

NATIONAL MARINE FISHERIES SERVICE (NMFS) REPORT ON HIGHLY MIGRATORY SPECIES (HMS) ACTIVITIES

Bycatch Mitigation efforts in HMS Fisheries

Under this agenda item there will be two presentations:

- Dr. Yonat Swimmer, of the Pacific Islands Fisheries Science Center, will present findings from [research](#) where she and others investigated the efficacy of sea turtle bycatch regulations^{1,2} implemented in U.S. longline fisheries. Additionally, with the help of other contributors, she will present proven bycatch mitigation techniques for other taxa.
- Dr. Elliott Hazen of the Southwest Fisheries Science Center, will provide an update on EcoCast.

Summaries of their presentations are included below.

Bycatch Mitigation Techniques

Sea Turtles

In 2004, regulations were implemented in longline fisheries targeting swordfish (shallow-set) in Hawaii and in regions of the north Atlantic to protect endangered and threatened sea turtles. Regulations included the use of maximum 10 degree offset 18/0 circle hooks (which replaced traditionally used J-hooks), and the use of finfish bait rather than traditionally used squid bait. In addition, U.S. vessels had mandatory increases in observer coverage (100% in Hawaii shallow-set and minimum of 8% for parts of the Atlantic), take limits on turtle interactions (Hawaii only), as well as additional requirements specific to handling and safe release of sea turtles.

Dr. Swimmer's research includes more than 20 years of longline observer data, during periods before and after the regulations, to assess the effectiveness of the measures. Analyses include relationships between the number and species of turtle interactions and operational components such as fishing region, hook type, bait type, sea surface temperature, and the use of light sticks. Results indicate clear temporal and spatial patterns in sea turtle capture rates by species, and confirm the value of eliminating J-hooks and reducing use of squid bait as an effective means to reduce bycatch in shallow set longline fisheries.

Sharks

While the focus of bycatch mitigation has typically been on protected species, in more recent years, concerns about the impacts of longline gear on shark populations have increased. Blue sharks are the primary bycatch species in both shallow- and deep-set longline fisheries in the region and, since the implementation of the finning ban in 2000, they have no market value. While there is variability across location and fisheries and additional research is needed, the most

¹ National Marine Fisheries Service, NMFS. (2004). Fisheries Off West Coast States and in the Western Pacific; Western Pacific Pelagic Fisheries; Pelagic Longline Fishing Restrictions, Seasonal Area Closure, Limit on Swordfish Fishing Effort, Gear Restrictions, and Other Sea Turtle Take Mitigation Measures. Federal Register 69, No.64, 17329-17354.

² National Marine Fisheries Service, NMFS. (2004). Atlantic Highly Migratory Species (HMS); Pelagic Longline Fishery; Final Rule. Federal Register 69, No. 128, 40733-40758.

promising recommendations for reducing fisheries mortality are to use large circle hooks and thawed finfish bait, and to rapidly release sharks in the water with minimal trailing gear.

Marine Mammals and Seabirds

Bycatch reduction techniques for marine mammals and seabirds for longline gear have also been researched and, in some cases, implemented through regulations. Some techniques include: weak hooks for false killer whales, died bait, night setting, and more.

EcoCast tool update

EcoCast aims to predict in near real-time the spatial distributions of highly migratory ocean species, including non-target species (e.g., leatherback sea turtles) and target species (e.g., swordfish). EcoCast was first presented to the Council via public comment during the March 2016 meeting (See [Agenda Item F.2.c](#)). In September, NMFS provided an update from the EcoCast development team on the progress of the tool. Some deep-set buoy gear and longline Exempted Fishing Permit participants have agreed to help beta test EcoCast. NMFS and the EcoCast team are hopeful that drift gillnet fishery participants will also assist in testing EcoCast. Dr. Elliott Hazen's presentation will provide the Council with a more recent update on the progress of the tool's development as well as answer any questions the Council may have.