawaii-based longline vessel to learn about false killer whale interactions with fishing gear.

Northeast

Project Title: Maine fishing industry monitoring program

Applicant: [Gulf of Maine Lobster Foundation](#)

Funding Amount: \$181,530

Continuation of Previous BREP research? No

Location: Three to twelve miles off the coast of Maine

Description: The Gulf of Maine Lobster Foundation (GOMLF) will collaborate with Maine lobstermen to investigate the distribution and density of fixed-gear (buoy) fishing effort 3-12 miles off the shore of Maine. Right, humpback, and fin whales—which are protected by the Marine Mammal Protection Act—are threatened by fixed gear interactions. The Atlantic Large Whale Take Reduction Plan (ALWTRP) includes a high-priority research objective to investigate the overlap of whale and fishing distribution in Northwest Atlantic Ocean waters. The Maine lobster fishery has a dockside value of more than \$300 million, and fixed-gear risk reduction is likely to be addressed in additional upcoming ALWTRP regulations. This project will provide an improved understanding of gear distribution and density, which should help guide regulations so they are targeted and effective. Industry involvement in this project should increase buy-in with future regulations.

Project Title: Testing in-trawl image collection and analysis to quantify and record bycatch in the Atlantic herring/mackerel mid-water trawl fishery

Applicant: [Gulf of Maine Research Institute](#)

Funding Amount: \$127,649

Continuation of Previous BREP research? No

Location: Northeastern United States

Description: The investigator plans to test the effectiveness of a camera system inside a fishing trawl to reduce bycatch and improve documentation of species composition in the mid-water trawl fisheries for Atlantic herring and mackerel in the Northeastern United States. The proposed project will test use of a camera system to quantify the species as fish are being caught. The camera sends real-time images to the ship's bridge, allowing the captain to know precisely what fish species and sizes are being caught. The research aims to evaluate such a system's ability to record all fish captured, even those not brought onboard; accurately quantify bycatch by species and numbers; provide a real-time warning if non-target species or certain sizes of fish are entering the trawl; document the overlap between bycatch species and the targeted herring/mackerel; and archive catch history for fisheries monitoring. If successful, this approach would allow the captain to position the trawl in a way that could reduce bycatch of non-target species and maximize catch of the target species, which reduces trawling time, fuel use, and emissions.

Project Title: Testing of a modified groundgear to reduce yellowtail flounder and juvenile cod in the large mesh groundfish fishery on Georges Bank

Applicant: [University of Massachusetts Dartmouth](#)

Funding Amount: \$184,674

Continuation of Previous BREP research? No

Location: Georges Bank

Description: The investigator will work with a commercial fishing vessel to test modified gear designed to reduce catch of yellowtail flounder and juvenile cod in the Georges Bank groundfish fishery. The modified gear was developed based on escape behavior of flatfish species (i.e., flounder and juvenile cod tend to head for the groundgear portion of trawls when encountering a net). The annual catch limit for Georges Bank yellowtail flounder was reduced by 80 percent in 2012 compared to the previous fishing year, and discards of juvenile cod are hindering the rebuilding of this overfished stock. This project could give fishermen an increased ability to reduce discards of yellowtail flounder and juvenile cod, allowing the fishermen to make the most of their limited catch allocations and fish more sustainably.

Project Title: Enhancing the visibility of fishing ropes to reduce right whale entanglements

Applicant: [New England Aquarium Corporation](#)

Funding Amount: \$231,079

Continuation of Previous BREP research? No

Location: Cape Cod Bay

Description: Researchers from the New England Aquarium, along with members of the New England lobster industry, will identify what types of light are most visible to North Atlantic right whales. Based on this research, they will develop illuminated ropes that can be used in commercial fishing gear to deter right whales from interacting with the gear. The North Atlantic right whale is the most endangered large whale in the north Atlantic, with less than 500 alive today. Along the East Coast of the United States, entanglement in fishing gear and ropes kills at least one North Atlantic right whale annually. As this entanglement problem continues, it jeopardizes the viability of several fixed gear fisheries, especially the lobster fishery.

Project Title: Elucidating post-release mortality and ‘best capture and handling’ methods in sublegal Atlantic cod discarded in Gulf of Maine recreational hook-and-line fisheries

Applicant: [New England Aquarium Corporation](#)

Funding Amount: \$248,659

Continuation of Previous BREP research? No

Location: Ocean waters off Massachusetts and New Hampshire

Description: To determine the likelihood of survival after discard, the investigators will visually evaluate and tag Atlantic cod caught through recreational fishing methods. Based on the data gathered, the investigators will develop “best capture and handling practices” designed to minimize injury and enhance survival of cod that must be discarded. According to NOAA Fisheries’ 2011 Status of Stocks report, Gulf of Maine cod were described as being subject to overfishing. Discards of Gulf of Maine cod in recreational fisheries are approximately twice as much as cod that are landed, and recreational fishing over the last 5 years has been responsible for approximately 35 percent of cod removed by weight in the Gulf of Maine. Determining survival rates of discarded cod, along with adoption of best practices by recreational fishermen, will promote the sustainability of the Gulf of Maine cod stock.

Northwest

Project Title: Use of artificial light to enhance the escapement of Chinook salmon when used in conjunction with a bycatch reduction device in a Pacific hake midwater trawl net

Applicant: [Pacific States Marine Fisheries Commission](#)

Funding Amount: \$130,043

Continuation of Previous BREP research? Yes. See pages 51-54 of [2012 BREP Report to Congress](#).

Location: Off the coast of Oregon and/or Washington

Description: The investigator will work with Pacific hake fishermen and a net manufacturer to determine whether artificial light helps Chinook salmon escape from trawl nets. The Pacific hake fishery is the largest groundfish fishery by volume off the U.S. West Coast. This fishery also catches Chinook salmon, which are listed under the Endangered Species Act (ESA). If Chinook salmon bycatch exceeds certain levels, then consultation under the fishery’s ESA-related biological opinion will need to be reinitiated, which could result in additional fishing restrictions for this important fishery. Therefore, reducing the amount of Chinook salmon caught in Pacific hake trawl nets is critical to the West Coast fishing industry.

Project Title: Reducing the bycatch of overfished and rebuilding rockfish species in the U.S. Pacific hake fishery

Applicant: [Pacific States Marine Fisheries Commission](#)

Funding Amount: \$144,598

Continuation of Previous BREP research? Yes. See pages 51-54 of [2012 BREP Report to Congress](#).

Location: Off the coast of Oregon and/or Washington

Description: The investigator will work with Pacific hake fishermen and net manufacturers to test an excluder device designed to reduce rockfish bycatch in the U.S. Pacific hake fishery. In 2011, Pacific hake began to be managed under the West Coast Groundfish Trawl Catch Share Program, which created individual fishing quotas as well as individual bycatch quotas. If a fisherman participating in this program reaches a rockfish bycatch quota before reaching his Pacific hake fishing quota, then his fishing season would end. Developing

gear modifications that reduce rockfish bycatch while retaining a high proportion of targeted species is very important for the Pacific hake fishery.

Project Title: Field validation of the RAMP approach for determining crab bycatch mortality

Applicant: [Oregon State University](#)

Funding Amount: \$68,289

Continuation of Previous BREP research? Yes. See pages 70-71 of [2012 BREP Report to Congress](#).

Location: Ocean waters off Oregon, as well as Yaquina Bay, Oregon

Description: The investigators plan to conduct the first-ever field evaluation of the Reflex Action Mortality Predictor (RAMP) for determining crab survival after being caught and released as bycatch. The investigators will also estimate Dungeness crab survival rates after release in Oregon trap fisheries and evaluate ways to increase survival of bycaught crab. If the RAMP is determined to be effective, then it could be used to determine survival in various U.S. fisheries. Because this project involves several commercial fishermen, the investigators hope that this project will help encourage additional fishermen involvement in research.

Pacific Islands

Project Title: Estimating post-release mortality in istiophorid billfish

Applicant: [Queen's University](#)

Funding Amount: \$226,039

Continuation of Previous BREP research? Yes. See pages 75-79 of [2012 BREP Report to Congress](#).

Location: Ocean waters off Hawaii

Description: Using a combination of Pop-up Satellite Archival Tags and analysis of billfish tissue and blood, the investigators will determine survival rates for large Pacific blue marlin and striped marlin that are caught by and released from pelagic longline gear. The investigators hope to develop an innovative approach to predict the survival of large billfish without relying on expensive satellite tags. Accurate assessments of fish survival are critical for improving stock assessments. In addition, new fishing techniques designed to increase the survival of released fish can be developed for fish known to have low rates of survival upon release from fishing gear.

Southeast and Caribbean

Project Title: Enhancing proof of concept procedures of potential bycatch reduction devices in the Southeastern shrimp fishery

Applicant: [Texas A&M University](#)

Funding Amount: \$83,571

Continuation of Previous BREP research? Yes. See pages 15-16 of [2011 BREP Report to Congress](#).

Location: Gulf of Mexico

Description: Recent estimates indicate that for 213.5 million pounds of shrimp landed, 681 million pounds of bycatch were discarded. This bycatch consists of a variety of species, including the overfished red snapper. Shrimp trawlers are required to use NOAA Fisheries-certified bycatch reduction devices to reduce their discards. However, these devices usually do not eliminate the majority of bycatch. The investigator plans to

develop and modify promising bycatch reduction devices and test them on a commercial shrimp trawler to determine which designs might best meet NOAA Fisheries' certification criteria. This project could result in an increased number of effective bycatch reduction devices that are inexpensive and simple for fishermen to construct and install.

Southwest

Project Title: Testing modified deep-set buoy gear to minimize bycatch and increase swordfish selectivity

Applicant: [Pfleger Institute of Environmental Research \(PIER\)](#)

Funding Amount: \$150,272

Continuation of Previous BREP research? No

Location: Ocean waters off California

Description: The investigators will work with the fishing industry to test deep-set buoy gear that can catch target swordfish at a depth (250-350 meters) that is not frequented by endangered leatherback turtles and other bycatch species. Although the population of north Pacific swordfish is healthy and considered to be underexploited, bycatch-avoidance restrictions associated with drift gillnet gear have resulted in a historically low number of drift gillnet vessels targeting swordfish of California. This project will include an information industry workshop regarding deep-set buoy gear, field trials, market analyses comparing the performance of the traditional and experimental gears, and eventual presentations to the Pacific Fishery Management Council on additional low-bycatch gear options that may be used to revitalize West Coast swordfish fisheries.

Atlantic Highly Migratory Species

Project Title: Geospatial preference modeling and real-time catch reporting in support of an Atlantic bluefin tuna avoidance system

Applicant: [GeoEye Imagery Collection Systems Inc.](#)

Funding Amount: \$227,636

Continuation of Previous BREP research? No

Location: Florida East Coast region

Description: The investigators will use Geospatial Preference Modeling to collect real-time data that will be used to provide predictions regarding pelagic species habitat. This information will serve as the foundation for development of an Atlantic Bluefin Tuna Avoidance System for the North Atlantic pelagic longline fleet. Over a nine-month period, a research team will collect real-time catch data and examine environmental preferences of Atlantic bluefin tuna. Data on movement patterns, reproductive state, and oceanographic conditions will then be used to develop a depiction of Atlantic bluefin tuna habitat "hotspots." The long term objective of this research is to gain a better understanding of Atlantic bluefin tuna movements and behavior and the viability of an avoidance system as a way for the pelagic longline fishery to reduce bycatch while maintaining target catch (i.e., swordfish and yellowfin tuna).

Project Title: Performance of a long lasting shark repellent bait for bycatch reduction during commercial pelagic longline fishing

Applicant: [Florida Keys Community College](#)

Funding Amount: \$234,311

Continuation of Previous BREP research? No

Location: Straits of Florida

Description: Prior research funded by NOAA Fisheries has shown that the use of bait infused with time-released chemical shark repellents can be effective in reducing shark bycatch in the commercial pelagic longline fishery in the Straits of Florida. However, the time-released repellent fades after eight hours in the water, and the insertion of repellent into bait during fishing operations presents logistical challenges. As part of this research, the investigators plan to look for ways to overcome these obstacles. First, they will conduct research to increase the time-release effectiveness of the repellent. In addition, they will explore the possibility of inserting the repellent into the bait at bait processing facilities, which would allow commercial fishermen to purchase bait that contains the shark repellent. This research is intended to improve the effectiveness of using time-released chemical shark repellents to further reduce shark bycatch.

For more information on the Bycatch Reduction Engineering Program, visit
www.nmfs.noaa.gov/by_catch/bycatch_BREP.htm.