Seabirds and Circle Hooks

Introduction

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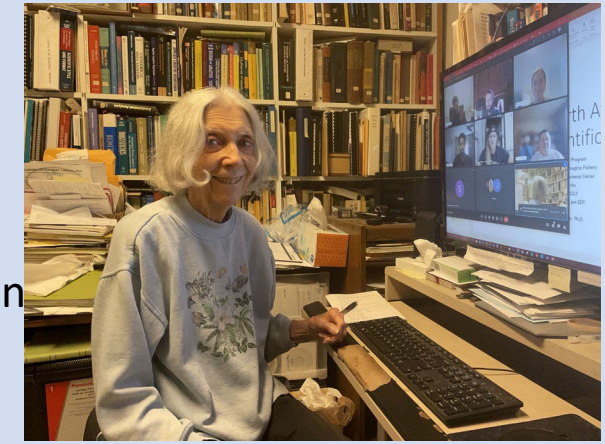


Annette Henry (presenting)
NOAA Fisheries National Seabird Program Coordinator, Office of Science and Technology at Southwest Fisheries Science Center

Seabirds, NOAA Fisheries, and International Concerns

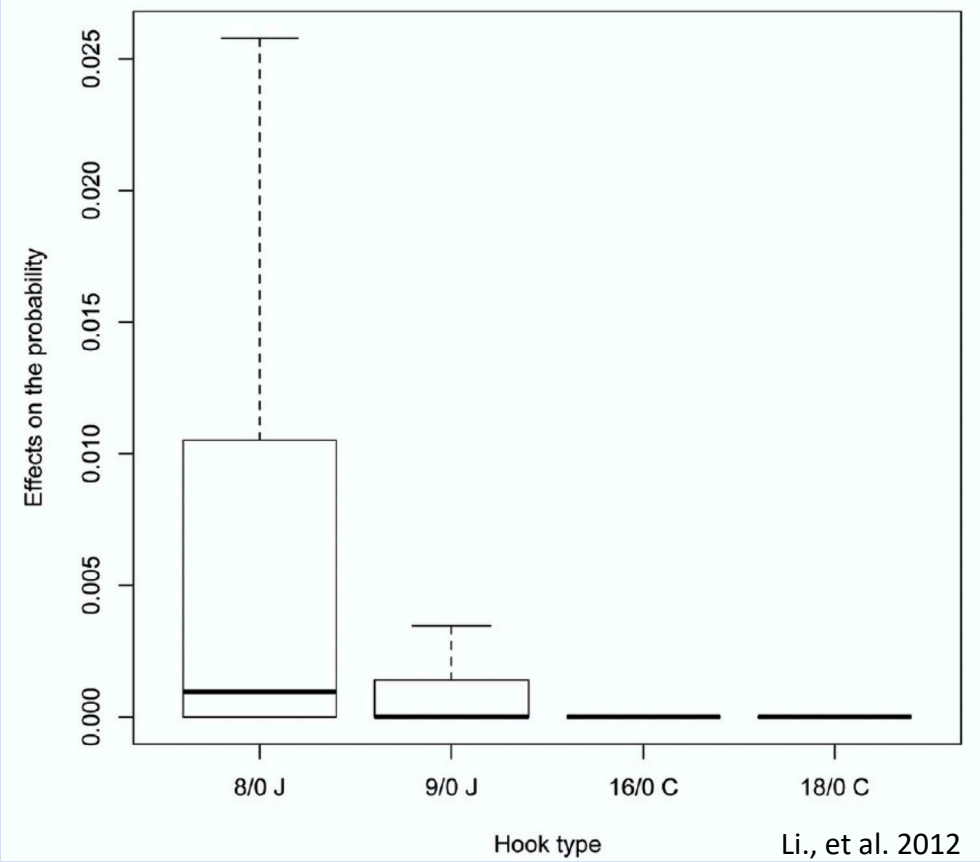
- NMFS marine stewardship role includes the responsibility to protect seabirds and other migratory birds (NPOA & Executive Order 13186).
- Worldwide, hundreds of thousands of seabirds are taken by commercial fishing gear annually.
- Seabirds are among the most threatened groups of birds.
- Their fate as bycatch is a growing concern because of the long-term ecological effects.

Seabirds and Circle Hooks

- **J hooks have a significantly higher probability of catching a seabird than circle hooks**
  Use of circle hooks instead of J-hooks can be expected to reduce the number of seabirds bycaught per unit effort (Li, et al., 2012).
  Other studies showed confounding results (Domingo, et al., 2012, Gilman, et al., 2016).

- **There are no data to show whether mortality rates differ between seabirds hooked by circle hooks and those hooked by J hooks**
  Research is needed to determine if circle hooks decrease the mortality of bycaught seabirds (Gilman, et al., 2016).

Seabirds: J Hooks vs Circle Hooks



Li., et al. 2012

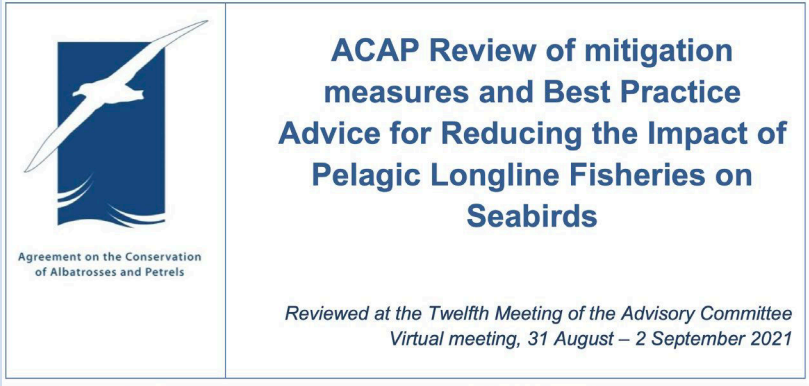
- 8/0 J-hook led to the highest probability of catching a seabird followed by the 9/0 J hook

- Use of circle hooks (16/0 and 18/0) may significantly reduce seabird bycatch in the US Atlantic pelagic longline fishery.

Seabirds and Circle Hooks

Author	Title	Summary
Li, et al. (2012)	Hook effects on seabird bycatch in the United States Atlantic pelagic longline fishery	**Expanded use of circle hooks and elimination of J-hooks should reduce seabird bycatch in the US Atlantic pelagic longline fishery.** Use of the 8/0 J-hook led to the highest probability of catching a seabird. Use of circle hooks may significantly reduce seabird bycatch, but its effectiveness may be confounded by other factors such as bait type, fishing location, season, and target species.
Domingo, et al. (2012)	Circle hook performance in the Uruguayan pelagic longline fishery	**Inconclusive results concluding the performance of circle hooks to reduce seabird bycatch in the Uruguayan pelagic longline fishery remains unclear and requires further research**.
Gilman, et al. (2016)	Risk Factors for Seabird Bycatch in a Pelagic Longline Tuna Fishery	In the Hawaii pelagic longline fishery, hook shape likely has little effect on seabird bycatch rates: * Circle hooks might reduce degree of injury for the few birds caught alive. * Larger hooks might reduce seabird catch rates by sinking faster than smaller hooks.
Avery, et al. (2017)	Seabird longline bycatch reduction devices increase target catch while reducing bycatch: A meta-analysis	Circle hooks and dyed bait did not show a reduction in bird deaths when analyzed alone; however, the small sample sizes for these bycatch reduction methods may have been overshadowed by alternative bycatch reduction devices for which more data exists.
Gilman, et al. (2022)	Investigating weighted fishing hooks for seabird bycatch mitigation	Differences in hook shape or size showed no significant direct effect on albatross bycatch rates, maybe because all hooks tested could easily fit into the large albatross mouths. But larger hooks, if heavier, might reduce seabird capture risk by sinking faster.

ACAP's Position



The Agreement on the Conservation of Albatrosses and Petrels (ACAP) considers that **changes to hook size and design currently lack scientific substantiation as procedures for reducing the impact of pelagic longlines on seabirds. Therefore, they are not recommended as mitigation measures to reduce seabird bycatch** in these fisheries. The ACAP Summary Advice for Reducing the Impact of Pelagic Longline Fisheries on Seabirds states that changes to hook size and design may reduce the chance of seabird mortality in longline fisheries but have not been adequately studied. It would be desirable that any further analyses undertaken to look at the effect of hook type and size on turtle bycatch and/or other taxa could be expanded to include seabird bycatch. This could provide more data on the matter."