

EXPLORING HAWAIIAN **PELAGIC LONGLINE** **FISHERIES**

AN ANALYSIS OF TEN YEARS OF DEEP-SET AND
SHALLOW-SET FISHERY DATA

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BACKGROUND

- Hawaii-based pelagic longline fishing uses lines up to 60 miles, either deep-set or shallow-set in open water and target large pelagic species such as bigeye tuna and swordfish.
- Baited hooks attract a vast array of unwanted marine life (protected species, undersized or not marketable fish)
 - But to what extent?
 - How do retained catch and discards differ in U.S. Pacific based longline fisheries?
 - How do mortality rates differ by species?

METHODS/ METRICS

- Examine 10 years of unpublished observer data of Hawaiian pelagic longline fisheries covering January 2007 to April 2017 provided by NOAA Fisheries in response to Oceana's Freedom of Information Act request:
 - Retained catch composition
 - Discard composition
 - Discard rate and mortality
 - Species vulnerability to fishing
 - Protected species interactions

DEFINITIONS

- **Catch** – All fish and other animals that are caught by fishing operations.
- **Bycatch** – All fish or other animals caught and discarded or otherwise not retained.
- **Retained catch** – total number of fish caught and kept.
- **Discard rate** – fishery's total discards divided by its total catch.
- **Discard mortality** – fishery's total injured/deceased/in an unknown state discards as recorded by the observer divided by its total discards.
- **Protected species** – Species under specific conservation and management measures.

SUMMARY STATISTICS

HAWAIIAN SHALLOW-SET LONGLINE FISHERY (100% COVERAGE)

Total catch (by number): **449,865**

Retained catch (by number): **242,875**

Discard rate: **46.0%**

Species or species group caught: **116** (10 ESA listed species).

HAWAIIAN DEEP-SET LONGLINE FISHERY (20.6% COVERAGE)

Total catch (by number): **2,087,469**

Retained catch (by number): **1,087,425**

Discard rate: **48.0%**

Species or species group caught: **119** (9 ESA listed species).

RETAINED CATCH DIVERSITY

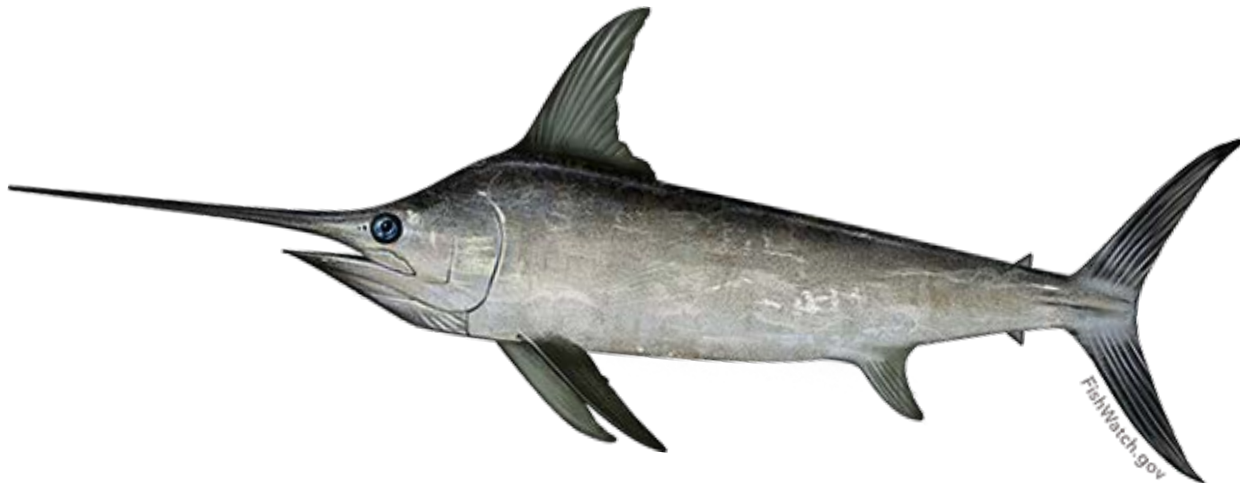
HAWAIIAN SHALLOW-SET LONGLINE FISHERY (100% COVERAGE)

Retention rate: **54%**

Fish species retained: **61** (out of 116)

Swordfish / retained catch: **63%**

Bigeye / retained catch: **4.5%**



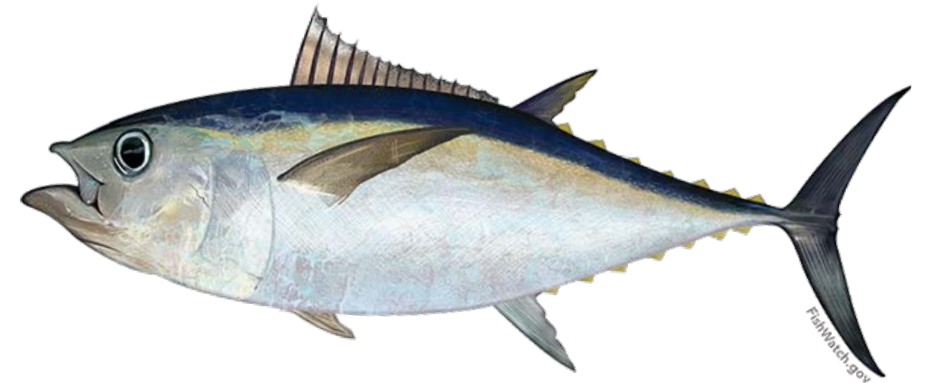
HAWAIIAN DEEP-SET LONGLINE FISHERY (20.6% COVERAGE)

Retention rate: **52%**

Fish species retained: **63** (out of 119)

Swordfish / retained catch: **0.9%**

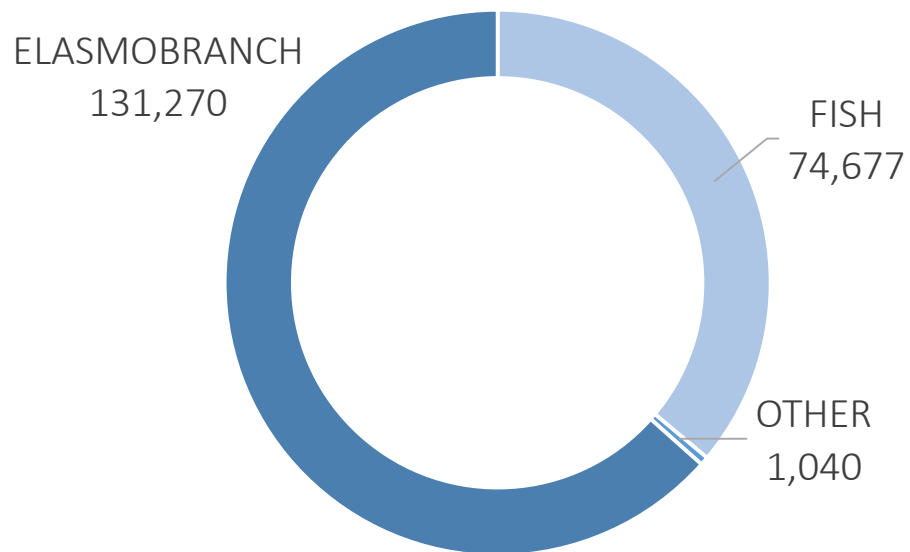
Bigeye / retained catch: **19%**



DISCARD COMPOSITION

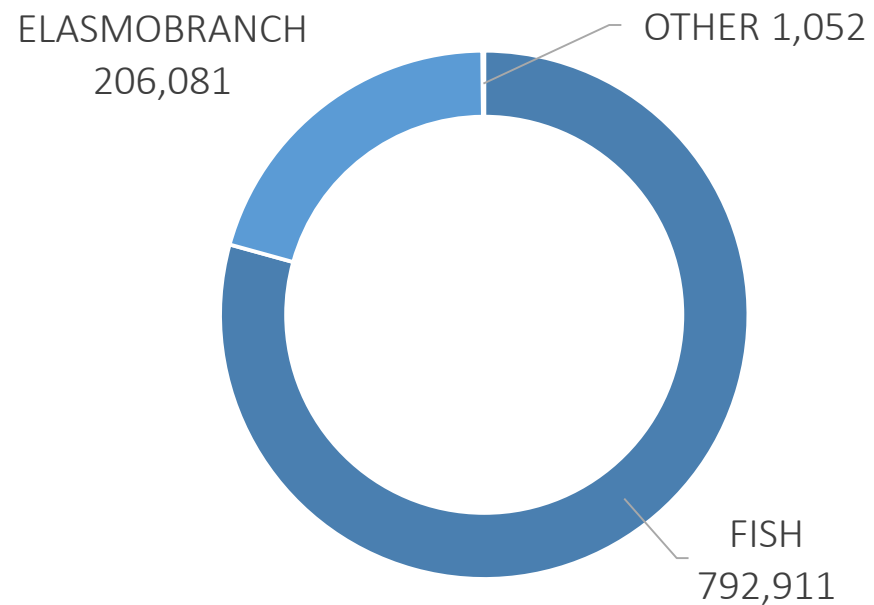
HAWAIIAN DEEP-SET LONGLINE FISHERY (100% COVERAGE)

discard composition, by number



HAWAIIAN DEEP-SET LONGLINE FISHERY (20.6% COVERAGE)

observed discard composition, by number



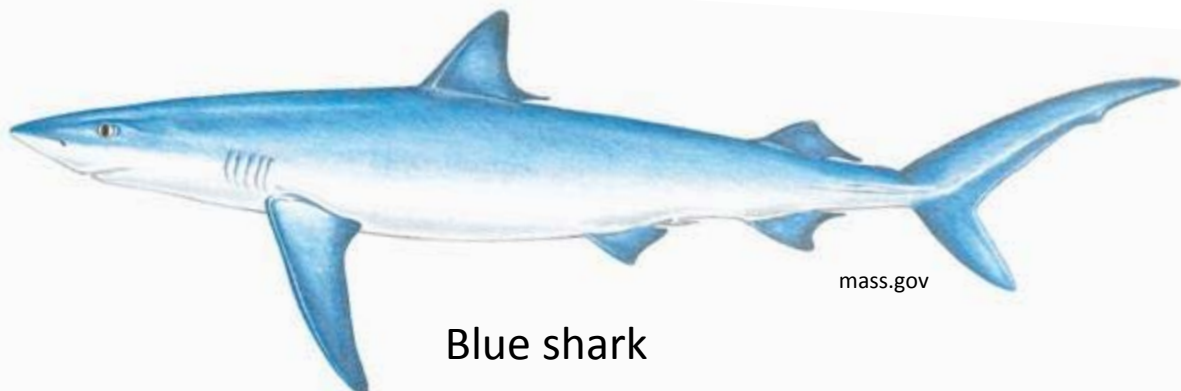
DISCARD RATE AND MORTALITY

HAWAIIAN SHALLOW-SET LONGLINE FISHERY (100% COVERAGE)

Discard rate: **46%**

Number of species entirely discarded (>99.9%): **27 species** (incl. 10 ESA listed sp.)

Top two species discarded by number: **1. blue shark** (mortality rate of 9.4%)
2. longnose lancetfish (mortality rate 90.5%)



Blue shark

HAWAIIAN DEEP-SET LONGLINE FISHERY (20.6% COVERAGE)

Discard rate: **48%**

Number of species entirely discarded (>99.9%): **22 species** (incl. 9 ESA listed sp.)

Top two species discarded by number: **1. longnose lancetfish** (mortality rate 93.3%)
2. blue shark (mortality rate of 4.6%)



Longnose lancetfish

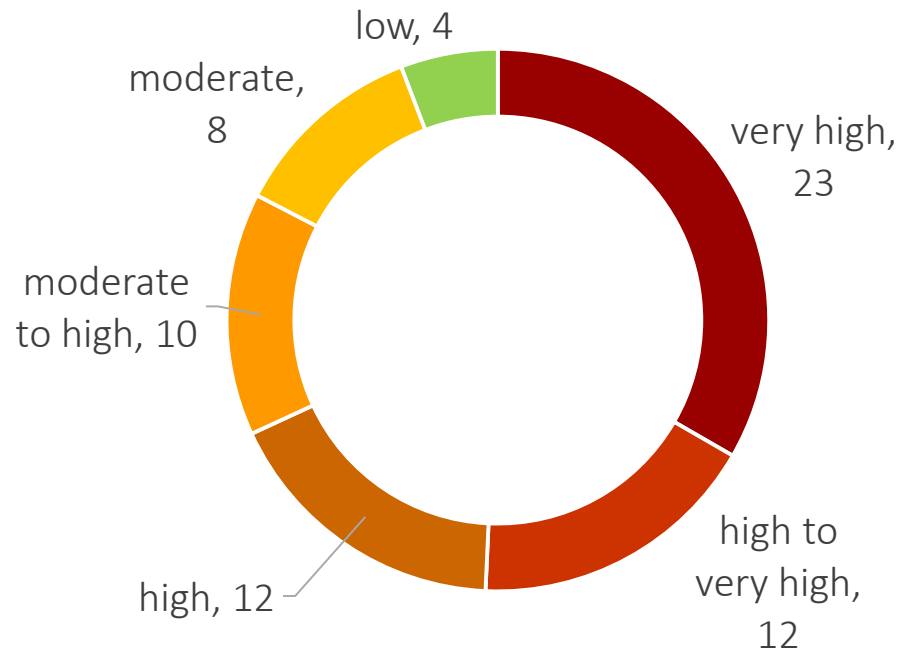
SPECIES VULNERABILITY TO

FISHING

HAWAIIAN SHALLOW-SET

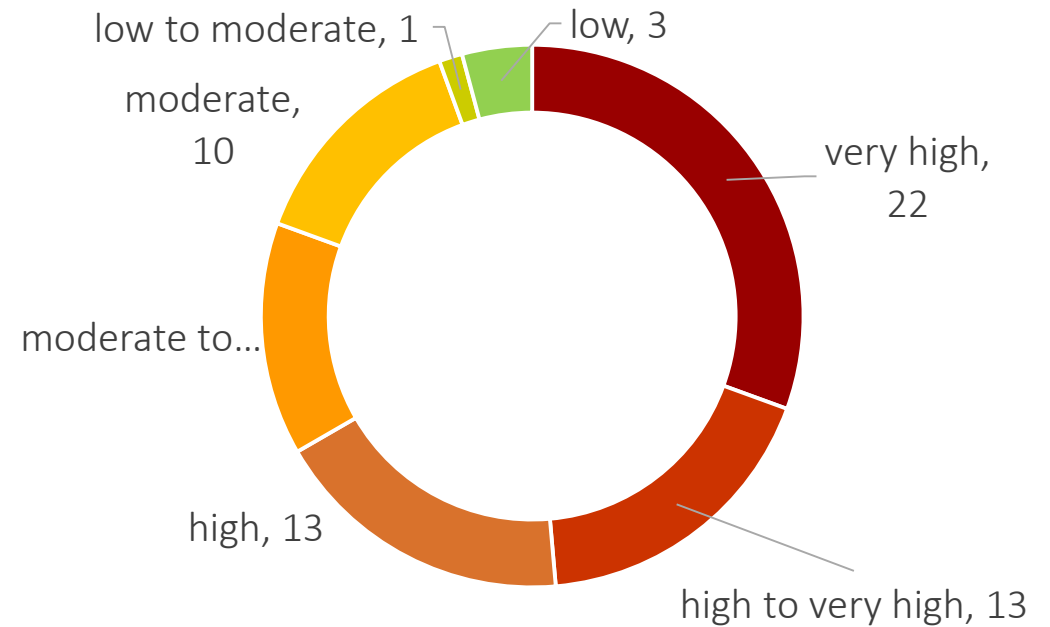
LONGLINE FISHERY (100% COVERAGE)

FishBase vulnerability scores, by species



HAWAIIAN DEEP-SET LONGLINE FISHERY (20.6% COVERAGE)

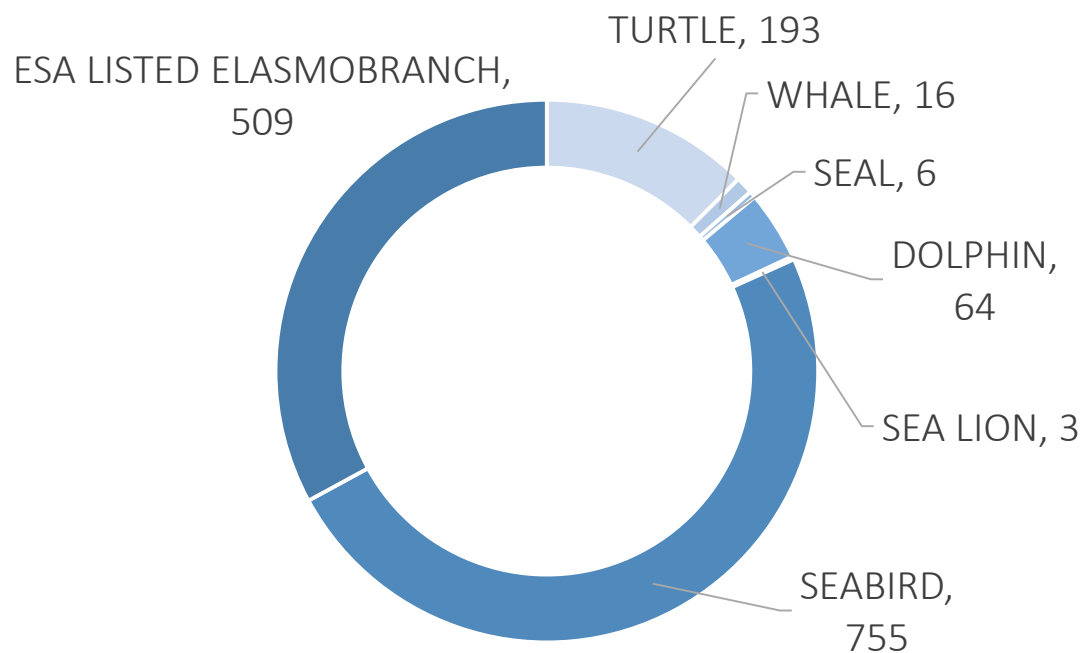
FishBase vulnerability scores, by species



PROTECTED SPECIES

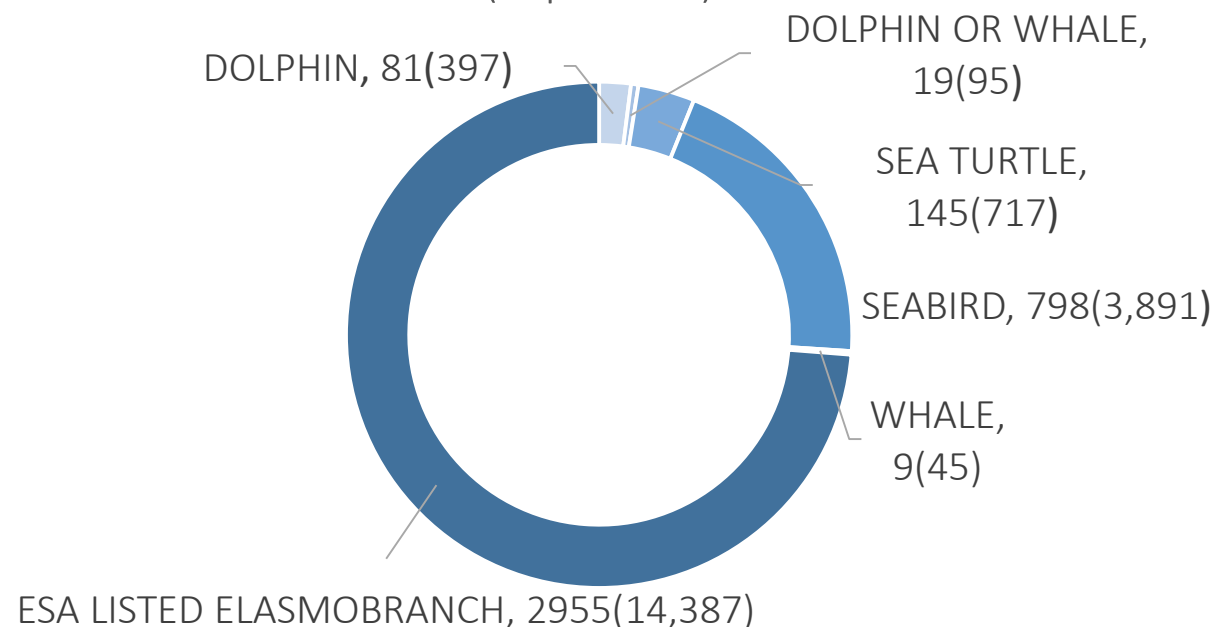
HAWAIIAN SHALLOW-SET LONGLINE FISHERY (100% COVERAGE)

Protected Marine Life Takes



HAWAIIAN DEEP-SET LONGLINE FISHERY (20.6% COVERAGE)

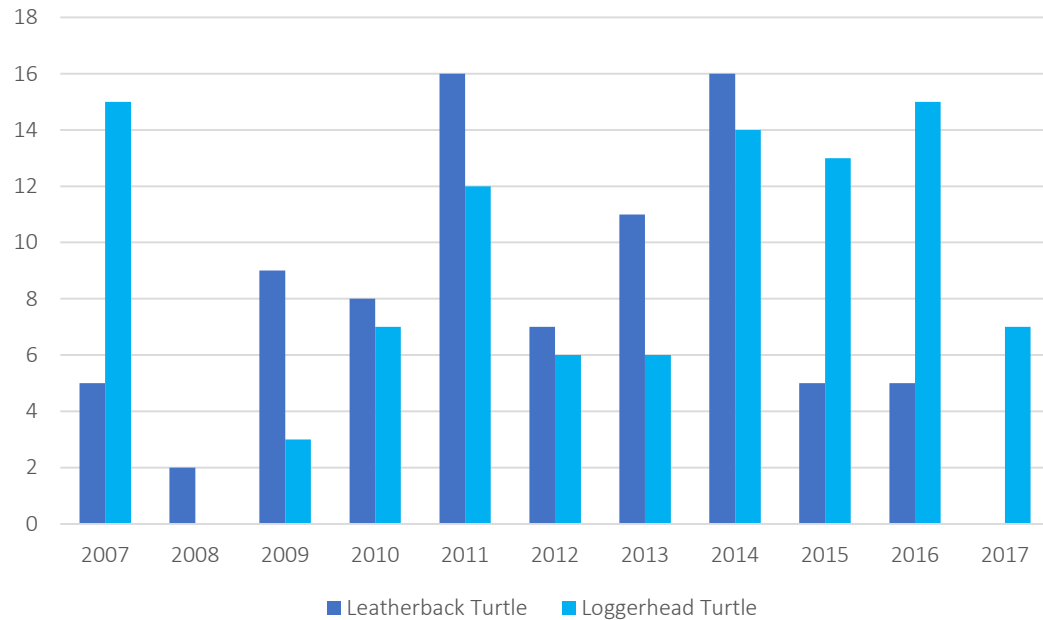
Protected Marine Life Takes, observed
(expanded)



SEA TURTLE INTERACTIONS

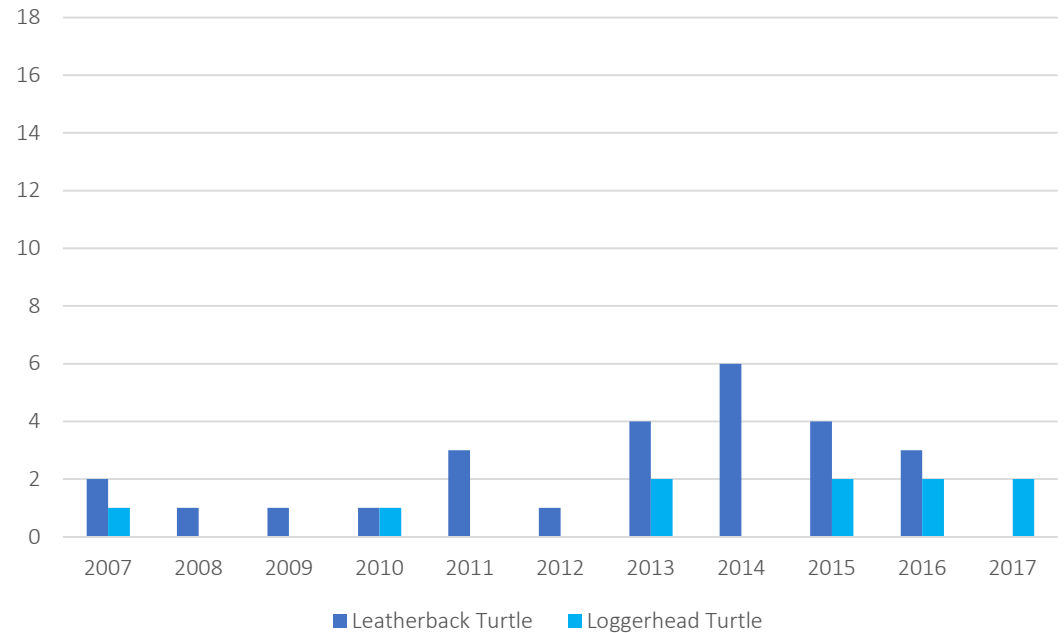
HAWAIIAN SHALLOW-SET LONGLINE FISHERY (100% COVERAGE)

Annual take of leatherback and loggerhead sea turtles in the HI SSL (2007 - April 2017)



HAWAIIAN DEEP-SET LONGLINE FISHERY (20.6% COVERAGE)

Observed Annual take of leatherback and loggerhead sea turtles in the HI DSL (2007 - April 2017)





WRAP-UP

- Similar discard rate (46 and 48%) for HI SSL and HI DSL fisheries
- Different retained and bycatch composition but significant interactions with blue shark and longnose lancetfish in both fisheries
- HI DSL had a higher discard mortality rate than HI SSL
- Seabirds, sea turtles, and marine mammals had among the highest injury and mortality rates



THANK YOU FOR YOUR ATTENTION!