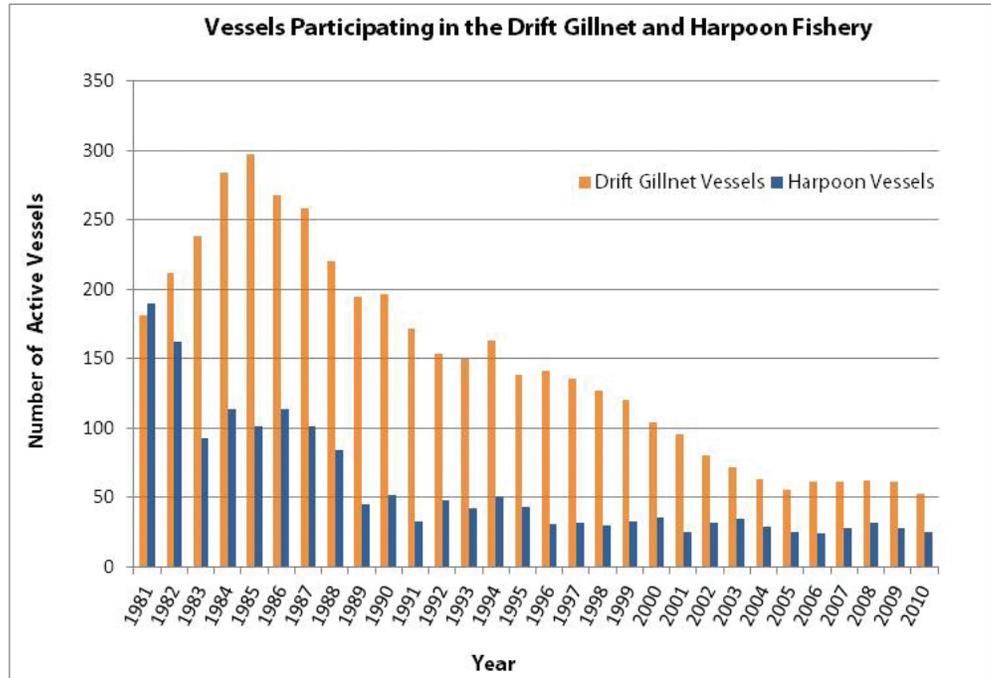


## Introduction

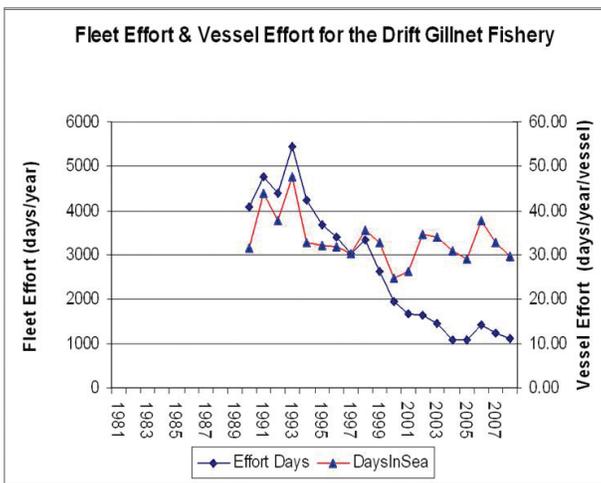
The National Oceanic and Atmospheric Administration's (NOAA) National Marine Fisheries Service (NMFS) hosted a stakeholder workshop in San Diego, California, on May 10-11, 2011, to discuss the future of the U.S. west coast swordfish (*Xiphius gladius*) fishery, including the under utilization of this marine resource and the excessive reliance on swordfish imports by U.S. consumers. The implications to coastal communities, protected living marine resources, and seafood consumers were also considered in the two-day event.

**Current Trends in the U.S. North Pacific Swordfish Fishery:** Based out of Hawaii and California, swordfish in the Pacific have been primarily harvested using longline, large mesh drift gillnet (DGN), and to a lesser extent, harpoon fishing gear. Over the last few decades, there has been considerable attrition in the U. S. west coast swordfish fishery.

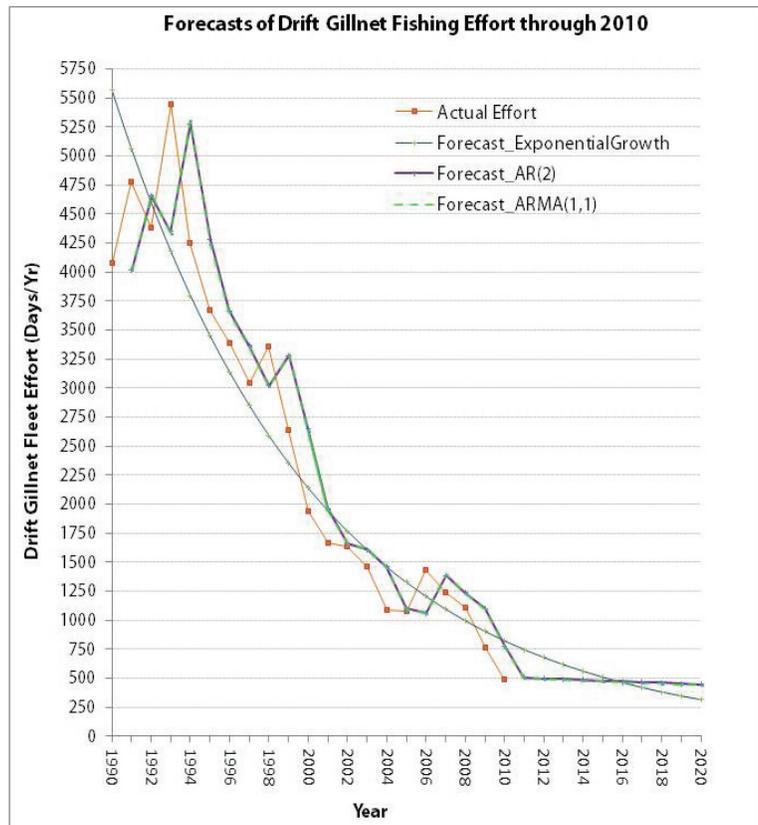
The number of DGN vessels participating in the west coast fishery has declined from a high of 297 active vessels in 1985 to less than 65 active vessels since 2004 with operations now based solely out of California (PFMC, 2011). Similarly, total annual DGN vessel effort has consistently declined since the early 1990s. Using data available in 2011, NMFS forecasts that DGN fleet effort in 2015 will hover around 500 days annually and will further decline to about 300 to 450 fishing days by 2020. The number of active harpoon vessels, which mostly operate in the Southern California Bight, has remained fairly stable over the last two decades. Thus, the focus of the workshop was directed more towards identifying and overcoming factors and constraints that may have caused DGN vessels to exit the fishery.



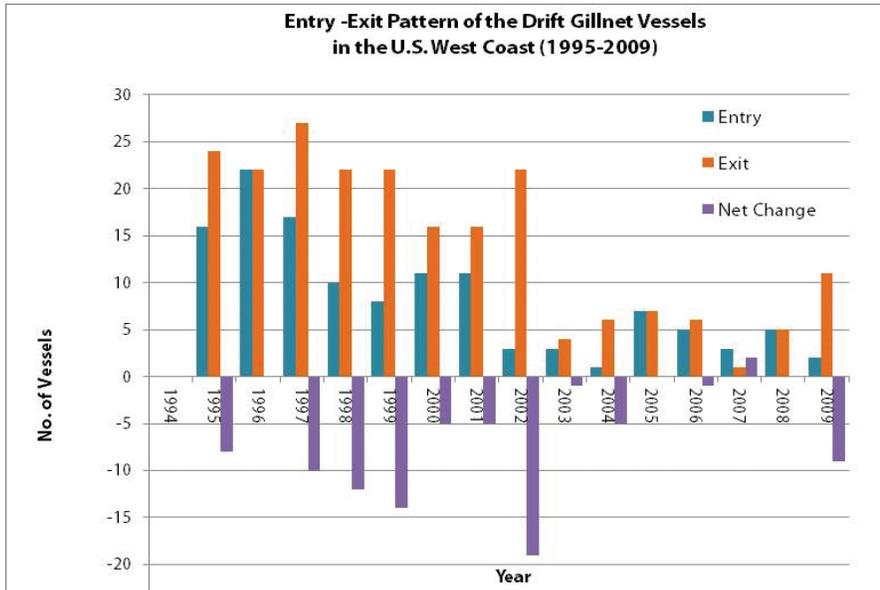
Number of active vessels in the DGN and harpoon sectors of the west coast swordfish fishery (PFMC, 2011).



DGN fleet and vessel effort 1981-2009.



Decline in actual DGN effort from 1990-2010 (orange) with forecasts for DGN effort through 2020 based on three different economic models.



Vessels entry and exit and net change by year in participation in the DGN fishery for 1995-2009.

The current decline in DGN effort does not appear to be related to biomass levels of the North Pacific swordfish stock. Results from the 2009 stock assessment indicate that the exploitable biomass of both North Pacific sub-stocks is above biological thresholds necessary to achieve maximum sustainable yield (ISC, 2010). Rather, industry representatives associated with the DGN fleet attribute the decline to regulations, primarily a 214,000 square mile closure to protect sea turtles listed as threatened and endangered under the Endangered Species Act (ESA) (PFMC, 2009).

**Swordfish Fisheries and Sea Turtles:** While the coastal waters off the U.S. west coast are considered a productive area for swordfish at certain times of the year, the waters are also an important foraging area for endangered leatherback sea turtles (*Dermochelys coriacea*) and occasionally for threatened loggerhead sea turtles (*Caretta caretta*). Currently, there are two sub-populations of Pacific leatherback sea turtles: a western Pacific population and an eastern Pacific population. The sea turtles found off the U.S. west coast are thought to originate from tropical/subtropical nesting beaches in the western Pacific (Benson et al. 2007a) and represent a small proportion of the total western population. Loggerhead sea turtles, while only occasionally found in U.S. waters off of California, originate from nesting beaches in Japan. At times, the DGN fishery has interacted with both species, resulting in the need to impose time and area closures to avoid such interactions.

**Consumer Demand for Swordfish:** Despite the declining trend in U.S. west coast swordfish production, demand throughout the United States remains strong. Americans consume 2-3 times the total domestic landings (Chan and Pan, 2012). U.S. production is simply unable to meet domestic demand. This imbalance perpetuates a trade deficit with implications for U.S. jobs, west coast communities, and local food production. Economists and fisheries managers are also now beginning to realize the indirect effects to sea turtle conservation and recovery of importing swordfish from countries with higher bycatch rates (Rausser et al., 2009; Chan and Pan, 2012).

**Workshop Proceedings:** The following sections of this report summarize the primary themes and topics discussed during the workshop. Presentations covered a range of topics including swordfish fisheries, stock status, ecology, and the socio-economic conditions of swordfish-dependent fleets. Two moderated panels and small group discussions allowed participants to share their perspectives about the issues and challenges facing the U.S. west coast swordfish fishery and its future. The workshop concluded with a discussion about potential steps for revitalizing the fishery.

