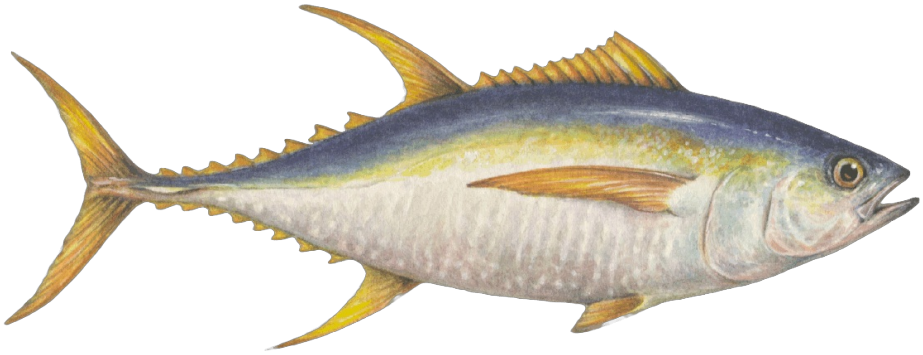
Monterey Bay Aquarium
Seafood Watch

Draft Assessment for Review

September 2025

Environmental sustainability of wild-caught tuna and large pelagic species from Hawaii caught using handlines and hand-operated pole-and-lines, longlines, and trolling lines



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Species:	Albacore, Bigeye tuna, Black marlin, Blue marlin, Dolphinfish, Opah, Shortbill spearfish, Sickle pomfret, Skipjack tuna, Striped marlin, Swordfish, Wahoo, Yellowfin tuna
Location:	Hawaii: Western and Central Pacific, Eastern Central Pacific
Gear:	Handlines and hand-operated pole-and-lines, Longline (deep-set), Longline (shallow-set), Trolling lines
Type:	Wild Caught
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About the Monterey Bay Aquarium Seafood Watch Program

The mission of the Monterey Bay Aquarium is to inspire conservation of the ocean and enable a future where the ocean flourishes and people thrive in a just and equitable world. To do this, the Aquarium is focused on creating extraordinary experiences that inspire awe and wonder, championing science-based solutions, and connecting people across the planet to protect and restore the ocean. We know that healthy ocean ecosystems are critical to enabling life on Earth to exist, and that our very survival depends on them. As such, our conservation objectives are to mobilize climate action, improve the sustainability of global fisheries and aquaculture, reduce sources of plastic pollution, and restore and protect ocean wildlife and ecosystems.

The aquarium is focused on improving the sustainability of fisheries and aquaculture given the role seafood plays in providing essential nutrition for 3 billion people globally, and in supporting hundreds of millions of livelihoods. Approximately 180 million metric tons of wild and farmed seafood is harvested each year (excluding seaweeds). Unfortunately, not all current harvest practices are sustainable and poorly managed fisheries and aquaculture pose the greatest immediate threat to the health of the ocean and the economic survival and food security of billions of people.

The Seafood Watch program was started 25 years ago as a small exhibit in the Monterey Bay Aquarium highlighting better fishing practices and grew into one of the leading sources of information on seafood sustainability, harnessing the power of consumer choice to mobilize change. The program's comprehensive open-source information and public outreach raises awareness about global sustainability issues, identifies areas for improvement, recognizes and rewards best practices and empowers individuals and businesses to make informed decisions when purchasing seafood.

We define sustainable seafood as seafood from sources, whether fished or farmed, that can maintain or increase production without jeopardizing the structure and function of affected ecosystems, minimize harmful environmental impacts, assure good and fair working conditions, and support livelihoods and economic benefits throughout the entire supply chain. As one aspect of this vision, Seafood Watch has developed trusted, rigorous standards for assessing the environmental impacts of fishing and aquaculture practices worldwide. Built on a solid foundation of science and collaboration, our standards reflect our guiding principles for defining environmental sustainability in seafood.

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Seafood Watch Ratings

The Seafood Watch Standard for Fisheries is used to produce assessments for wild-capture fisheries resulting in a Seafood Watch rating of green, yellow, or red. Seafood Watch uses the assessment criteria to determine a final numerical score as well as numerical subscores and colors for each criterion. These scores are translated to a final Seafood Watch color rating according to the methodology described in the table below. The table also describes how Seafood Watch defines each of these categories. The narrative descriptions of each Seafood Watch rating, and the guiding principles listed below, compose the framework on which the criteria are based.

Green	Final Score >3.2, and either criterion 1 or criterion 3 (or both) is green, and no red criteria, and no critical scores	Wild-caught and farm-raised seafood rated green are environmentally sustainable, well managed and caught or farmed in ways that cause little or no harm to habitats or other wildlife. These operations align with all of our guiding principles.
Yellow	Final score >2.2, and no more than one red criterion, and no critical scores, and does not meet the criteria for green (above)	Wild-caught and farm-raised seafood rated yellow cannot be considered fully environmentally sustainable at this time. They align with most of our guiding principles, but there is either one conservation concern needing substantial improvement, or there is significant uncertainty associated with the impacts of the fishery or aquaculture operations.
Red	Final Score ≤2.2, or two or more red criteria, or one or more critical scores.	Wild-caught and farm-raised seafood rated red are caught or farmed in ways that have a high risk of causing significant harm to the environment. They do not align with our guiding principles and are considered environmentally unsustainable due to either a critical conservation concern, or multiple areas where improvement is needed.

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Disclaimer: All Seafood Watch fishery assessments are reviewed for accuracy by external experts in ecology, fisheries science, and aquaculture. Scientific review does not constitute an endorsement of the Seafood Watch program or its ratings on the part of the reviewing scientists. Seafood Watch is solely responsible for the conclusions reached in this assessment.

Recommended Citation: Seafood Watch (2025) Environmental sustainability of wild-caught tuna and large pelagic species from Hawaii caught using handlines and hand-operated pole-and-lines, longlines, and trolling lines Monterey Bay Aquarium

Guiding Principles

Monterey Bay Aquarium defines sustainable seafood as seafood from sources, whether fished or farmed, that can maintain or increase production without jeopardizing the structure and function of affected ecosystems, minimize harmful environmental impacts, assure good and fair working conditions, and support livelihoods and economic benefits throughout the entire supply chain.

As one aspect of this vision, Seafood Watch has developed trusted, rigorous standards for assessing the environmental impacts of fishing and aquaculture practices worldwide. Environmentally sustainable wild capture fisheries:

1. **Follow the principles of ecosystem-based fisheries management**

   The fishery is managed to ensure the integrity of the entire ecosystem, rather than solely focusing on maintenance of single species stock productivity. To the extent allowed by the current state of the science, ecological interactions affected by the fishery are understood and protected, and the structure and function of the ecosystem is maintained.

2. **Ensure all affected stocks[1] are healthy and abundant**

   Abundance, size, sex, age and genetic structure of the main species affected by the fishery (not limited to target species) is maintained at levels that do not impair recruitment or long-term productivity of the stocks or fulfillment of their role in the ecosystem and food web.

   Abundance of the main species affected by the fishery should be at, above, or fluctuating around levels that allow for the long-term production of maximum sustainable yield. Higher abundances are necessary in the case of forage species, in order to allow the species to fulfill its ecological role.

3. **Fish all affected stocks at sustainable levels**

   Fishing mortality for the main species affected by the fishery should be appropriate given current abundance and inherent resilience to fishing while accounting for scientific uncertainty, management uncertainty, and non-fishery impacts such as habitat degradation.

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[1]"Affected" stocks include all stocks affected by the fishery, no matter whether target or bycatch, or whether they are ultimately retained or discarded.

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The cumulative fishing mortality experienced by affected species must be at or below the level that produces maximum sustainable yield for single-species fisheries on typical species that are at target levels.

Fishing mortality may need to be lower than the level that produces maximum sustainable yield in certain cases such as forage species, multispecies fisheries, highly vulnerable species, or fisheries with high uncertainty.

For species that are depleted below target levels, fishing mortality must be at or below a level that allows the species to recover to its target abundance.

4. **Minimize bycatch**

   Seafood Watch defines bycatch as all fisheries-related mortality or injury other than the retained catch. Examples include discards, endangered or threatened species catch, pre-catch mortality and ghost fishing. All discards, including those released alive, are considered bycatch unless there is valid scientific evidence of high post-release survival and there is no documented evidence of negative impacts at the population level.

   The fishery optimizes the utilization of marine and freshwater resources by minimizing post-harvest loss and by efficiently using marine and freshwater resources as bait.

5. **Have no more than a negligible impact on any threatened, endangered or protected species**

   The fishery avoids catch of any threatened, endangered or protected (ETP) species. If any ETP species are inadvertently caught, the fishery ensures and can demonstrate that it has no more than a negligible impact on these populations.

6. **Are managed to sustain the long-term productivity of all affected species**

   Management should be appropriate for the inherent resilience of affected marine and freshwater life and should incorporate data sufficient to assess the affected species and manage fishing mortality to ensure little risk of depletion. Measures should be implemented and enforced to ensure that fishery mortality does not threaten the long term productivity or ecological role of any species in the future.

   The management strategy has a high chance of preventing declines in stock productivity by taking into account the level of uncertainty, other impacts on the stock, and the potential for increased pressure in the future.

   The management strategy effectively prevents negative population impacts on bycatch species, particularly species of concern.

7. **Avoid negative impacts on the structure, function or associated biota of aquatic habitats where fishing occurs**

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The fishery does not adversely affect the physical structure of the seafloor or associated biological communities.

If high-impact gears (e.g. trawls, dredges) are used, vulnerable seafloor habitats (e.g. corals, seamounts) are not fished, and potential damage to the seafloor is mitigated through substantial spatial protection, gear modifications and/or other highly effective methods.

8. **Maintain the trophic role of all aquatic life**

   All stocks are maintained at levels that allow them to fulfill their ecological role and to maintain a functioning ecosystem and food web, as informed by the best available science.

9. **Do not result in harmful ecological changes such as reduction of dependent predator populations, trophic cascades, or phase shifts**

   Fishing activities must not result in harmful changes such as depletion of dependent predators, trophic cascades, or phase shifts.

   This may require fishing certain species (e.g., forage species) well below maximum sustainable yield and maintaining populations of these species well above the biomass that produces maximum sustainable yield.

10. **Ensure that any enhancement activities and fishing activities on enhanced stocks do not negatively affect the diversity, abundance, productivity, or genetic integrity of wild stocks**

    Any enhancement activities are conducted at levels that do not negatively affect wild stocks by reducing diversity, abundance or genetic integrity.

    Management of fisheries targeting enhanced stocks ensures that there are no negative impacts on the wild stocks, in line with the guiding principles described above, as a result of the fisheries.

    Enhancement activities do not negatively affect the ecosystem through density dependent competition or any other means, as informed by the best available science.

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Final Ratings

Ratings Details	C 1 Target Species	C 2 Other Species	C 3 Management	C 4 Habitat	Rating
Albacore North Pacific Stock - United States - Hawaii - Eastern Central Pacific Ocean | Northeast Pacific Ocean - Longline (deep-set) - FAO Major Area: Pacific, Northeast | Pacific, Eastern Central - Permit/License: Covers US vessels landing in Hawaii or California - RFMO: Inter-American Tropical Tuna Commission (IATTC)	5.000	1.732	3.000	3.873	Yellow (3.167)
Albacore North Pacific Stock - United States - Hawaii - Northwest Pacific Ocean | Western Central Pacific Ocean - Longline (deep-set) - FAO Major Area: Pacific, Western Central | Pacific, Northwest - RFMO: Western and Central Pacific Fisheries Commission (WCPFC)	5.000	1.732	3.000	3.873	Yellow (3.167)
Bigeye tuna Western and Central Pacific Ocean (WCPO) Stock - United States - Hawaii - Western Central Pacific Ocean - Handlines and hand-operated pole-and-lines - FAO Major Area: Pacific, Western Central	5.000	5.000	3.000	3.873	Green (4.128)
Bigeye tuna Eastern Pacific Ocean Stock - United States - Hawaii - Eastern Central Pacific Ocean | Northeast Pacific Ocean - Longline (deep-set) - FAO Major Area: Pacific, Northeast | Pacific, Eastern Central - Permit/License: Covers US vessels landing in Hawaii or California - RFMO: Inter-American Tropical Tuna Commission (IATTC)	5.000	1.732	3.000	3.873	Yellow (3.167)
Bigeye tuna Western and Central Pacific Ocean (WCPO) Stock - United States - Hawaii - Northwest Pacific Ocean | Western Central Pacific Ocean - Longline (deep-set) - FAO Major Area: Pacific, Western Central | Pacific, Northwest	5.000	1.732	3.000	3.873	Yellow (3.167)

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Ratings Details	C 1 Target Species	C 2 Other Species	C 3 Management	C 4 Habitat	Rating
Black marlin United States - Hawaii - Eastern Central Pacific Ocean | Northeast Pacific Ocean - Longline (deep-set) - FAO Major Area: Pacific, Northeast | Pacific, Eastern Central - Permit/License: Covers US vessels landing in Hawaii or California - RFMO: Inter-American Tropical Tuna Commission (IATTC)	1.732	1.732	3.000	3.873	Red (2.430)
Black marlin United States - Hawaii - Northwest Pacific Ocean | Western Central Pacific Ocean - Longline (deep-set) - FAO Major Area: Pacific, Western Central | Pacific, Northwest - RFMO: Western and Central Pacific Fisheries Commission (WCPFC)	1.732	1.732	3.000	3.873	Red (2.430)
Blue marlin United States - Hawaii - Eastern Central Pacific Ocean | Northeast Pacific Ocean - Longline (deep-set) - FAO Major Area: Pacific, Northeast | Pacific, Eastern Central - Permit/License: Covers US vessels landing in Hawaii or California - RFMO: Inter-American Tropical Tuna Commission (IATTC)	4.284	1.732	3.000	3.873	Yellow (3.047)
Blue marlin United States - Hawaii - Northwest Pacific Ocean | Western Central Pacific Ocean - Longline (deep-set) - FAO Major Area: Pacific, Western Central | Pacific, Northwest	4.284	1.732	3.000	3.873	Yellow (3.047)
Blue marlin United States - Hawaii - Western Central Pacific Ocean - Trolling lines - FAO Major Area: Pacific, Western Central	4.284	2.644	3.000	3.873	Green (3.387)
Dolphinfish United States - Hawaii - Western Central Pacific Ocean - Handlines and hand-operated pole-and-lines	2.644	5.000	3.000	3.873	Yellow (3.520)

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Ratings Details	C 1 Target Species	C 2 Other Species	C 3 Management	C 4 Habitat	Rating
Dolphinfish United States - Hawaii - Eastern Central Pacific Ocean | Northeast Pacific Ocean - Longline (deep-set) - Permit/License: Covers US vessels landing in Hawaii or California	2.644	1.732	3.000	3.873	Yellow (2.701)
Dolphinfish United States - Hawaii - Northwest Pacific Ocean | Western Central Pacific Ocean - Longline (deep-set)	2.644	1.732	3.000	3.873	Yellow (2.701)
Dolphinfish United States - Hawaii - Eastern Central Pacific Ocean | Northeast Pacific Ocean - Longline (shallow-set)	2.644	2.236	3.000	3.873	Yellow (2.879)
Dolphinfish United States - Hawaii - Northwest Pacific Ocean | Western Central Pacific Ocean - Longline (shallow-set)	2.644	2.236	3.000	3.873	Yellow (2.879)
Dolphinfish United States - Hawaii - Western Central Pacific Ocean - Trolling lines	2.644	4.284	3.000	3.873	Yellow (3.387)
Opah United States - Hawaii - Eastern Central Pacific Ocean | Northeast Pacific Ocean - Longline (deep-set) - FAO Major Area: Pacific, Northeast | Pacific, Eastern Central - Permit/License: Covers US vessels landing in Hawaii or California - RFMO: Inter-American Tropical Tuna Commission (IATTC)	4.284	1.732	3.000	3.873	Yellow (3.047)
Opah United States - Hawaii - Northwest Pacific Ocean | Western Central Pacific Ocean - Longline (deep-set) - FAO Major Area: Pacific, Western Central | Pacific, Northwest - RFMO: Western and Central Pacific Fisheries Commission (WCPFC)	2.644	1.732	3.000	3.873	Yellow (2.701)

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Ratings Details	C 1 Target Species	C 2 Other Species	C 3 Management	C 4 Habitat	Rating
Shortbill spearfish United States - Hawaii - Eastern Central Pacific Ocean | Northeast Pacific Ocean - Longline (deep-set) - Permit/License: Covers US vessels landing in Hawaii or California	2.644	1.732	3.000	3.873	Yellow (2.701)
Shortbill spearfish United States - Hawaii - Northwest Pacific Ocean | Western Central Pacific Ocean - Longline (deep-set)	2.644	1.732	3.000	3.873	Yellow (2.701)
Shortbill spearfish United States - Hawaii - Eastern Central Pacific Ocean | Northeast Pacific Ocean - Longline (shallow-set)	2.644	2.236	3.000	3.873	Yellow (2.879)
Shortbill spearfish United States - Hawaii - Northwest Pacific Ocean | Western Central Pacific Ocean - Longline (shallow-set)	2.644	2.236	3.000	3.873	Yellow (2.879)
Sickle pomfret United States - Hawaii - Eastern Central Pacific Ocean | Northeast Pacific Ocean - Longline (deep-set) - FAO Major Area: Pacific, Northeast | Pacific, Eastern Central - Permit/License: Covers US vessels landing in Hawaii or California - RFMO: Inter-American Tropical Tuna Commission (IATTC)	2.644	1.732	3.000	3.873	Yellow (2.701)
Sickle pomfret United States - Hawaii - Northwest Pacific Ocean | Western Central Pacific Ocean - Longline (deep-set) - FAO Major Area: Pacific, Western Central | Pacific, Northwest - RFMO: Western and Central Pacific Fisheries Commission (WCPFC)	2.644	1.732	3.000	3.873	Yellow (2.701)
Skipjack tuna Eastern Pacific Ocean Stock - United States - Hawaii - Eastern Central Pacific Ocean | Northeast Pacific Ocean - Longline (deep-set) - FAO Major Area: Pacific, Northeast | Pacific, Eastern Central - Permit/License: Covers US vessels landing in Hawaii or California - RFMO: Inter-American Tropical Tuna Commission (IATTC)	5.000	1.732	3.000	3.873	Yellow (3.167)

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Ratings Details	C 1 Target Species	C 2 Other Species	C 3 Management	C 4 Habitat	Rating
Skipjack tuna Western and Central Pacific Ocean (WCPO) Stock - United States - Hawaii - Northwest Pacific Ocean | Western Central Pacific Ocean - Longline (deep-set) - FAO Major Area: Pacific, Western Central | Pacific, Northwest	5.000	1.732	3.000	3.873	Yellow (3.167)
Skipjack tuna Western and Central Pacific Ocean (WCPO) Stock - United States - Hawaii - Western Central Pacific Ocean - Trolling lines - FAO Major Area: Pacific, Western Central	5.000	2.644	3.000	3.873	Green (3.520)
Striped marlin United States - Hawaii - Eastern Central Pacific Ocean | Northeast Pacific Ocean - Longline (deep-set) - FAO Major Area: Pacific, Northeast | Pacific, Eastern Central - Permit/License: Covers US vessels landing in Hawaii or California - RFMO: Inter-American Tropical Tuna Commission (IATTC)	1.000	1.732	3.000	3.873	Red (2.118)
Striped marlin United States - Hawaii - Northwest Pacific Ocean | Western Central Pacific Ocean - Longline (deep-set) - FAO Major Area: Pacific, Western Central | Pacific, Northwest - RFMO: Western and Central Pacific Fisheries Commission (WCPFC)	1.000	1.732	3.000	3.873	Red (2.118)
Swordfish Northwestern and Central Pacific Ocean Stock - United States - Hawaii - Eastern Central Pacific Ocean | Northeast Pacific Ocean - Longline (shallow-set) - FAO Major Area: Pacific, Northeast | Pacific, Eastern Central - RFMO: Inter-American Tropical Tuna Commission (IATTC)	5.000	2.236	3.000	3.873	Green (3.376)
Swordfish Northwestern and Central Pacific Ocean Stock - United States - Hawaii - Northwest Pacific Ocean | Western Central Pacific Ocean - Longline (shallow-set) - FAO Major Area: Pacific, Western Central | Pacific, Northwest - RFMO: Western and Central Pacific Fisheries Commission (WCPFC)	5.000	2.236	3.000	3.873	Green (3.376)

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Ratings Details	C 1 Target Species	C 2 Other Species	C 3 Management	C 4 Habitat	Rating
Wahoo United States - Hawaii - Eastern Central Pacific Ocean | Northeast Pacific Ocean - Longline (deep-set) - FAO Major Area: Pacific, Northeast | Pacific, Eastern Central - Permit/License: Covers US vessels landing in Hawaii or California - RFMO: Inter-American Tropical Tuna Commission (IATTC)	4.284	1.732	3.000	3.873	Yellow (3.047)
Wahoo United States - Hawaii - Northwest Pacific Ocean | Western Central Pacific Ocean - Longline (deep-set) - FAO Major Area: Pacific, Western Central | Pacific, Northwest	2.644	1.732	3.000	3.873	Yellow (2.701)
Wahoo United States - Hawaii - Western Central Pacific Ocean - Trolling lines - FAO Major Area: Pacific, Western Central	2.644	2.644	3.000	3.873	Yellow (3.002)
Yellowfin tuna Western and Central Pacific Ocean (WCPO) Stock - United States - Hawaii - Western Central Pacific Ocean - Handlines and hand-operated pole-and-lines	5.000	5.000	3.000	3.873	Green (4.128)
Yellowfin tuna Eastern Pacific Ocean Stock - United States - Hawaii - Eastern Central Pacific Ocean | Northeast Pacific Ocean - Longline (deep-set) - FAO Major Area: Pacific, Northeast | Pacific, Eastern Central - Permit/License: Covers US vessels landing in Hawaii or California - RFMO: Inter-American Tropical Tuna Commission (IATTC)	4.284	1.732	3.000	3.873	Yellow (3.047)
Yellowfin tuna Western and Central Pacific Ocean (WCPO) Stock - United States - Hawaii - Northwest Pacific Ocean | Western Central Pacific Ocean - Longline (deep-set) - FAO Major Area: Pacific, Western Central | Pacific, Northwest	5.000	1.732	3.000	3.873	Yellow (3.167)

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Ratings Details	C 1 Target Species	C 2 Other Species	C 3 Management	C 4 Habitat	Rating
Yellowfin tuna Western and Central Pacific Ocean (WCPO) Stock – United States – Hawaii – Western Central Pacific Ocean – Trolling lines	5.000	2.644	3.000	3.873	Green (3.520)

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Abbreviations

Table 2

Abbreviation	Description
EPO	Eastern Pacific Ocean
WCPO	Western and Central Pacific Ocean
FEP	Fishery Ecosystem Plan
WPRFMC	Western Pacific Regional Fishery Management Countil
WCPFC	Western and Central Pacific Fisheries Commission
IATTC	Inter-American Tropical Tuna Commission
RFMO	Regional Fishery Management Organization
EEZ	Exclusive Economic Zone
LRP	Limit Reference Point
SSB	Spawning Stock Biomass
TRP	Target Reference Point
SB	Stock Biomass
MSY	Maximum Sustainable Yield
IUCN	International Union for the Conservation of Nature
PSA	Productivity-Susceptibility Analysis
SBR	Spawning Biomass Ratio
ETP	Endangered, Threatened, Protected
PBR	Potential Biological Removal
NOAA	National Oceanic and Atmospheric Administration
ITS	Incidental Take Statement
MHI	Main Hawaiian Islands Insular

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NWHI	Northwest Hawaiian Islands
DPS	Distinct Population Segment
ESA	Endangered Species Act
CITES	Convention on International Traed in Endangered Species
BiOp	Biological Opinion
MMPA	Marine Mammal Protection Act
MIST	Maximum Impact Sustainable Threshold
DSLL	Deep-Set Longline
SSLL	Shallow-Set Longline
HCR	Harvest Control Rule
MSE	Management Strategy Evaluation
NMFS	National Marine Fisheries Service
CMM	Conservation and Management Measure
MUS	Management Unit Species
PMU	Pelagic Management Unit
MSST	Minimum Stock Size Threshold
GAO	Government Accountability Office
EM	Electronic Monitoring
EFH	Essential Fish Habitat
EBFM	Ecosystem-Based Fisheries Management
MMA	Marine Managed Area
USFWS	US Fish and Wildlife Service
NWR	National Wildlife Refuge

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Summary

This report reviews four United States pelagic fisheries in the western and central Pacific Ocean (WCPO) and eastern Pacific Ocean (EPO): the Hawaii shallow-set longline fishery targeting swordfish (*Xiphias gladius*); the Hawaii deep-set longline fishery targeting bigeye tuna (*Thunnus obesus*) and yellowfin tuna (*Thunnus albacares*), some of which also is landed in California; the Hawaii handline and hand-operated pole and line fishery targeting yellowfin tuna (*Thunnus albacares*); and the Hawaii trolling line fishery, which targets tunas, marlins, and other pelagic species. Other species landed in these fisheries that are assessed in this report include albacore tuna (*Thunnus alalunga*) and skipjack tuna (*Katsuwonus pelamis*), dolphinfish (*Coryphaena hippurus*), wahoo (*Acanthocybium solandri*), black, blue, and striped marlin (*Makaira indica, Makaira nigricans, Kajikia audax*), shortbill spearfish (*Tetrapturus angustirostris*), sickle pomfret (*Taractichthys steindachneri*), and opah (*Lampris guttatus*).

The Western Pacific Regional Fishery Management Council (WPRFMC) manages these fisheries under the Pelagic Fishery Ecosystem Plan (FEP) in federal waters. Many of the fish managed under the Pelagic FEP are also managed under the international agreements governing the Western and Central Pacific Fisheries Commission (WCPFC) and/or the Inter-American Tropical Tuna Commission (IATTC), to which the US is a party.

Bigeye, albacore, skipjack, and yellowfin tuna stocks are generally healthy, as is the North Pacific swordfish stock. Other species (billfish, other pelagic teleosts) largely lack stock assessments.

Deep-set longlines and shallow-set longlines catch a number of vulnerable taxa, though the potential impact of the deep-set fishery is higher based on the number of species it interacts with and the catch numbers for these species. Handlines and troll fisheries generally have low bycatch rates.

Reference points and some management control rules are in place for tropical tuna species and swordfish, though related billfish and finfish largely lack RFMO-level control rules and reference points. Effective bycatch strategies are in place in the shallow-set fishery, and some bycatch management occurs in the deep-set fishery. The shallow-set fishery is 100% observed. The deep-set fishery's rate of observer coverage declined in recent years but is transitioning to a mandatory electronic monitoring program. Management rules are effectively enforced, and the management process is participatory and transparent.

Pelagic longline, handline, and pole and line gears have minimal impact on bottom habitats because they fish at or near the surface.

All fisheries receive a moderate concern score for ecosystem-based management because policies (e.g., area closures, turtle and marine mammal bycatch hard caps) are in place to protect ecosystem function, but the efficacy of these ecosystem-based measures are unknown for a number of vulnerable species, apex predators including sharks, turtles and some finfish, and baitfish species.

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Nearly all deep-set longline ratings are yellow, with the exception of black and striped marlin, which are rated red. All shallow-set longline ratings except swordfish, which is green, are yellow, and all handline and troll ratings except dolphinfish and wahoo, which are yellow, are green.

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Introduction

Scope of the analysis and ensuing rating

This report reviews four United States pelagic fisheries in the western and central Pacific Ocean (WCPO) and eastern Pacific Ocean (EPO): the Hawaii shallow-set longline fishery targeting swordfish (*Xiphias gladius*); the Hawaii deep-set longline fishery targeting bigeye tuna (*Thunnus obesus*) and yellowfin tuna (*Thunnus albacares*), some of which also is landed in California; the Hawaii handline and hand-operated pole and line fishery targeting yellowfin tuna (*Thunnus albacares*); and the Hawaii trolling line fishery, which targets tunas, marlins, and other pelagic species (WPRFMC 2023). Other species caught in these fisheries that are assessed in this report include albacore tuna (*Thunnus alalunga*) and skipjack tuna (*Katsuwonus pelamis*), dolphinfish (*Coryphaena hippurus*), wahoo (*Acanthocybium solandri*), black, blue, and striped marlin (*Makaira indica, Makaira nigricans, Kajikia audax*), shortbill spearfish (*Tetrapturus angustirostris*), sickle pomfret (*Taractichthys steinadachneri*), and opah (*Lampris guttatus*).

Longline gear consists of three basic components: the mainline, the branch line, and the baited hook. Longline gear components are adaptable for targeting specific species through changes in materials, lengths, and deployment strategies. Pelagic longline gear is set mid-water column and is used worldwide to capture widely dispersed, pelagic species (Watson & Kerstetter 2006). Troll gear consists of dragged or towed lines that use bait or lures, and handlines consist of a vessel-based mainline with baited hooks.

Species Overview

Swordfish are a widely distributed billfish species found globally from 50-degrees N to 50-degrees S and at all longitudes in the Pacific Ocean. Swordfish are assessed as a single stock in the North Pacific, a single population in the Southwest Pacific, two populations in the Atlantic (South and North), and a single population in both the Indian Ocean and Mediterranean Sea (ISC 2018).

Tunas

Albacore, skipjack, bigeye and yellowfin tuna are widely distributed in temperate and tropical waters in all oceans. There are six managed populations of albacore tuna: North and South Pacific Ocean, North and South Atlantic Ocean, Indian Ocean and Mediterranean Sea (ISC 2017). There are four populations of yellowfin and bigeye and five populations of skipjack: Western and Central Pacific Ocean, EPO, Atlantic (eastern and western for skipjack) and Indian Ocean. Juvenile yellowfin tuna and juvenile bigeye tuna tend to form schools with skipjack tuna that are mostly found in surface waters. Larger tunas are found in subsurface waters where they also form schools (Mckechnie et al. 2017; Tremblay-Boyer et al. 2017).

Marlins

Black marlin lives in tropical and subtropical waters of the Indian and Pacific Oceans. It is found in surface waters and often close to land. Black marlin is highly migratory and an apex predator,

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feeding on fish, squid, and octopods, among others (Froese and Pauly 2019).

Blue marlin is a circumglobal species found in tropical and semitropical waters. It is highly migratory and also an apex predator that feeds on small tuna and squids, among other prey. There is believed to be a single population of blue marlin in the Pacific Ocean (WCPFC 2019; ISC 2016).

Striped marlin is the most abundant and widely distributed Istiophorid billfish species. It is epipelagic and found across the 85° latitude in the Pacific Ocean, with the largest abundance in the Eastern and North Central Pacific Ocean. Striped marlin also feeds on fish, squid, and other prey (Davies et al. 2012; ISC 2019). Recent genetic studies indicate the possibility of four populations of striped marlin in the Pacific (Mamoozadeh et al. 2019).

Sickle Pomfret and Short-billed Spearfish

Shortbill spearfish is a pelagic billfish that is found in most of the world's temperate and tropical oceans. It can be found between 40° N and 35° S in the Pacific Ocean. Shortbill spearfish prefer deeper waters and are not often found in coastal areas. Little is known about the stock structure of this species (Froese and Pauly 2019).

Pomfret is a pelagic species found worldwide. It can be live down to depths of 1,000 m and in waters between 12 and 24 degrees C. Pomfret migrate in small schools, which move related to water temperature, and feed on a variety of animals including small fish and cephalopods (Froese and Pauly 2019).

Opah

Opah is found worldwide in bathypelagic tropical and temperate waters, most commonly between 100 m and 500 m in depth. Opah also is a top predator, feeding on fish and squid among other prey (Froese and Pauly 2019). Opah are most frequently caught in longline sets targeting albacore (Molony 2008).

Dolphinfish (Mahi mahi/Dorado)

Dolphinfish is one of two species in the family Coryphaenidae, along with the pompano dolphinfish (*C. equiselis*) {Olson and Galván-Magaña 2002; Uchiyama and Boggs 2006; Polovina et al. 2009; Whoriskey et al. 2011}. Both species have a global distribution and, though pompano dolphinfish are typically smaller than mahi mahi, they share a similar morphology and coloration. Accordingly, pompano dolphinfish are often mistaken for juvenile mahi mahi (Froese and Pauly 2019) and are sometimes sold as mahi mahi. Mahi mahi are mid-trophic level predators, feeding primarily on other fishes and, occasionally, crustaceans and squid (Froese and Pauly 2019). They are found worldwide in tropical and subtropical waters warmer than 20°C (Palko et al. 1982). This species is extremely fast growing and reaches sexual maturity in the first year of life. Size at maturity varies throughout its range (for a summary, see (Collette et al. 2011)). Dolphinfish are sexually dimorphic, with males significantly larger than females. They school in feeding aggregations, which are commonly associated with floating objects.

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Wahoo

Wahoo is the only extant member of the genus Acanthocybium and is a member of the family Scombridae, along with tunas and mackerels. Wahoo also are mid-trophic level predators, feeding primarily on other fishes and occasionally cephalopods (Froese and Pauly 2019; Polovina et al. 2009). They are found worldwide in tropical and subtropical waters between 20° and 30°C {Zischke et al. 2012}. Wahoo are not sexually dimorphic. Both males and females reach sexual maturity in the first year of life (Jenkins and McBride 2009; Brown-Peterson et al. 2000). They grow to at least 200 cm FL (Hogarth 1976, as cited in (Collette et al. 2011c)), and females are highly fecund, producing as many as 1.7 million eggs per spawning event (Jenkins and McBride 2009). Estimates of wahoo lifespan range from 5 to 10 years (for review see {Zischke et al. 2012}). Wahoo often are associated with floating debris and targeted near fish aggregation devices (Collette et al. 2011c).

Globally, longlines are the most common method used to capture swordfish, albacore tuna, and bigeye tuna, and purse seines are the primary gear used to capture skipjack and yellowfin tuna.

The Western Pacific Regional Fishery Management Council (WPRFMC), in conjunction with the National Marine Fisheries Service (NMFS), manages these species in the federal waters of the US Exclusive Economic Zone (EEZ) off Hawaii. The United Nations Straddling and Highly Migratory Fish Stocks Agreement (1995) established Regional Fisheries Management Organizations (RFMOs) to manage straddling and highly migratory fish stocks. Two RFMOs, the Western and Central Pacific Fisheries Commission (WCPFC) and the Inter-American Tropical Tuna Commission (IATTC), manage international swordfish and tuna fisheries in the WCPO and EPO, respectively. The US is an active member in both RFMOs (see Figure).

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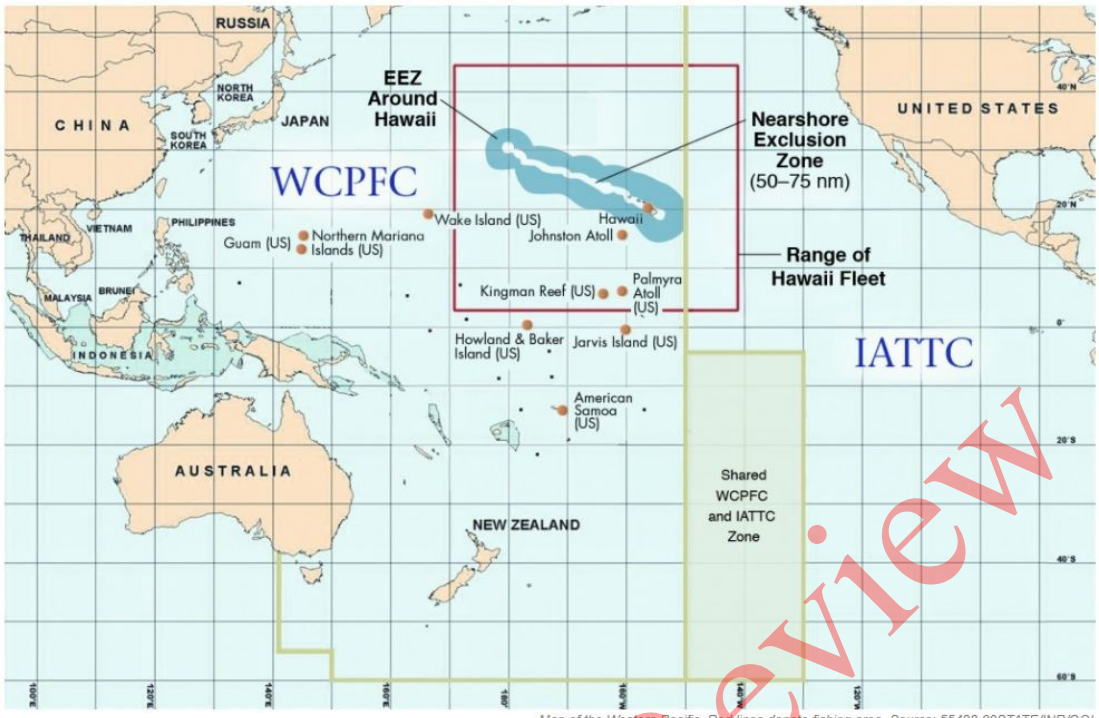

Map of the Western Pacific. Red lines denote fishing area. Source: 55428-00STATE/INR/GGI

Map of the Western Pacific. Red lines denote fishing area.

Figure 1: Fishing area of the Hawaii deep- and shallow-set longline fisheries and handline, hand-operated pole and line and trolling line fisheries (Hawaii-seafood.org; *Source: 55428-00STATE/INR/GGI)..*

Production Statistics

Hawaii Fisheries

The Hawaii longline fleet uses two modes of fishing: 1) deep-set longlines that fish in deeper water, with floats spread farther apart and more hooks between floats, that typically target tunas; and 2) shallow-set longlines that are buoyed to the surface, with fewer hooks between floats, which typically target swordfish (WPRFMC 2014). The fleet primarily operates in the Western and Central Pacific Ocean but also fishes (with longlines) in the Eastern Pacific Ocean. It accounts for almost 90% of the ex-vessel value of total commercial landings in Hawaii and in 2022, the deep-set fleet caught 82% (by volume) of all pelagic species in Hawaiian commercial pelagic fisheries (WPRFMC 2023). The shallow-set fleet caught only 6% of pelagic species by volume, while the trolling line fishery accounted for 6% of total catch, and the handline fleet (Main Hawaiian Islands and offshore) accounted for 4% of total catch by volume (ibid). The majority of the 3,201 pelagic Hawaii fishing licenses issued in 2022 went to longline and troll fishermen (52% and 31% respectively) (WPRFMC 2023).

Swordfish

Catches of swordfish in the western and central north Pacific Ocean have varied over time, peaking during the late 1950s and again during the early to mid 1990s. The majority of swordfish are caught by longlines. Total catch of swordfish in the Hawaiian pelagic fisheries in 2022 was estimated to be 2,048,000 lbs (average from 2013 to 2022 was 2,458,500 lbs)

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(WPRFMC 2023). Catches of swordfish outside of the US EEZ account for the majority of Pacific swordfish harvests.

Tunas

The total catches of albacore tuna in the Pacific Ocean in 2021 were 111,656 t (average 146,035 t from 2012-2021) (WPRFMC 2023). Longline fisheries catch the majority of albacore tuna in the Pacific Ocean (WCPFC 2017). In Hawaii, longline landings of albacore tuna peaked during the mid-to-late 1990s and early 2000s. Peak landings were 1,805 t in 1999, and in 2022 roughly 228.5 t of albacore tuna were landed by the Hawaii commercial pelagic fleet (WPRFMC 2023).

Total catches of bigeye tuna in the western and central Pacific Ocean have increased over time, peaking in the mid-2000s at just under 200,000 t. Total catch of bigeye in the Pacific Ocean in 2021 was estimated to be 222,013 t (average 245,440 2012-2021) (WPRFMC 2023). The majority of bigeye catches occur within equatorial regions of the western and central Pacific Ocean. In 2022, approximately 8,064.5 t of bigeye were landed by the Hawaiian commercial pelagic fleet.

Total catches of yellowfin tuna in the Pacific Ocean have increased moderately since 2008 and peaked in 2021 at 1,034,496 t (WPRFMC 2023). The majority of this catch is by purse seiners (WCPFC 2017). Total Hawaii commercial pelagic catches of yellowfin tuna in 2022 were 3,562 t. Hawaii longline catches of yellowfin tuna have varied over time, averaging 2,280 t from 2000-2018 (PIFSC 2020).

Skipjack tuna are predominantly caught with purse seine gear in the Pacific. Catches of skipjack in the Pacific Ocean were approximately 1.95 million t in 2021, which is very close to the average 2008-2017 but lower than the catch was in 2018-2020 (WPRFMC 2018) (WPRFMC 2023). The Hawaii longline fishery accounts for a small portion of this, and 2022 landings of skipjack were approximately 230 t (WPRFMC 2023).

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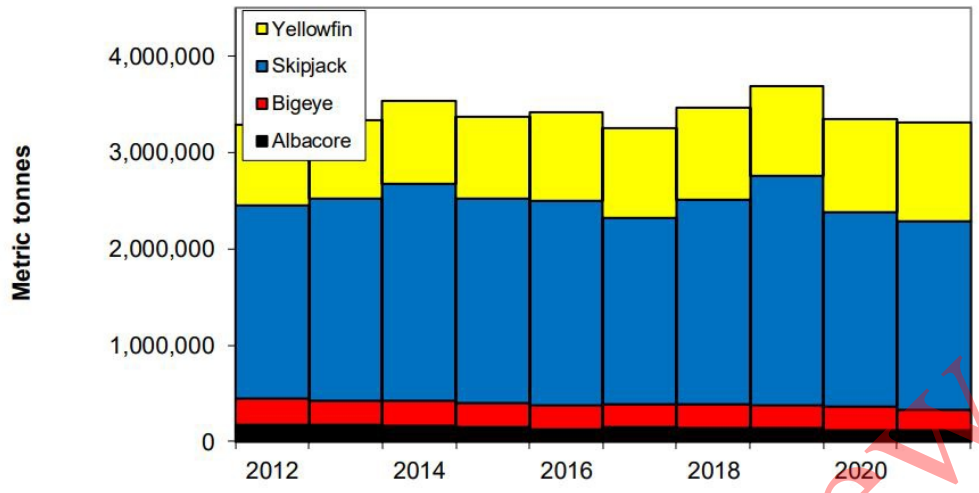

Figure 2: Total annual tuna catches in the Pacific, by species, from 2012 to 2021. Source: (WPRFMC 2023).

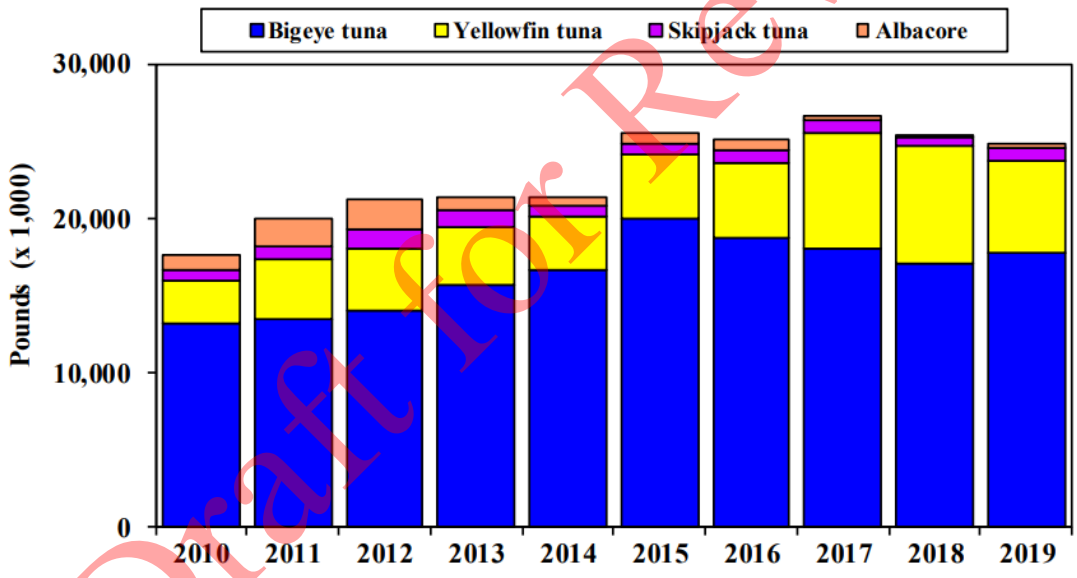

Figure 3: Total tuna catches in the Hawaiian pelagic fleet, by species, from 2013 to 2022. Source: (WPRFMC 2023).

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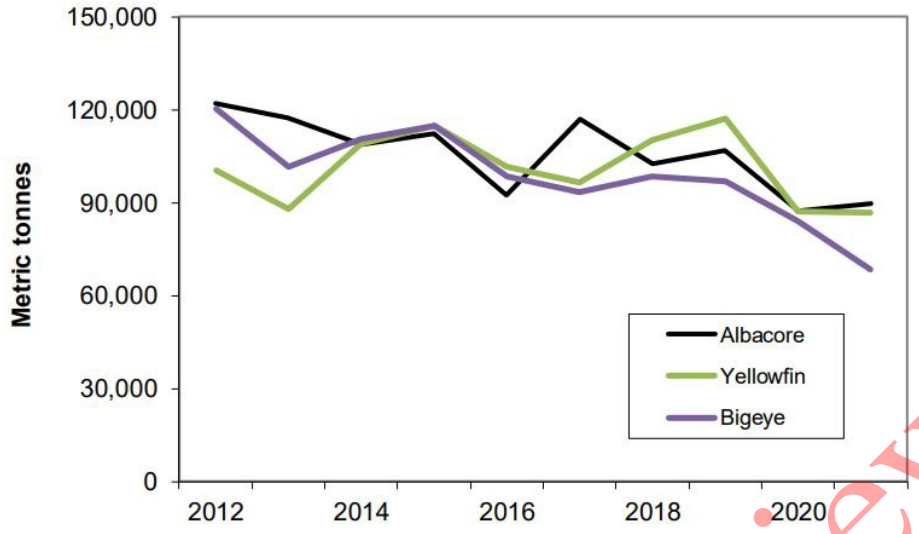

Figure 4: Total tuna catches in longline gear in the Pacific, by species, from 2012 to 2021. Source: (WPRFMC 2023).

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Billfish

During 2021, longline vessels operating in the Pacific Ocean caught 10,172 t of blue marlin, 1,345 t of black marlin, and 4,953 t of striped marlin (WPRFMC 2023). The 2021 catch levels for all three species were below the average catch for each species from 2012 to 2021 (ibid). The 2022 billfish catches in the Hawaii permitted fleet were as follows: 619.5 t of blue marlin, 322.5 t of striped marlin, 148 t of spearfish, and 13.5 t of other marlins (ibid). Black marlin catch was not reported separately for the Hawaii fleet.

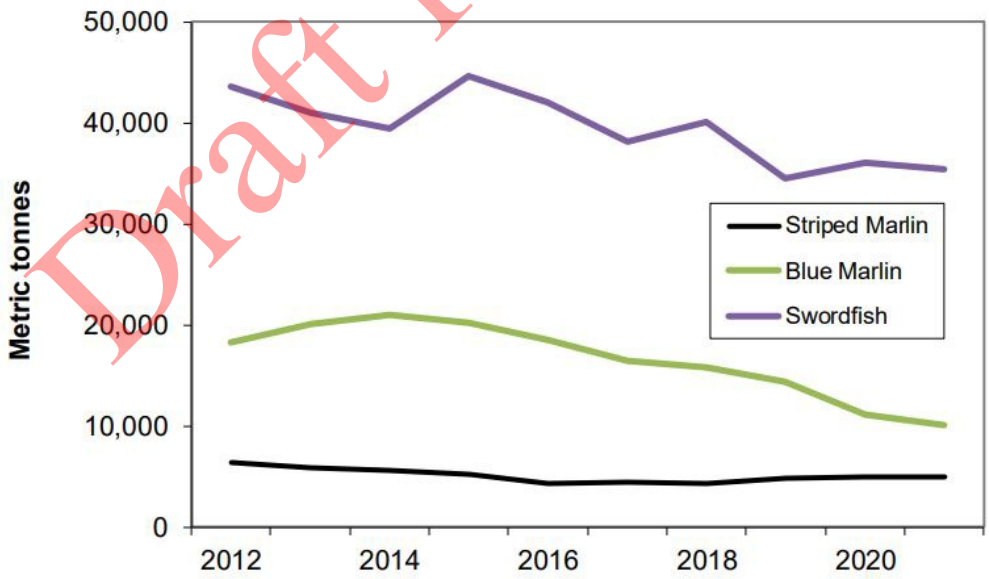

Figure 5: Total billfish catches by longline gear in the Pacific, by species, from 2012 to 2021. Source: (WPRFMC 2023).

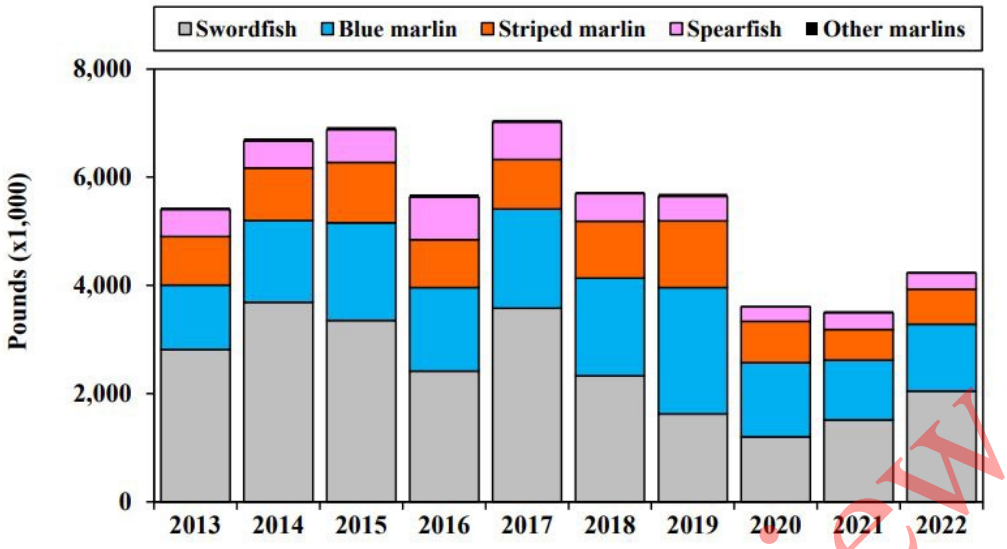

Figure 6: Total billfish catch in the Hawaiian pelagic fleet, by species, 2013-2022. Source: (WPRFMC 2023).

Dolphinfish and Wahoo

In 2022, the Hawaii commercial pelagic fleet landed 387.5 t of dolphinfish and 333.5 t wahoo (WPRFMC 2023).

Opah

The 2022 opah landings for the Hawaii pelagic fleet were roughly 238.8 t (WPRFMC 2023)..

Pomfret and Short-billed Spearfish

In 2022, roughly 272.2 t of "other pelagics" were landed by the Hawaii fleet (WPRFMC 2023). This category includes pomfrets and other species. Of this, about 194.6 t can be attributed to pomfret species (ibid). Shortbill spearfish catch is only reported in number of fish for Hawaii longlines, rather than in weight. In 2022, over 11,000 shortbill spearfish were caught in the deep-set fishery, and 62 were caught in the shallow-set fishery.

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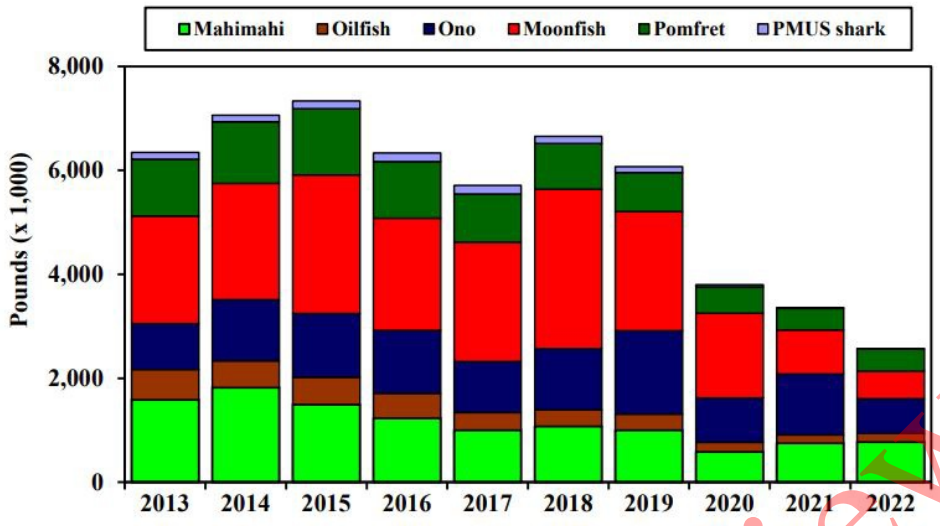

Figure 7: Total other pelagics catch in the Hawaiian pelagic fleet, by species, 2013-2022. Source; (WPRFMC 2023).

Importance to the US/North American market

In 2019, the US landed approximately 3,408 t of swordfish (Atlantic and Pacific), and imported approximately 11,500 t. Swordfish imports into the US were primarily from Ecuador (36.9%), Brazil (14.1%), Costa Rica (7.9%) and Canada (7.1%), which could include processing nations (NMFS 2020).

In 2019, the U.S imported 150,469 t of fresh and frozen tuna, down 19,850 tons (11.7%) from 2016 but the value of fresh and frozen tuna imports increased by 2.2% to $1.0 billion. Imports of canned tuna were 141,480 tons, up 8,882 tons (6.7%) from 2016. The value of canned tuna imports also increased by $108.9 million (20.8%) from 2016. Tuna is also re-exported from the US (1,066 tons valued at $7.4 million) as fresh and frozen products (NMFS 2020). Bigeye tuna within the IATTC Convention Area are primarily imported from Panama and Ecuador (33% each). Skipjack tuna are primarily imported from Mexico (99%). The majority of yellowfin tuna were imported from Mexico (31%) and Venezuela (28%) (NMFS 2020).

In 2022, US fishermen landed 45 million pounds of tuna (bigeye, skipjack, yellowfin, bluefin, albacore), valued at nearly $169 million. Bigeye landings in 2022 were over 16 million pounds, albacore over 16 million pounds, skipjack over 302,000 pounds, and yellowfin over 9 million pounds (NMFS 2023b). Of these, bigeye was the most valuable species (in dollar value per pound landed), followed by yellowfin.

Common and market names

See table below under Primary product forms.

Primary product forms

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In Hawaii, swordfish, albacore, bigeye, skipjack and yellowfin tuna are typically landed and sold fresh for both cooking and for sushi and sashimi.See below for common, market and primary product forms of tuna, billfish, and other pelagic species.

Table 1

Pelagic species	Common/Market Name	Product forms
Albacore tuna	‘Ahi palaha, Tombo, Germon, albecore, T. germo, albacore	Fresh, frozen, canned, filet, rounds
Bigeye tuna	‘Ahi po’onui, Mabachi, bigeye	Fresh, sashimi, frozen, canned, filet, rounds
Black marlin	A'u, Makaira	Fresh, frozen, filet
Blue marlin	A'u, Kajiki	Fresh, frozen, filet
Dolphinfish	Mahi mahi, dorado	Fresh, frozen, filet
Opah	Moonfish, opah	Fresh, frozen, filet
Pomfret	Monchong	Fresh, frozen, filet
Short-billed spearfish	Hebi	Fresh, frozen, filet
Striped marlin	Nairagi	Fresh, frozen, filet
Skipjack tuna	Bonito, lesser tuna, Aku	Fresh, frozen, canned, filet, rounds
Swordfish	A’uku, broadbilled, broadbill, espada, emperado, mekajiki, shutome	Fresh, frozen, canned, filet, rounds
Wahoo	Ono	Fresh, frozen, filet
Yellowfin tuna	'Ahi shibi	Fresh, frozen, canned, filet, rounds

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Production volume notes

Volumes for the MHI troll fishery and the handline fishery (MHI and offshore, combined) are for 2022. Volumes for the deep-set and shallow-set longline fisheries can be found in the Appendix section. For the purposes of this assessment, ratings in these fisheries are split into east and west (following stock delineations of target species), but catch is presented in sum and is not separated by area. While it is unknown exactly how much of the catch volume noted in the Appendix can be attributed to east vs west Pacific ratings, the DSLL fishery set ~87.6% of its hooks in the WCPO in 2022, and the SSLL fishery set ~80.9% of its hooks in the WCPO in 2022.

Summary

This report reviews four United States pelagic fisheries in the western and central Pacific Ocean (WCPO) and eastern Pacific Ocean (EPO): the Hawaii shallow-set longline fishery targeting swordfish (*Xiphias gladius*); the Hawaii deep-set longline fishery targeting bigeye tuna (*Thunnus obesus*) and yellowfin tuna (*Thunnus albacares*), some of which also is landed in California; the Hawaii handline and hand-operated pole and line fishery targeting yellowfin (WCPO only); and the Hawaii trolling line fishery (WCPO only), which targets tunas, marlins, and other pelagic species. Other species caught in these fisheries that are assessed in this report include albacore tuna (*Thunnus alalunga*) and skipjack tuna (*Katsuwonus pelamis*), dolphinfish (*Coryphaena hippurus*), wahoo (*Acanthocybium solandri*), black, blue, and striped marlin (*Makaira indica, Makaira nigricans, Kajikia audax*), shortbill spearfish (*Tetrapturus angustirostris*), pomfrets (*Taractichthys spp.*), and opah (*Lampris guttatus*). Nearly all ratings for the deep-set longline fishery are yellow, with black and striped marlin rated red. All but swordfish (rated green) ratings in the shallow-set fishery are yellow, and all but dolphinfish and wahoo (rated yellow) ratings in the handline and troll fisheries are green.

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Assessments

This section assesses the sustainability of the fishery(s) relative to the Seafood Watch Standard for Fisheries, available at www.seafoodwatch.org. The specific standard used is referenced on the title page of all Seafood Watch assessments.

Criterion 1: Impacts on the Species Under Assessment

This criterion evaluates the impact of fishing mortality on the species, given its current abundance. When abundance is unknown, abundance is scored based on the species' inherent vulnerability, which is calculated using a Productivity-Susceptibility Analysis. The final Criterion 1 score is determined by taking the geometric mean of the abundance and fishing mortality scores. The Criterion 1 rating is determined as follows:

- Score >3.2 = **Green** or Low Concern
- Score >2.2 and ≤3.2 = **Yellow** or Moderate Concern
- Score ≤2.2 = **Red** or High Concern

Rating is Critical if Factor 1.3 (Fishing Mortality) is Critical.

Guiding principles

- *Ensure all affected stocks are healthy and abundant.*
- *Fish all affected stocks at sustainable level*

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Criterion 1 Summary

Albacore			
Region / Method	**Abundance**	**Fishing Mortality**	**Score**
North Pacific Stock - United States - Hawaii - Eastern Central Pacific Ocean | Northeast Pacific Ocean - Longline (deep-set) - FAO Major Area: Pacific, Northeast | Pacific, Eastern Central - Permit/License: Covers US vessels landing in Hawaii or California - RFMO: Inter-American Tropical Tuna Commission (IATTC)	5.000 Very Low Concern	5.000 Low Concern	**Green (5.000)**
North Pacific Stock - United States - Hawaii - Northwest Pacific Ocean | Western Central Pacific Ocean - Longline (deep-set) - FAO Major Area: Pacific, Western Central | Pacific, Northwest - RFMO: Western and Central Pacific Fisheries Commission (WCPFC)	5.000 Very Low Concern	5.000 Low Concern	**Green (5.000)**

Bigeye tuna			
Region / Method	**Abundance**	**Fishing Mortality**	**Score**
Western and Central Pacific Ocean (WCPO) Stock - United States - Hawaii - Western Central Pacific Ocean - Handlines and hand-operated pole-and-lines - FAO Major Area: Pacific, Western Central	5.000 Very Low Concern	5.000 Low Concern	**Green (5.000)**
Eastern Pacific Ocean Stock - United States - Hawaii - Eastern Central Pacific Ocean | Northeast Pacific Ocean - Longline (deep-set) - FAO Major Area: Pacific, Northeast | Pacific, Eastern Central - Permit/License: Covers US vessels landing in Hawaii or California - RFMO: Inter-American Tropical Tuna Commission (IATTC)	5.000 Very Low Concern	5.000 Low Concern	**Green (5.000)**
Western and Central Pacific Ocean (WCPO) Stock - United States - Hawaii - Northwest Pacific Ocean | Western Central Pacific Ocean - Longline (deep-set) - FAO Major Area: Pacific, Western Central | Pacific, Northwest	5.000 Very Low Concern	5.000 Low Concern	**Green (5.000)**

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Black marlin			
Region / Method	**Abundance**	**Fishing Mortality**	**Score**
United States - Hawaii - Eastern Central Pacific Ocean | Northeast Pacific Ocean - Longline (deep-set) - FAO Major Area: Pacific, Northeast | Pacific, Eastern Central - Permit/License: Covers US vessels landing in Hawaii or California - RFMO: Inter-American Tropical Tuna Commission (IATTC)	1.000 High Concern	3.000 Moderate Concern	**Red (1.732)**
United States - Hawaii - Northwest Pacific Ocean | Western Central Pacific Ocean - Longline (deep-set) - FAO Major Area: Pacific, Western Central | Pacific, Northwest - RFMO: Western and Central Pacific Fisheries Commission (WCPFC)	1.000 High Concern	3.000 Moderate Concern	**Red (1.732)**

Blue marlin			
Region / Method	**Abundance**	**Fishing Mortality**	**Score**
United States - Hawaii - Eastern Central Pacific Ocean | Northeast Pacific Ocean - Longline (deep-set) - FAO Major Area: Pacific, Northeast | Pacific, Eastern Central - Permit/License: Covers US vessels landing in Hawaii or California - RFMO: Inter-American Tropical Tuna Commission (IATTC)	3.670 Low Concern	5.000 Low Concern	**Green (4.284)**
United States - Hawaii - Northwest Pacific Ocean | Western Central Pacific Ocean - Longline (deep-set) - FAO Major Area: Pacific, Western Central | Pacific, Northwest	3.670 Low Concern	5.000 Low Concern	**Green (4.284)**
United States - Hawaii - Western Central Pacific Ocean - Trolling lines - FAO Major Area: Pacific, Western Central	3.670 Low Concern	5.000 Low Concern	**Green (4.284)**

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Dolphinfish			
Region / Method	**Abundance**	**Fishing Mortality**	**Score**
United States - Hawaii - Western Central Pacific Ocean - Handlines and hand-operated pole-and-lines	2.330 Moderate Concern	3.000 Moderate Concern	**Yellow (2.644)**
United States - Hawaii - Eastern Central Pacific Ocean | Northeast Pacific Ocean - Longline (deep-set) - Permit/License: Covers US vessels landing in Hawaii or California	2.330 Moderate Concern	3.000 Moderate Concern	**Yellow (2.644)**
United States - Hawaii - Northwest Pacific Ocean | Western Central Pacific Ocean - Longline (deep-set)	2.330 Moderate Concern	3.000 Moderate Concern	**Yellow (2.644)**
United States - Hawaii - Eastern Central Pacific Ocean | Northeast Pacific Ocean - Longline (shallow-set)	2.330 Moderate Concern	3.000 Moderate Concern	**Yellow (2.644)**
United States - Hawaii - Northwest Pacific Ocean | Western Central Pacific Ocean - Longline (shallow-set)	2.330 Moderate Concern	3.000 Moderate Concern	**Yellow (2.644)**
United States - Hawaii - Western Central Pacific Ocean - Trolling lines	2.330 Moderate Concern	3.000 Moderate Concern	**Yellow (2.644)**

Opah			
Region / Method	**Abundance**	**Fishing Mortality**	**Score**
United States - Hawaii - Eastern Central Pacific Ocean | Northeast Pacific Ocean - Longline (deep-set) - FAO Major Area: Pacific, Northeast | Pacific, Eastern Central - Permit/License: Covers US vessels landing in Hawaii or California - RFMO: Inter-American Tropical Tuna Commission (IATTC)	3.670 Low Concern	5.000 Low Concern	**Green (4.284)**
United States - Hawaii - Northwest Pacific Ocean | Western Central Pacific Ocean - Longline (deep-set) - FAO Major Area: Pacific, Western Central | Pacific, Northwest - RFMO: Western and Central Pacific Fisheries Commission (WCPFC)	2.330 Moderate Concern	3.000 Moderate Concern	**Yellow (2.644)**

Draft for Review

Shortbill spearfish			
Region / Method	**Abundance**	**Fishing Mortality**	**Score**
United States - Hawaii - Eastern Central Pacific Ocean | Northeast Pacific Ocean - Longline (deep-set) - Permit/License: Covers US vessels landing in Hawaii or California	2.330 Moderate Concern	3.000 Moderate Concern	**Yellow (2.644)**
United States - Hawaii - Northwest Pacific Ocean | Western Central Pacific Ocean - Longline (deep-set)	2.330 Moderate Concern	3.000 Moderate Concern	**Yellow (2.644)**
United States - Hawaii - Eastern Central Pacific Ocean | Northeast Pacific Ocean - Longline (shallow-set)	2.330 Moderate Concern	3.000 Moderate Concern	**Yellow (2.644)**
United States - Hawaii - Northwest Pacific Ocean | Western Central Pacific Ocean - Longline (shallow-set)	2.330 Moderate Concern	3.000 Moderate Concern	**Yellow (2.644)**

Sickle pomfret			
Region / Method	**Abundance**	**Fishing Mortality**	**Score**
United States - Hawaii - Eastern Central Pacific Ocean | Northeast Pacific Ocean - Longline (deep-set) - FAO Major Area: Pacific, Northeast | Pacific, Eastern Central - Permit/License: Covers US vessels landing in Hawaii or California - RFMO: Inter-American Tropical Tuna Commission (IATTC)	2.330 Moderate Concern	3.000 Moderate Concern	**Yellow (2.644)**
United States - Hawaii - Northwest Pacific Ocean | Western Central Pacific Ocean - Longline (deep-set) - FAO Major Area: Pacific, Western Central | Pacific, Northwest - RFMO: Western and Central Pacific Fisheries Commission (WCPFC)	2.330 Moderate Concern	3.000 Moderate Concern	**Yellow (2.644)**

Draft for Review

Skipjack tuna			
Region / Method	**Abundance**	**Fishing Mortality**	**Score**
Eastern Pacific Ocean - United States - Hawaii - Eastern Central Pacific Ocean | Northeast Pacific Ocean - Longline (deep-set) - FAO Major Area: Pacific, Northeast | Pacific, Eastern Central - Permit/License: Covers US vessels landing in Hawaii or California - RFMO: Inter-American Tropical Tuna Commission (IATTC)	5.000 Very Low Concern	5.000 Low Concern	**Green (5.000)**
Western and Central Pacific Ocean (WCPO) Stock - United States - Hawaii - Northwest Pacific Ocean | Western Central Pacific Ocean - Longline (deep-set) - FAO Major Area: Pacific, Western Central | Pacific, Northwest	5.000 Very Low Concern	5.000 Low Concern	**Green (5.000)**
Western and Central Pacific Ocean (WCPO) Stock - United States - Hawaii - Western Central Pacific Ocean - Trolling lines - FAO Major Area: Pacific, Western Central	5.000 Very Low Concern	5.000 Low Concern	**Green (5.000)**

Striped marlin			
Region / Method	**Abundance**	**Fishing Mortality**	**Score**
United States - Hawaii - Eastern Central Pacific Ocean | Northeast Pacific Ocean - Longline (deep-set) - FAO Major Area: Pacific, Northeast | Pacific, Eastern Central - Permit/License: Covers US vessels landing in Hawaii or California - RFMO: Inter-American Tropical Tuna Commission (IATTC)	1.000 High Concern	1.000 High Concern	**Red (1.000)**
United States - Hawaii - Northwest Pacific Ocean | Western Central Pacific Ocean - Longline (deep-set) - FAO Major Area: Pacific, Western Central | Pacific, Northwest - RFMO: Western and Central Pacific Fisheries Commission (WCPFC)	1.000 High Concern	1.000 High Concern	**Red (1.000)**

Draft for Review

Swordfish			
Region / Method	**Abundance**	**Fishing Mortality**	**Score**
Northwestern and Central Pacific Ocean Stock - United States - Hawaii - Eastern Central Pacific Ocean | Northeast Pacific Ocean - Longline (shallow-set) - FAO Major Area: Pacific, Northeast | Pacific, Eastern Central - RFMO: Inter-American Tropical Tuna Commission (IATTC)	5.000 Very Low Concern	5.000 Low Concern	**Green (5.000)**
Northwestern and Central Pacific Ocean Stock - United States - Hawaii - Northwest Pacific Ocean | Western Central Pacific Ocean - Longline (shallow-set) - FAO Major Area: Pacific, Western Central | Pacific, Northwest - RFMO: Western and Central Pacific Fisheries Commission (WCPFC)	5.000 Very Low Concern	5.000 Low Concern	**Green (5.000)**

Wahoo			
Region / Method	**Abundance**	**Fishing Mortality**	**Score**
United States - Hawaii - Eastern Central Pacific Ocean | Northeast Pacific Ocean - Longline (deep-set) - FAO Major Area: Pacific, Northeast | Pacific, Eastern Central - Permit/License: Covers US vessels landing in Hawaii or California - RFMO: Inter-American Tropical Tuna Commission (IATTC)	3.670 Low Concern	5.000 Low Concern	**Green (4.284)**
United States - Hawaii - Northwest Pacific Ocean | Western Central Pacific Ocean - Longline (deep-set) - FAO Major Area: Pacific, Western Central | Pacific, Northwest	2.330 Moderate Concern	3.000 Moderate Concern	**Yellow (2.644)**
United States - Hawaii - Western Central Pacific Ocean - Trolling lines - FAO Major Area: Pacific, Western Central	2.330 Moderate Concern	3.000 Moderate Concern	**Yellow (2.644)**

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Yellowfin tuna			
Region / Method	**Abundance**	**Fishing Mortality**	**Score**
Western and Central Pacific Ocean (WCPO) Stock - United States - Hawaii - Western Central Pacific Ocean - Handlines and hand-operated pole-and-lines	5.000 Very Low Concern	5.000 Low Concern	**Green (5.000)**
Eastern Pacific Ocean Stock - United States - Hawaii - Eastern Central Pacific Ocean | Northeast Pacific Ocean - Longline (deep-set) - FAO Major Area: Pacific, Northeast | Pacific, Eastern Central - Permit/License: Covers US vessels landing in Hawaii or California - RFMO: Inter-American Tropical Tuna Commission (IATTC)	3.670 Low Concern	5.000 Low Concern	**Green (4.284)**
Western and Central Pacific Ocean (WCPO) Stock - United States - Hawaii - Northwest Pacific Ocean | Western Central Pacific Ocean - Longline (deep-set) - FAO Major Area: Pacific, Western Central | Pacific, Northwest	5.000 Very Low Concern	5.000 Low Concern	**Green (5.000)**
Western and Central Pacific Ocean (WCPO) Stock - United States - Hawaii - Western Central Pacific Ocean - Trolling lines	5.000 Very Low Concern	5.000 Low Concern	**Green (5.000)**

Criterion 1 Assessment

Scoring Guidelines

Factor 1.1 - Abundance

Goal: Stock abundance and size structure of native species is maintained at a level that does not impair recruitment or productivity.

- *5 (Very Low Concern) — Strong evidence exists that the population is above an appropriate target abundance level (given the species' ecological role), or near virgin biomass.*
- *3.67 (Low Concern) — Population may be below target abundance level, but is at least 75% of the target level, OR data-limited assessments suggest population is healthy and species is not highly vulnerable.*
- *2.33 (Moderate Concern) — Population is not overfished but may be below 75% of the target abundance level, OR abundance is unknown and the species is not highly vulnerable.*
- *1 (High Concern) — Population is considered overfished/depleted, a species of concern, threatened or endangered, OR abundance is unknown and species is highly vulnerable.*

Factor 1.2 - Fishing Mortality

Goal: Fishing mortality is appropriate for current state of the stock.

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- *5 (Low Concern) – Probable (>50%) that fishing mortality from all sources is at or below a sustainable level, given the species ecological role, OR fishery does not target species and fishing mortality is low enough to not adversely affect its population.*
- *3 (Moderate Concern) – Fishing mortality is fluctuating around sustainable levels, OR fishing mortality relative to a sustainable level is uncertain.*
- *1 (High Concern) – Probable that fishing mortality from all source is above a sustainable level.*

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Albacore *(Thunnus alalunga)*

1.1 Abundance

North Pacific Stock - United States - Hawaii - Eastern Central Pacific Ocean | Northeast Pacific Ocean - Longline (deep-set) - FAO Major Area: Pacific, Northeast | Pacific, Eastern Central - Permit/License: Covers US vessels landing in Hawaii or California - RFMO: Inter-American Tropical Tuna Commission (IATTC)

North Pacific Stock - United States - Hawaii - Northwest Pacific Ocean | Western Central Pacific Ocean - Longline (deep-set) - FAO Major Area: Pacific, Western Central | Pacific, Northwest - RFMO: Western and Central Pacific Fisheries Commission (WCPFC)

Very Low Concern

Albacore is assessed as a single stock in the North Pacific. The most recent stock assessment was conducted in 2023 using biomass data through 2021 and a length-based, sex-structured modeling approach (WCPFC 2024b). The limit reference point (LRP) for this stock has been set at 14%$SSB_{current, F=0}$, or 20% of current biomass when there is no fishing mortality. No abundance-based target reference point (TRP) has been set for North Pacific albacore, but a threshold reference point of 30%$SSB_{current, F=0}$ is used instead (ibid). The SSB has been relatively stable since 2000, and SSB in 2021 was estimated to be above both the limit and threshold reference points ($SSB_{2021}/SSB_{current, F=0}$ = 0.54); SSB_{2021} was thus approximately 1.8 times the threshold reference point)) (ibid). WCPFC denotes the stock as not overfished, though the Scientific Committee does note some uncertainty in the 2018-2021 biomass estimates. Based on a stock assessment using data <5 years old with a finding that SSB is above management reference points, Abundance is considered "very low concern." (per lines 1.a-b in table 1.1.1 the Seafood Watch Standard).

1.2 Fishing Mortality

North Pacific Stock - United States - Hawaii - Eastern Central Pacific Ocean | Northeast Pacific Ocean - Longline (deep-set) - FAO Major Area: Pacific, Northeast | Pacific, Eastern Central - Permit/License: Covers US vessels landing in Hawaii or California - RFMO: Inter-American Tropical Tuna Commission (IATTC)

North Pacific Stock - United States - Hawaii - Northwest Pacific Ocean | Western Central Pacific Ocean - Longline (deep-set) - FAO Major Area: Pacific, Western Central | Pacific, Northwest - RFMO: Western and Central Pacific Fisheries Commission (WCPFC)

Low Concern

WCPFC and IATTC use a target reference point of $F_{45\%SPR}$ for fishing mortality. The 2023 stock assessment of North Pacific albacore found that 2018-2020 (current) fishing

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mortality was below this target ($F_{\%SPR, 2018-2020} = F59_{\%SPR}$) (WCPFC 2024b). The range of possible fishing mortality values stayed below the target reference point (95% CI = $F72_{\%SPR}$ - $F46_{\%SPR}$) (ibid). Based on a stock assessment using data <10 years old with a finding that fishing mortality is below fishing mortality reference points, Fishing Mortality is considered "low concern" (per line 1 in table 1.2.1 of the Seafood Watch Standard).

Bigeye tuna *(Thunnus obesus)*

1.1 Abundance

Eastern Pacific Ocean Stock - United States - Hawaii - Eastern Central Pacific Ocean | Northeast Pacific Ocean - Longline (deep-set) - FAO Major Area: Pacific, Northeast | Pacific, Eastern Central - Permit/License: Covers US vessels landing in Hawaii or California - RFMO: Inter-American Tropical Tuna Commission (IATTC)

Very Low Concern

Bigeye tuna are assessed as a single stock in the EPO. The most recent stock assessment used biomass data through the beginning of 2024 and estimated that spawning biomass at that time was greater than the dynamic MSY level ($S_{current}/S_{MSY} = 1.29$) (IATTC 2024a). Based on a stock assessment <5 years old indicating that biomass is above a target reference point, Abundance is considered "very low concern" (per lines 1.a-b in table 1.1.1 of the Seafood Watch Standard).

Western and Central Pacific Ocean (WCPO) Stock - United States - Hawaii - Western Central Pacific Ocean - Handlines and hand-operated pole-and-lines - FAO Major Area: Pacific, Western Central

Western and Central Pacific Ocean (WCPO) Stock - United States - Hawaii - Northwest Pacific Ocean | Western Central Pacific Ocean - Longline (deep-set) - FAO Major Area: Pacific, Western Central | Pacific, Northwest

Very Low Concern

Bigeye tuna in the WCPO were most recently assessed in 2023 using biomass data up to 2021. According to the updated model, the median recent (2018-2021) spawning biomass depletion ratio was above the limit reference point (a depletion ratio of 0.2), and the median recent and latest (2021) spawning biomass were above the MSY level ($SB_{recent}/SB_{F=0} = 0.35$ (80% CI = 0.31-0.40); $SB_{recent}/SB_{MSY} = 1.83$ (80% CI = 1.32-2.38); $SB_{latest}/SB_{MSY} = 1.45$ (80% CI = 0.86-1.97)) (WCPFC 2024b). There is no target reference point formally in place, but WCPFC has agreed to an interim target of maintaining the spawning biomass depletion ratio at or above the 2012-2015 average level (0.34) (ibid).

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The Commission has also noted that the spawning potential has been declining for several decades. Based on a stock assessment using data<5 years old indicating that the stock is above the limit reference point, MSY level, and an interim target level.WCPO bigeye tuna Abundacne is considered “very low concern” (per lines 1.a and b in table 1.1.1 of the Seafood Watch Standard).

1.2 Fishing Mortality

Eastern Pacific Ocean Stock - United States - Hawaii - Eastern Central Pacific Ocean | Northeast Pacific Ocean - Longline (deep-set) - FAO Major Area: Pacific, Northeast | Pacific, Eastern Central - Permit/License: Covers US vessels landing in Hawaii or California - RFMO: Inter-American Tropical Tuna Commission (IATTC)

Low Concern

The 2024 assessment of EPO bigeye found that there was a 24.7% probability that 2021-2023 fishing mortality was above the TRP of F_{MSY}, compared to a 58.5% probability it was above the TRP in 2017-2019 (IATTC 2024a). Fishing mortality was estimated to be 18% lower than the MSY level ($F_{current}/F_{MSY}$ = 0.82). Thus, fishing mortality has decreased in recent years to below a sustainable level and is considered “low concern” (per line 1 in table 1.2.1 of the Seafood Watch Standard).

Western and Central Pacific Ocean (WCPO) Stock - United States - Hawaii - Western Central Pacific Ocean - Handlines and hand-operated pole-and-lines - FAO Major Area: Pacific, Western Central

Western and Central Pacific Ocean (WCPO) Stock - United States - Hawaii - Northwest Pacific Ocean | Western Central Pacific Ocean - Longline (deep-set) - FAO Major Area: Pacific, Western Central | Pacific, Northwest

Low Concern

The 2023 WCPO bigeye stock assessment results indicate that recent (2017-2020) median fishing mortality is below the MSY level (F_{recent}/F_{MSY} = 0.59 (80% CI = 0.46-0.74)), and none of the 54 models used in the assessment estimated that recent fishing mortality was above MSY (WCPFC 2024b). All models in the assessment indicated that the stock is not overfished or experiencing overfishing. Based on an assessment using data <10 years old, indicating that fishing mortality is below a sustainable level, Fishing Mortality is considered “low concern” (per line 1 in table 1.2.1 of the Seafood Watch Standard).

Black marlin *(Istiompax indica)*

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1.1 Abundance

United States - Hawaii - Eastern Central Pacific Ocean | Northeast Pacific Ocean - Longline (deep-set) - FAO Major Area: Pacific, Northeast | Pacific, Eastern Central - Permit/License: Covers US vessels landing in Hawaii or California - RFMO: Inter-American Tropical Tuna Commission (IATTC)

United States - Hawaii - Northwest Pacific Ocean | Western Central Pacific Ocean - Longline (deep-set) - FAO Major Area: Pacific, Western Central | Pacific, Northwest - RFMO: Western and Central Pacific Fisheries Commission (WCPFC)

High Concern

No assessment for black marlin has been conducted in the Pacific Ocean. The International Union for Conservation of Nature (IUCN) has classified this species as "Data Deficient" with an unknown population trend (Collette et al 2022d) . Black marlin have a high vulnerability to fishing (PSA=3.21, see detailed section below). Based on the PSA score, Abundance is considered "high concern" (per line 3.e in table 1.1.1 of the Seafood Watch Standard).

Supplementary Information

PSA for black marlin in the Pacific (see Seafood Watch Fisheries Standard Version 4 for methodology details).

Productivity Attribute	High productivity (low risk, score = 1)	Medium productivity (medium risk, score = 2)	Low productivity (high risk, score = 3)	Score	Value and notes
Average age at maturity (yrs)	< 5	5-15	>15	1	2 years (females); 4-5 years (males) (Sun et al. 2015b)
Average maximum age (yrs) (don't use if max size is available)	<10	10-25	>25		Not scored as max size is available
Von Bertalanffy (Brody) Growth Coefficient (K)	>0.25	0.15-0.25	<0.15	1	0.47 (Froese and Pauly 2020)

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Productivity Attribute	High productivity (low risk, score = 1)	Medium productivity (medium risk, score = 2)	Low productivity (high risk, score = 3)	Score	Value and notes
Fecundity (eggs/yr)	>20,000	100-20,000	<100	1	11,000,000 (Sun et al. 2015b)
Average maximum size (cm)	< 100	100-300	>300	3	400 cm (Sun et al. 2015a)
Average size at maturity (cm)	<40	40-200	>200	3	209 cm (Sun et al. 2015b)
Reproductive strategy	Broadcast spawner	Demersal egg layer or brooder	Live bearer	1	Broadcast spawner
Productivity score (mean of attribute scores)				**1.57**	

Susceptibility Attribute (default scores in bold)	Low S (score = 1)	Medium S (score = 2)	High S (score = 3)	Score	Value and notes
Areal overlap (all fisheries)	>90% of species concentration is unfished	70-90% of species concentration is unfished	**<30% of species concentration is unfished**	3	Default value selected
Vertical overlap (all fisheries)	>67% of species' depth range is unfished	33-66% of species' depth range is unfished	**<33% of species' depth range is unfished**	3	Default value selected
Seasonal Availability (all fisheries)	Fisheries overlap with species <3 months/year	Fisheries overlap with species 3-6 months/year	**Fisheries overlap with species >6 months/year**	3	Default value selected

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Susceptibility Attribute (default scores in bold)	Low S (score = 1)	Medium S (score = 2)	High S (score = 3)	Score	Value and notes
Selectivity of fishery (specific to fishery under assessment)	Species is not targeted AND is not likely to be captured by gear	**Species is targeted, or is incidentally encountered AND is not likely to escape the gear**	Species is targeted or is incidentally encountered AND combination of fishery attributes and species' biology increase in susceptibility to the gear	2	Default value selected
Post-capture mortality (specific to fishery under assessment)	>66% individuals survive post-capture	33-66% individuals survive post-capture	**Retained species or >66% do not survive post-capture**	3	Default value selected
Susceptibility score (mean of attribute scores)				**2.8**	

Productivity-Susceptibility Score ($V=v(P^2+S^2)$)	3.21
Vulnerability Rating: <2.64 = Low vulnerability, = 2.64 and = 3.18 = Medium vulnerability, >3.18 = High vulnerability	High

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1.2 Fishing Mortality

United States - Hawaii - Eastern Central Pacific Ocean | Northeast Pacific Ocean - Longline (deep-set) - FAO Major Area: Pacific, Northeast | Pacific, Eastern Central - Permit/License: Covers US vessels landing in Hawaii or California - RFMO: Inter-American Tropical Tuna Commission (IATTC)

United States - Hawaii - Northwest Pacific Ocean | Western Central Pacific Ocean - Longline (deep-set) - FAO Major Area: Pacific, Western Central | Pacific, Northwest - RFMO: Western and Central Pacific Fisheries Commission (WCPFC)

Moderate Concern

No stock assessment has been conducted for black marlin in the Pacific Ocean. Because Fishing Mortality is unknown, it is considered "moderate concern" (per line 3 in table 1.2.1 of the Seafood Watch Standard).

Blue marlin *(Makaira nigricans)*

1.1 Abundance

United States - Hawaii - Eastern Central Pacific Ocean | Northeast Pacific Ocean - Longline (deep-set) - FAO Major Area: Pacific, Northeast | Pacific, Eastern Central - Permit/License: Covers US vessels landing in Hawaii or California - RFMO: Inter-American Tropical Tuna Commission (IATTC)

United States - Hawaii - Northwest Pacific Ocean | Western Central Pacific Ocean - Longline (deep-set) - FAO Major Area: Pacific, Western Central | Pacific, Northwest

United States - Hawaii - Western Central Pacific Ocean - Trolling lines - FAO Major Area: Pacific, Western Central

Low Concern

Blue marlin are assessed as a single stock in the Pacific. the latest stock assessment was completed in 2021 using data through 2019, and found a SSB/SSB_{MSY} ratio of 1.17 (ISC 2021). Based on a stock assessment using data <10 years old with a finding that $SSB>SSB_{MSY}$, Abundance is considered “low concern” (per line 1.b in table 1.1.1 of the Seafood Watch Standard).

1.2 Fishing Mortality

United States - Hawaii - Eastern Central Pacific Ocean | Northeast Pacific Ocean - Longline (deep-set) - FAO Major Area: Pacific, Northeast | Pacific, Eastern Central - Permit/License: Covers US vessels landing in Hawaii or California - RFMO: Inter-American Tropical Tuna Commission (IATTC)

United States - Hawaii - Northwest Pacific Ocean | Western Central Pacific Ocean - Longline (deep-set) - FAO Major Area: Pacific, Western Central | Pacific, Northwest

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United States - Hawaii - Western Central Pacific Ocean - Trolling lines - FAO Major Area: Pacific, Western Central

Low Concern

The last assessment for blue marlin was conducted in 2020. Fishing mortality rates reached a high between 2003 and 2006 but have since declined, and fishing mortality has been below the MSY level since around 2005. Fishing mortality rates estimated in this assessment are currently below levels needed to produce the maximum sustainable yield (F_{2019}/F_{MSY} = 0.50) (ISC 2021). Fishing mortality from 2016 to 2019 was also 28% below $F_{20\%SSB0}$, the limit reference point used in the assessment. Based on these results, blue marlin is currently not subject to overfishing, with over a 90% probability (ibid). Because recent fishing mortality is below both reference points used for the purposes of the 2020 assessment, it is considered "low concern" (per line 1 in table 1.2.1 of the Seafood Watch Standard).

Dolphinfish *(Coryphaena hippurus)*

1.1 Abundance

United States - Hawaii - Western Central Pacific Ocean - Handlines and hand-operated pole-and-lines

United States - Hawaii - Eastern Central Pacific Ocean | Northeast Pacific Ocean - Longline (deep-set) - Permit/License: Covers US vessels landing in Hawaii or California

United States - Hawaii - Northwest Pacific Ocean | Western Central Pacific Ocean - Longline (deep-set)

United States - Hawaii - Eastern Central Pacific Ocean | Northeast Pacific Ocean - Longline (shallow-set)

United States - Hawaii - Northwest Pacific Ocean | Western Central Pacific Ocean - Longline (shallow-set)

United States - Hawaii - Western Central Pacific Ocean - Trolling lines

Moderate Concern

Data are limited for dolphinfish (also known as mahimahi and dorado) in the EPO and WCPO. No stock assessment has been conducted for dolphinfish in the western Pacific, and in the eastern Pacific, a stock assessment only exists for the southern EPO. The IUCN has assessed dolphinfish as a species of Least Concern, but this assessment is >10 years old (Collette et al. 2011) and so cannot be used for scoring. Therefore, a PSA was

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performed, resulting in a score of 3.10 (medium vulnerability). Based on the PSA results, Abundance is considered "moderate concern" (per line 2.e in table 1.1.1 of the Seafood Watch Standard).

Supplementary Information

PSA for dolphinfish in the Pacific (see Seafood Watch Fisheries Standard Version 4 for methodology details).

Productivity Attribute	High productivity (low risk, score = 1)	Medium productivity (medium risk, score = 2)	Low productivity (high risk, score = 3)	Score	Value and notes
Average age at maturity (yrs)	< 5	5-15	>15	1	1 year (Froese and Pauly 2019)} (Collette et al. 2011)
Average maximum age (yrs) (don't use if max size is available)	<10	10-25	>25		Not scored as max size is available
Von Bertalanffy (Brody) Growth Coefficient (K)	>0.25	0.15-0.25	<0.15	1	0.4 (Froese and Pauly 2019)
Fecundity (eggs/yr)	>20,000	100-20,000	<100	1	85,000 (Froese and Pauly 2019)
Average maximum size (cm)	< 100	100-300	>300	2	210cm (Froese and Pauly 2019)
Average size at maturity (cm)	<40	40-200	>200	2	55.8cm (Froese and Pauly 2019)
Reproductive strategy	Broadcast spawner	Demersal egg layer or brooder	Live bearer	1	Broadcast spawner (Froese and Pauly 2019)

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Productivity Attribute	High productivity (low risk, score = 1)	Medium productivity (medium risk, score = 2)	Low productivity (high risk, score = 3)	Score	Value and notes
Productivity score (mean of attribute scores)				**1.33**	

Susceptibility Attribute (default scores in bold)	Low S (score = 1)	Medium S (score = 2)	High S (score = 3)	Score	Value and notes
Areal overlap (all fisheries)	>90% of species concentration is unfished	70-90% of species concentration is unfished	**<30% of species concentration is unfished**	3	Unknown; Default value selected
Vertical overlap (all fisheries)	>67% of species' depth range is unfished	33-66% of species' depth range is unfished	**<33% of species' depth range is unfished**	3	Unknown; Default value selected
Seasonal Availability (all fisheries)	Fisheries overlap with species <3 months/year	Fisheries overlap with species 3-6 months/year	**Fisheries overlap with species >6 months/year**	3	Unknown; Default value selected
Selectivity of fishery (specific to fishery under assessment)	Species is not targeted AND is not likely to be captured by gear	**Species is targeted, or is incidentally encountered AND is not likely to escape the gear**	Species is targeted or is incidentally encountered AND combination of fishery attributes and species' biology increase in susceptibility to the gear	2	Unknown; Default value selected
Post-capture mortality (specific to fishery under assessment)	>66% individuals survive post-capture	33-66% individuals survive post-capture	**Retained species or >66% do not survive post-capture**	3	Unknown; Default value selected

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Susceptibility Attribute (default scores in bold)	Low S (score = 1)	Medium S (score = 2)	High S (score = 3)	Score	Value and notes
Susceptibility score (mean of attribute scores)				**2.8**	

Productivity-Susceptibility Score ($V=v(P^2+S^2)$)	3.10
Vulnerability Rating: <2.64 = Low vulnerability, = 2.64 and = 3.18 = Medium vulnerability, >3.18 = High vulnerability	High

1.2 Fishing Mortality

United States - Hawaii - Western Central Pacific Ocean - Handlines and hand-operated pole-and-lines

United States - Hawaii - Eastern Central Pacific Ocean | Northeast Pacific Ocean - Longline (deep-set) - Permit/License: Covers US vessels landing in Hawaii or California

United States - Hawaii - Northwest Pacific Ocean | Western Central Pacific Ocean - Longline (deep-set)

United States - Hawaii - Eastern Central Pacific Ocean | Northeast Pacific Ocean - Longline (shallow-set)

United States - Hawaii - Northwest Pacific Ocean | Western Central Pacific Ocean - Longline (shallow-set)

United States - Hawaii - Western Central Pacific Ocean - Trolling lines

Moderate Concern

Fishing mortality rates for mahi mahi in the eastern Pacific Ocean and western Pacific Ocean are unknown, as reference points have not been calculated. Therefore, Fishing Mortality is considered “moderate concern” (per line 3 in table 1.2.1 of the Seafood Watch Standard).

Opah *(Lampris guttatus)*

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1.1 Abundance

United States - Hawaii - Eastern Central Pacific Ocean | Northeast Pacific Ocean - Longline (deep-set) - FAO Major Area: Pacific, Northeast | Pacific, Eastern Central - Permit/License: Covers US vessels landing in Hawaii or California - RFMO: Inter-American Tropical Tuna Commission (IATTC)

Low Concern

There are no stock assessments for opah in the Pacific. The species is categorized as a Least Concern by the IUCN (Smith-Vaniz et al 2015b), but that assessment is based on data that is over 10 years old and so cannot be used for scoring. A data poor ecological risk assessment suggests opah is not highly vulnerable to the fisheries in the EPO and has a healthy stock status (SSB/SSB_{MSY} = 2.66) (Griffiths et al 2019a). Based on a data-limited assessment indicating that the stock is above a sustainable level, Abundance is considered "low concern" (per line 1.b in table 1.1.1 of the Seafood Watch Standard).

Supplementary Information

IATTC staff have conducted an ecological risk assessment for opah and other species in the EPO using a tool developed specifically to quantify the cumulative impacts of multiple fisheries for data-limited bycatch species (Griffiths et al 2019a). This Ecological Assessment of Sustainable Impacts of Fisheries or EASI-Fish tool is comprised of separate susceptibility and productivity components. The susceptibility component is used to approximate the instantaneous fishing mortality rate (F) that is compared to biological reference points used in the productivity component, specifically length-structured yield and biomass per-recruit models (Griffiths et al 2019a). The authors estimate spawning stock biomass-per-recruit for the year 2016 at about 147% of that at a proxy for a sustainable level (i.e. $SBB_{2016}/SBB_{40\%}$=1.47). While the authors do stress that the study is not a stock assessment and so should not be used to determine overfished or overfishing status, the results do nonetheless suggest the species is not particularly vulnerable to fishing impacts from the EPO fisheries.

United States - Hawaii - Northwest Pacific Ocean | Western Central Pacific Ocean - Longline (deep-set) - FAO Major Area: Pacific, Western Central | Pacific, Northwest - RFMO: Western and Central Pacific Fisheries Commission (WCPFC)

Moderate Concern

There are no stock assessments for opah in the Pacific. The species is categorized as a Least Concern by the IUCN via a 2013 assessment (Smith-Vaniz et al. 2015), but that assessment is based on data that is over 10 years old, thus it cannot be used for scoring. Therefore, a PSA was performed using limited data. The PSA resulted in a score of 3.18, thus the stock is not highly vulnerable and Abundance is considered "moderate concern"

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(per line 2.e in table 1.1.1 of the Seafood Watch Standard).

Supplementary Information

PSA for opah in the Pacific (see Seafood Watch Fisheries Standard Version 4 for methodology details).

Productivity Attribute	High productivity (low risk, score = 1)	Medium productivity (medium risk, score = 2)	Low productivity (high risk, score = 3)	Score	Value and notes
Average age at maturity (yrs)	< 5	5-15	>15	1	~4.3 years (Francis et al. 2004)
Average maximum age (yrs) (don't use if max size is available)	<10	10-25	>25		Not scored as max size is available
Von Bertalanffy (Brody) Growth Coefficient (K)	>0.25	0.15-0.25	<0.15	2	0.218 (Francis et al. 2004)
Fecundity (eggs/yr)	>20,000	100-20,000	<100	1	7,200,000-9,700,000 (Froese and Pauly 2019)
Average maximum size (cm)	< 100	100-300	>300	2	200cm (Froese and Pauly 2019); 119cm (Griffiths et al 2019a)
Average size at maturity (cm)	<40	40-200	>200	2	>104cm (CDFW 2001)
Reproductive strategy	Broadcast spawner	Demersal egg layer or brooder	Live bearer	1	Broadcast spawner (Froese and Pauly 2019)

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Productivity Attribute	High productivity (low risk, score = 1)	Medium productivity (medium risk, score = 2)	Low productivity (high risk, score = 3)	Score	Value and notes
Productivity score (mean of attribute scores)				**1.5**	

Susceptibility Attribute (default scores in bold)	Low S (score = 1)	Medium S (score = 2)	High S (score = 3)	Score	Value and notes
Areal overlap (all fisheries)	>90% of species concentration is unfished	70-90% of species concentration is unfished	**<30% of species concentration is unfished**	3	Default value selected
Vertical overlap (all fisheries)	>67% of species' depth range is unfished	33-66% of species' depth range is unfished	**<33% of species' depth range is unfished**	3	Default value selected
Seasonal Availability (all fisheries)	Fisheries overlap with species <3 months/year	Fisheries overlap with species 3-6 months/year	**Fisheries overlap with species >6 months/year**	3	Default value selected
Selectivity of fishery (specific to fishery under assessment)	Species is not targeted AND is not likely to be captured by gear	**Species is targeted, or is incidentally encountered AND is not likely to escape the gear**	Species is targeted or is incidentally encountered AND combination of fishery attributes and species' biology increase in susceptibility to the gear	2	Default value selected
Post-capture mortality (specific to fishery under assessment)	>66% individuals survive post-capture	33-66% individuals survive post-capture	**Retained species or >66% do not survive post-capture**	3	Default value selected

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Susceptibility Attribute (default scores in bold)	Low S (score = 1)	Medium S (score = 2)	High S (score = 3)	Score	Value and notes
Susceptibility score (mean of attribute scores)				**2.8**	

Productivity-Susceptibility Score ($V=v(P^2+S^2)$)	3.18
Vulnerability Rating: <2.64 = Low vulnerability, = 2.64 and = 3.18 = Medium vulnerability, >3.18 = High vulnerability	Medium

1.2 Fishing Mortality

United States - Hawaii - Eastern Central Pacific Ocean | Northeast Pacific Ocean - Longline (deep-set) - FAO Major Area: Pacific, Northeast | Pacific, Eastern Central - Permit/License: Covers US vessels landing in Hawaii or California - RFMO: Inter-American Tropical Tuna Commission (IATTC)

Low Concern

There are no reference points or stock assessments for opah in the Pacific. The EASI-Fish analysis suggests fishing mortality is well below a sustainable level (F_{2016}/F_{MSY}=0.32) (Griffiths et al 2019a), though the authors do stress the approach should not be used for managers determine an official overfishing status. Still, the results indicated it is likely that Fishing Mortality is below a sustainable level, thus it is considered "low concern" (per line 1 in table 1.2.1 of the Seafood Watch Standard).

United States - Hawaii - Northwest Pacific Ocean | Western Central Pacific Ocean - Longline (deep-set) - FAO Major Area: Pacific, Western Central | Pacific, Northwest - RFMO: Western and Central Pacific Fisheries Commission (WCPFC)

Moderate Concern

There are no reference points or stock assessments for opah in the Pacific. Total Fishing Mortality in the western Pacific is unknown so is considered "moderate concern" (per line 3 in table 1.2.1 of the Seafood Watch Standard).

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Shortbill spearfish *(Tetrapturus angustirostris)*

1.1 Abundance

United States - Hawaii - Eastern Central Pacific Ocean | Northeast Pacific Ocean - Longline (deep-set) - Permit/License: Covers US vessels landing in Hawaii or California

United States - Hawaii - Northwest Pacific Ocean | Western Central Pacific Ocean - Longline (deep-set)

United States - Hawaii - Eastern Central Pacific Ocean | Northeast Pacific Ocean - Longline (shallow-set)

United States - Hawaii - Northwest Pacific Ocean | Western Central Pacific Ocean - Longline (shallow-set)

Moderate Concern

There is no stock assessment for shortbill spearfish in the Pacific, and the IUCN Red List of Threatened Species lists it as "Data Deficient" (Collette et al. 2023b). Consequently, a PSA was performed, resulting in a score of 3.13. Abundance is considered “moderate concern” due to the medium vulnerability indicated by the PSA score (per line 2.3e in table 1.1.1 of the Seafood Watch Standard).

Supplementary Information

PSA for opah in the Pacific (see Seafood Watch Fisheries Standard Version 4 for methodology details).

Productivity Attribute	High productivity (low risk, score = 1)	Medium productivity (medium risk, score = 2)	Low productivity (high risk, score = 3)	Score	Value and notes
Average age at maturity (yrs)	< 5	5-15	>15	1	2.4 years (Froese and Pauly 2019)
Average maximum age (yrs) (don't use if max size is available)	<10	10-25	>25		Not scored as max size is available

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Productivity Attribute	High productivity (low risk, score = 1)	Medium productivity (medium risk, score = 2)	Low productivity (high risk, score = 3)	Score	Value and notes
Von Bertalanffy (Brody) Growth Coefficient (K)	>0.25	0.15-0.25	<0.15	1	0.5 (Salcedo-Bojorquez and Arreguin-Sanchez 2011)
Fecundity (eggs/yr)	>20,000	100-20,000	<100		Unknown
Average maximum size (cm)	< 100	100-300	>300	2	230cm (Froese and Pauly 2019)
Average size at maturity (cm)	<40	40-200	>200	2	132cm (Salcedo-Bojorquez and Arreguin-Sanchez 2011)
Reproductive strategy	Broadcast spawner	Demersal egg layer or brooder	Live bearer	1	Broadcast spawner (Collette et al. 2023b)
Productivity score (mean of attribute scores)				**1.4**	

Susceptibility Attribute (default scores in bold)	Low S (score = 1)	Medium S (score = 2)	High S (score = 3)	Score	Value and notes
Areal overlap (all fisheries)	>90% of species concentration is unfished	70-90% of species concentration is unfished	**<30% of species concentration is unfished**	3	Default value selected

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Susceptibility Attribute (default scores in bold)	Low S (score = 1)	Medium S (score = 2)	High S (score = 3)	Score	Value and notes
Vertical overlap (all fisheries)	>67% of species' depth range is unfished	33-66% of species' depth range is unfished	**<33% of species' depth range is unfished**	3	Default value selected
Seasonal Availability (all fisheries)	Fisheries overlap with species <3 months/year	Fisheries overlap with species 3-6 months/year	**Fisheries overlap with species >6 months/year**	3	Default value selected
Selectivity of fishery (specific to fishery under assessment)	Species is not targeted AND is not likely to be captured by gear	**Species is targeted, or is incidentally encountered AND is not likely to escape the gear**	Species is targeted or is incidentally encountered AND combination of fishery attributes and species' biology increase in susceptibility to the gear	2	Default value selected
Post-capture mortality (specific to fishery under assessment)	>66% individuals survive post-capture	33-66% individuals survive post-capture	**Retained species or >66% do not survive post-capture**	3	Default value selected
Susceptibility score (mean of attribute scores)				**2.8**	

Productivity-Susceptibility Score ($V=v(P^2+S^2)$)	3.13
Vulnerability Rating: <2.64 = Low vulnerability, = 2.64 and = 3.18 = Medium vulnerability, >3.18 = High vulnerability	Medium

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1.2 Fishing Mortality

United States - Hawaii - Eastern Central Pacific Ocean | Northeast Pacific Ocean - Longline (deep-set) - Permit/License: Covers US vessels landing in Hawaii or California

United States - Hawaii - Northwest Pacific Ocean | Western Central Pacific Ocean - Longline (deep-set)

United States - Hawaii - Eastern Central Pacific Ocean | Northeast Pacific Ocean - Longline (shallow-set)

United States - Hawaii - Northwest Pacific Ocean | Western Central Pacific Ocean - Longline (shallow-set)

Moderate Concern

Shortbill spearfish are caught in both the Hawaii shallow- and deep-set longline fisheries (WPRFMC 2019). There are no stock assessments for shortbill spearfish nor reference points. Therefore, Fishing Mortality is unknown, thus is considered "moderate concern" (per line 3 in table 1.2.1 of the Seafood Watch Standard).

Sickle pomfret *(Taractichthys steindachneri)*

1.1 Abundance

United States - Hawaii - Eastern Central Pacific Ocean | Northeast Pacific Ocean - Longline (deep-set) - FAO Major Area: Pacific, Northeast | Pacific, Eastern Central - Permit/License: Covers US vessels landing in Hawaii or California - RFMO: Inter-American Tropical Tuna Commission (IATTC)

United States - Hawaii - Northwest Pacific Ocean | Western Central Pacific Ocean - Longline (deep-set) - FAO Major Area: Pacific, Western Central | Pacific, Northwest - RFMO: Western and Central Pacific Fisheries Commission (WCPFC)

Moderate Concern

The sickle pomfret belongs to the family Bramidae, which includes about 20 species across the Atlantic and Pacific Oceans. Data are limited for this species and there is no IUCN assessment, so a PSA was performed. The PSA scored medium vulnerability (2.98). Abundance is considered "moderate concern" due to the medium vulnerability indicated by the PSA (per line 2.e in table 1.1.1 of the Seafood Watch Standard).

Supplementary Information

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PSA for sickle pomfret in the Pacific (see Seafood Watch Fisheries Standard Version 4 for methodology details).

Productivity Attribute	High productivity (low risk, score = 1)	Medium productivity (medium risk, score = 2)	Low productivity (high risk, score = 3)	Score	Value and notes
Average age at maturity (yrs)	< 5	5-15	>15	1	2.47 years (Kindong et al. 2020)
Average maximum age (yrs) (don't use if max size is available)	<10	10-25	>25		Not scored as max size is available
Von Bertalanffy (Brody) Growth Coefficient (K)	>0.25	0.15-0.25	<0.15	1	0.52 (Kindong et al. 2020)
Fecundity (eggs/yr)	>20,000	100-20,000	<100		Unknown
Average maximum size (cm)	< 100	100-300	>300	1	91cm (Snow 2023)
Average size at maturity (cm)	<40	40-200	>200	2	60cm (Froese and Pauly 2019)
Reproductive strategy	Broadcast spawner	Demersal egg layer or brooder	Live bearer	1	Broadcast spawner (California Sea Grant 2023)
Productivity score (mean of attribute scores)				**1.2**	

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Susceptibility Attribute (default scores in bold)	Low S (score = 1)	Medium S (score = 2)	High S (score = 3)	Score	Value and notes
Areal overlap (all fisheries)	>90% of species concentration is unfished	70-90% of species concentration is unfished	**<30% of species concentration is unfished**	3	Default value selected
Vertical overlap (all fisheries)	>67% of species' depth range is unfished	33-66% of species' depth range is unfished	**<33% of species' depth range is unfished**	3	Default value selected
Seasonal Availability (all fisheries)	Fisheries overlap with species <3 months/year	Fisheries overlap with species 3-6 months/year	**Fisheries overlap with species >6 months/year**	3	Default value selected
Selectivity of fishery (specific to fishery under assessment)	Species is not targeted AND is not likely to be captured by gear	**Species is targeted, or is incidentally encountered AND is not likely to escape the gear**	Species is targeted or is incidentally encountered AND combination of fishery attributes and species' biology increase in susceptibility to the gear	2	Default value selected
Post-capture mortality (specific to fishery under assessment)	>66% individuals survive post-capture	33-66% individuals survive post-capture	**Retained species or >66% do not survive post-capture**	3	Default value selected
Susceptibility score (mean of attribute scores)				**2.8**	

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Productivity-Susceptibility Score ($V=v(P^2+S^2)$)	2.98
Vulnerability Rating: <2.64 = Low vulnerability, = 2.64 and = 3.18 = Medium vulnerability, >3.18 = High vulnerability	Medium

1.2 Fishing Mortality

United States - Hawaii - Eastern Central Pacific Ocean | Northeast Pacific Ocean - Longline (deep-set) - FAO Major Area: Pacific, Northeast | Pacific, Eastern Central - Permit/License: Covers US vessels landing in Hawaii or California - RFMO: Inter-American Tropical Tuna Commission (IATTC)

United States - Hawaii - Northwest Pacific Ocean | Western Central Pacific Ocean - Longline (deep-set) - FAO Major Area: Pacific, Western Central | Pacific, Northwest - RFMO: Western and Central Pacific Fisheries Commission (WCPFC)

Moderate Concern

Sickle pomfrets (monchong) are not a targeted species, but they are a common bycatch in the deep-set longline fishery. However, there are no fishing mortality reference points, and Fishing Mortality is considered "moderate concern" because it is unknown (per line 3 in table 1.2.1 of the Seafood Watch Standard).

Supplementary Information

One study in 2020 did estimate F for the species, which was found to be below the MSY level (Kindong et al. 2020). However, this was done only using data from Chinese longline observers in the western central and eastern Pacific, so may not be a fully accurate representation of F from all fishing sources relevant to this report.

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Skipjack tuna *(Katsuwonus pelamis)*

1.1 Abundance

Eastern Pacific Ocean Stock - United States - Hawaii - Eastern Central Pacific Ocean | Northeast Pacific Ocean - Longline (deep-set) - FAO Major Area: Pacific, Northeast | Pacific, Eastern Central - Permit/License: Covers US vessels landing in Hawaii or California - RFMO: Inter-American Tropical Tuna Commission (IATTC)

Very Low Concern

Skipjack tuna are assessed as a single stock in the EPO. The most recent assessment was completed in 2024 and notes that MSY-based quantities are unreliable for this stock, leading to the use of a proxy TRP of a spawning biomass ratio (SBR) equal to 0.3 (IATTC 2024b). The assessment found that spawning biomass was above this proxy reference point and the LRP of an SBR equal to 0.077. The reference model used in the assessment found SBR to be 0.43 (ibid). Based on a stock assessment <5 years old indicating that biomass is above the target reference point, Abundance is considered "very low concern" (per lines 1.a-b in table 1.1.1 of the Seafood Watch Standard).

Western and Central Pacific Ocean (WCPO) Stock - United States - Hawaii - Northwest Pacific Ocean | Western Central Pacific Ocean - Longline (deep-set) - FAO Major Area: Pacific, Western Central | Pacific, Northwest

Western and Central Pacific Ocean (WCPO) Stock - United States - Hawaii - Western Central Pacific Ocean - Trolling lines - FAO Major Area: Pacific, Western Central

Very Low Concern

Skipjack tuna in the WCPO was last assessed in 2022. An interim target reference point of $0.5SB_{F=0}$ and limit reference point of $0.2SB_{F=0}$ were used for the assessment. According to the assessment, the stock has become more depleted over time, mostly due to fishing impacts in the equatorial regions. The spawning potential has not changed substantially over time. None of the models used in the assessment showed the stock to be below the limit reference point, and the median spawning depletion from 2018-2021 ($SB_{recent}/SB_{F=0}$) is estimated to be 0.51, which is just above the target reference point (Jordan et al. 2022). Further, the recent spawning biomass was found to be well above the MSY level (SB_{recent}/SB_{MSY} = 2.98) (ibid).The population of skipjack tuna in the WCPO is not considered overfished. Abundance is considered "very low concern score" based on a stock assessment using data <5 years old indicating that the stock biomass is just above the target reference point (per line 1.a and b in table 1.1.1 of the Seafood Watch Standard).

1.2 Fishing Mortality

Eastern Pacific Ocean Stock - United States - Hawaii - Eastern Central Pacific Ocean | Northeast Pacific Ocean - Longline (deep-set) - FAO Major Area: Pacific, Northeast | Pacific, Eastern Central - Permit/License: Covers US vessels landing in Hawaii or California - RFMO: Inter-American Tropical Tuna Commission (IATTC)

Low Concern

The 2024 benchmark stock assessment of EPO skipjack tuna did not calculate MSY-based reference points. Relative to the selected reference point, the authors found that current

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fishing mortality is below the proxy target reference point ($F_{current}/Fb_{target}$ = 0.87, according to the reference model used in the assessment). Based on a stock assessment <10 years old indicating that fishing mortality is below a sustainable level, Fishing Mortality is considered "low concern" (per line 1 in table 1.2.1 of the Seafood Watch Standard).

Western and Central Pacific Ocean (WCPO) Stock - United States - Hawaii - Northwest Pacific Ocean | Western Central Pacific Ocean - Longline (deep-set) - FAO Major Area: Pacific, Western Central | Pacific, Northwest

Western and Central Pacific Ocean (WCPO) Stock - United States - Hawaii - Western Central Pacific Ocean - Trolling lines - FAO Major Area: Pacific, Western Central

Low Concern

According to the 2022 stock assessment, average fishing mortality rates have increased throughout the modeled time period for juvenile and adult skipjack tuna. However, recent (2018-2021) fishing mortality rates (F_{recent}) are below maximum sustainable yield levels (F_{recent}/F_{MSY} = 0.32) (Jordan et al. 2022). Therefore, overfishing of skipjack tuna is not occurring, and WCPO skipjack tuna Fishing Mortality is considered "low concern" (per line 1 in table 1.2.1 of the Seafood Watch Standard).

Striped marlin *(Kajikia audax)*

1.1 Abundance

United States - Hawaii - Eastern Central Pacific Ocean | Northeast Pacific Ocean - Longline (deep-set) - FAO Major Area: Pacific, Northeast | Pacific, Eastern Central - Permit/License: Covers US vessels landing in Hawaii or California - RFMO: Inter-American Tropical Tuna Commission (IATTC)

High Concern

Striped marlin was last assessed in the Eastern Pacific Ocean in 2008, and this assessment indicated the stock was not overfished and the spawning stock biomass was above maximum sustainable yield levels (IATTC 2022c). The biomass was expected to continue to grow in the years following this assessment (IATTC 2022c). The IUCN Red List has identified striped marlin populations as Least Concern with a decreasing population trend (Collette et al 2022c). More recently, a risk assessment found that striped marlin in the EPO in 2016 was below the estimated MSY level (SSB/SSB_{MSY} = 0.43) (Griffiths et al 2019a). Based on a data-limited assessment indicating that the stock is below 50% of the MSY level, Abundance is considered "high concern" (per line 1 in table 1.1.1 of the Seafood

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Watch Standard).

United States - Hawaii - Northwest Pacific Ocean | Western Central Pacific Ocean - Longline (deep-set) - FAO Major Area: Pacific, Western Central | Pacific, Northwest - RFMO: Western and Central Pacific Fisheries Commission (WCPFC)

High Concern

Striped marlin in the WCNPO were last assessed in 2023, using data up to 2020. Reference points for the assessment were calculated based on B_0, and a potential target reference point of 20%$SSB_{F=0}$ was used (currently, no official reference points are established for this stock). The assessment found that the average biomass from 2018 to 2020 was 63% below this target reference point ($SSB_{2018-2020}/0.2SSB_{F=0}$ = 0.37) (WCPFC 2024c). Based on model results, there is a >99% probability that the stock is overfished. Because the stock is well below the target reference point (with no limit reference point used) and is designated as overfished, Abundance is considered "high concern" (per line 1 in table 1.1.1 of the Seafood Watch Standard).

1.2 Fishing Mortality

United States - Hawaii - Eastern Central Pacific Ocean | Northeast Pacific Ocean - Longline (deep-set) - FAO Major Area: Pacific, Northeast | Pacific, Eastern Central - Permit/License: Covers US vessels landing in Hawaii or California - RFMO: Inter-American Tropical Tuna Commission (IATTC)

High Concern

Information on fishing levels of striped marlin in the eastern Pacific Ocean are limited, but there is some indication they have increased over the past decade. The last full assessment was conducted in 2008 and indicated that overfishing was not occurring (IATTC 2022c). Average catches between 2016-2020 were half the maximum sustainable yield levels estimated in 2010 (IATTC 2022c). The recent risk assessment found that striped marlin in the EPO had a 2016 fishing mortality level above MSY and other calculated F reference points (F/F_{MSY} = 1.59) (Griffiths et al 2019a). Because a data-limited assessment suggests Fishing Mortality is above sustainable levels, it is considered "high concern" (per line 1 in table 1.2.1 of the Seafood Watch Standard).

United States - Hawaii - Northwest Pacific Ocean | Western Central Pacific Ocean - Longline (deep-set) - FAO Major Area: Pacific, Western Central | Pacific, Northwest - RFMO: Western and Central Pacific Fisheries Commission (WCPFC)

High Concern

The 2023 stock assessment also used 20%$SSB_{F=0}$ in calculating a target F reference point.

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Fishing mortality for striped marlin aged 3 to 12, averaged from 2018 to 2020, was found to be above the target reference point proposed in the assessment ($F_{2018\text{-}2020}/F_{20\%SSB(F=0)}$ = 1.28 and $F_{2020}/F_{20\%SSB(F=0)}$ = 1.09) (WCPFC 2024c). The stock was found to be subject to overfishing with a >66% probability. Because fishing mortality is thought to be above a sustainable level, with over 50% certainty, Fishing Mortality is considered "high concern" (per line 1 in table 1.2.1 of the Seafood Watch Standard).

Swordfish *(Xiphias gladius)*

1.1 Abundance

Northwestern and Central Pacific Ocean Stock - United States - Hawaii - Eastern Central Pacific Ocean | Northeast Pacific Ocean - Longline (shallow-set) - FAO Major Area: Pacific, Northeast | Pacific, Eastern Central - RFMO: Inter-American Tropical Tuna Commission (IATTC)

Northwestern and Central Pacific Ocean Stock - United States - Hawaii - Northwest Pacific Ocean | Western Central Pacific Ocean - Longline (shallow-set) - FAO Major Area: Pacific, Western Central | Pacific, Northwest - RFMO: Western and Central Pacific Fisheries Commission (WCPFC)

Very Low Concern

North Pacific swordfish was last assessed in 2023, using data up to 2021. There are no adopted reference points for this stock, but MSY-based reference points were used for the 2023 assessment. The assessment found that SSB in 2021 was well above SSB_{MSY} (SSB_{2021}/SSB_{MSY} = 2.18) (ISC 2023a). The assessment further concluded that there was a > 99% probability that the stock was not overfished in 2021. Because the stock is well above a sustainable target reference point, based on an assessment using data <5 years old, abundance is considered a "very low concern" (per line 1 in table 1.1.1 of the Seafood Watch Standard).

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Supplementary Information

Previous stock assessments for North Pacific swordfish were divided into two stock delineations: Western Central and North Pacific stock and Eastern Pacific stock; however, the 2023 stock assessment was performed for a single, North Pacific stock delineation that covers both stock areas (ISC 2023a).

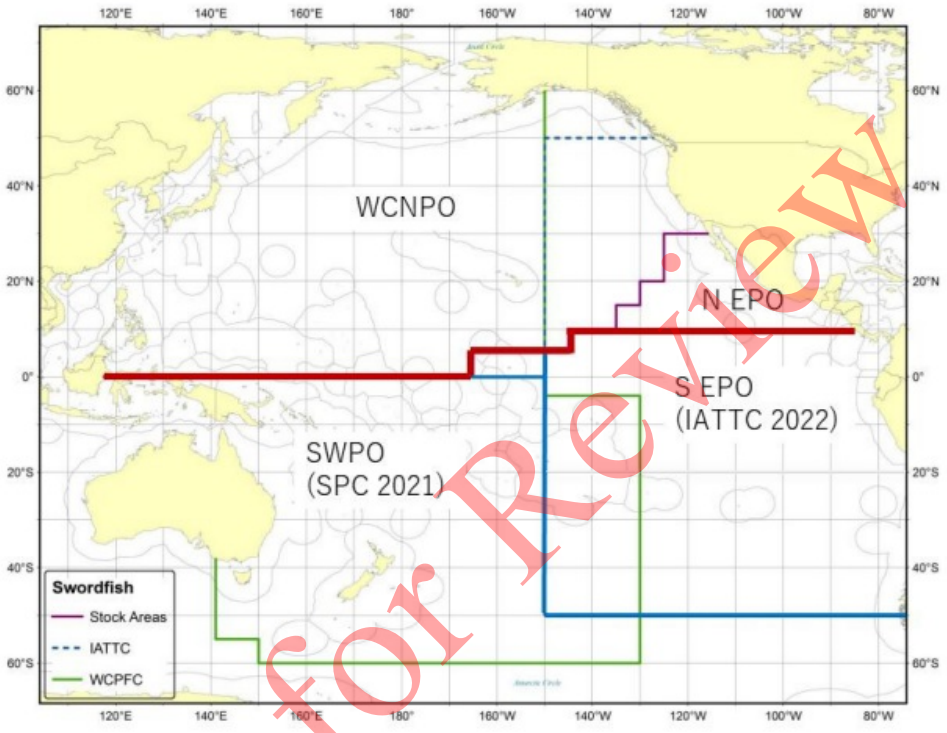

Figure 19: Stock boundaries for the 2023 North Pacific swordfish assessment. WCNPO and N EPO are treated as one stock in 2023. Source: (WCPFC 2024d).

1.2 Fishing Mortality

Northwestern and Central Pacific Ocean Stock - United States - Hawaii - Eastern Central Pacific Ocean | Northeast Pacific Ocean - Longline (shallow-set) - FAO Major Area: Pacific, Northeast | Pacific, Eastern Central - RFMO: Inter-American Tropical Tuna Commission (IATTC)

Northwestern and Central Pacific Ocean Stock - United States - Hawaii - Northwest Pacific Ocean | Western Central Pacific Ocean - Longline (shallow-set) - FAO Major Area: Pacific, Western Central | Pacific, Northwest - RFMO: Western and Central Pacific Fisheries Commission (WCPFC)

Low Concern

The 2023 North Pacific swordfish stock assessment found that fishing mortality generally

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decreased from 1978 to 2021 and was below the MSY level in the final year of the assessment (F_{2021}/F_{MSY} = 0.49) (ISC 2023a). There was a >99% probability that the stock was not subject to overfishing in 2021. Based on a stock assessment using data <10 years old indicating that fishing mortality is below a sustainable level, Fishing Mortality is considered "low concern" (per line 1 in table 1.2.1 of the Seafood Watch Standard).

Wahoo *(Acanthocybium solandri)*

1.1 Abundance

United States - Hawaii - Eastern Central Pacific Ocean | Northeast Pacific Ocean - Longline (deep-set) - FAO Major Area: Pacific, Northeast | Pacific, Eastern Central - Permit/License: Covers US vessels landing in Hawaii or California - RFMO: Inter-American Tropical Tuna Commission (IATTC)

Low Concern

Wahoo are listed as a species of "Least Concern" by the IUCN (Collette et al. 2023a). A recent risk assessment found that the EPO stock of wahoo was above the estimated MSY level in 2016 (SSB/SSB_{MSY} = 1.51), as well as other calculated biomass reference points (Griffiths et al. 2019). Based on a data-limited assessment <10 years old indicating that biomass is above a sustainable level, Abundance is considered "low concern" (per line 1.b in table 1.1.1 of the Seafood Watch Standard).

United States - Hawaii - Northwest Pacific Ocean | Western Central Pacific Ocean - Longline (deep-set) - FAO Major Area: Pacific, Western Central | Pacific, Northwest

United States - Hawaii - Western Central Pacific Ocean - Trolling lines - FAO Major Area: Pacific, Western Central

Moderate Concern

Wahoo is listed as a species of Least Concern by the IUCN (Collette et al. 2023a). No population assessments have been conducted for this species in the Pacific Ocean. Based on an IUCN listing of Least Concern that is <10 years old, Abundance is considered "moderate concern" (per line 3 in table 1.1.1 of the Seafood Watch Standard).

1.2 Fishing Mortality

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United States - Hawaii - Eastern Central Pacific Ocean | Northeast Pacific Ocean - Longline (deep-set) - FAO Major Area: Pacific, Northeast | Pacific, Eastern Central - Permit/License: Covers US vessels landing in Hawaii or California - RFMO: Inter-American Tropical Tuna Commission (IATTC)

Low Concern

The recent risk assessment performed for several EPO stocks suggests that fishing mortality for wahoo was below sustainable levels in 2016 (F/F_{MSY} = 0.44) (Griffiths et al. 2019). Based on these findings, Fishing Mortality is considered "low concern" (per line 1 in table 1.2.1 of the Seafood Watch Standard).

United States - Hawaii - Northwest Pacific Ocean | Western Central Pacific Ocean - Longline (deep-set) - FAO Major Area: Pacific, Western Central | Pacific, Northwest

United States - Hawaii - Western Central Pacific Ocean - Trolling lines - FAO Major Area: Pacific, Western Central

Moderate Concern

Fishing rates for wahoo in the WCPO compared to reference points are unknown, and Fishing Mortality therefore is considered "moderate concern" (per line 3 in table 1.2.1 of the Seafood Watch Standard).

Yellowfin tuna *(Thunnus albacares)*

1.1 Abundance

Eastern Pacific Ocean Stock - United States - Hawaii - Eastern Central Pacific Ocean | Northeast Pacific Ocean - Longline (deep-set) - FAO Major Area: Pacific, Northeast | Pacific, Eastern Central - Permit/License: Covers US vessels landing in Hawaii or California - RFMO: Inter-American Tropical Tuna Commission (IATTC)

Low Concern

Yellowfin tuna are assessed as a single stock in the EPO. The stock has an adopted, interim limit reference point of S_{LIMIT}, which is currently $0.077S_0$, and a target reference point of S_{MSY}. The latest stock assessment was a 2020 benchmark assessment using data through 2019 (Minte-Vera et al. 2020; ISSF 2023). The authors found that spawning biomass in 2020 was above the MSY level, averaged across all models ($SSB_{current}/SSB_{MSY}$ = 1.57), , with a 12% probability that $SSB_{current}$ is below SSB_{MSY}. Because a stock assessment between 5 and 10 years old years old indicates that biomass is above the target reference

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point, a score of “low concern” is assigned.

Western and Central Pacific Ocean (WCPO) Stock - United States - Hawaii - Western Central Pacific Ocean - Handlines and hand-operated pole-and-lines

Western and Central Pacific Ocean (WCPO) Stock - United States - Hawaii - Northwest Pacific Ocean | Western Central Pacific Ocean - Longline (deep-set) - FAO Major Area: Pacific, Western Central | Pacific, Northwest

Western and Central Pacific Ocean (WCPO) Stock - United States - Hawaii - Western Central Pacific Ocean - Trolling lines

Very Low Concern

An updated assessment of yellowfin tuna was conducted in 2023 using input data up to 2021 and incorporating additional uncertainty compared to previous assessments. Yellowfin has an adopted limit reference point of $0.2SB_{F=0}$, similar to other species managed by the WCPFC, but there is no adopted target reference point. Previously, the Commission set an objective of maintaining the spawning biomass depletion ratio at or above the average 2012-2015 level (0.44) (WCPFC 2024e). The 2023 assessment indicates that the median recent (2018-2021) spawning depletion ratio was above both the LRP and the 2012-2015 level ($SB_{recent}/SB_{F=0}$ = 0.47) (ibid). While MSY is not used to manage Western Pacific yellowfin biomass, recent spawning biomass was also above the MSY level (SB_{recent}/SB_{MSY} = 2.28) (ibid). Because a stock assessment using data <5 years old indicates that spawning biomass is above MSY, the interim target level, and the limit reference point, Abundance is scored “very low concern” (per lines 1.a and b in table 1.1.1 of the Seafood Watch Standard).

1.2 Fishing Mortality

Eastern Pacific Ocean Stock - United States - Hawaii - Eastern Central Pacific Ocean | Northeast Pacific Ocean - Longline (deep-set) - FAO Major Area: Pacific, Northeast | Pacific, Eastern Central - Permit/License: Covers US vessels landing in Hawaii or California - RFMO: Inter-American Tropical Tuna Commission (IATTC)

Low Concern

The 2020 stock assessment of EPO yellowfin tuna found that fishing mortality from 2017 to 2019 was below the MSY level, averaged across all models ($F_{current}/F_{MSY}$ = 0.67) (Minte-Vera et al. 2020; ISSF 2023). The probability across the models that fishing mortality in 2017-2019 exceeded the MSY level was 9% (ibid). A stock assessment using data <10 years old with a finding that fishing mortality is below a sustainable level allows for a score of “low concern” for fishing mortality.

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Western and Central Pacific Ocean (WCPO) Stock - United States - Hawaii - Western Central Pacific Ocean - Handlines and hand-operated pole-and-lines

Western and Central Pacific Ocean (WCPO) Stock - United States - Hawaii - Northwest Pacific Ocean | Western Central Pacific Ocean - Longline (deep-set) - FAO Major Area: Pacific, Western Central | Pacific, Northwest

Western and Central Pacific Ocean (WCPO) Stock - United States - Hawaii - Western Central Pacific Ocean - Trolling lines

Low Concern

The recent (2017-2020) median fishing mortality rate for yellowfin tuna was below the MSY level (F_{recent}/F_{MSY} = 0.50) (WCPFC 2024e). None of the models used in the assessment indicated that recent fishing mortality rates are above maximum sustainable yield levels (ibid). Therefore, overfishing is not occurring, and Fishing Mortality is considered “low concern” because F is below sustainable levels, according to a stock assessment using data <10 years old (per line 1 in table 1.2.1 of the Seafood Watch Standard).

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Criterion 2: Impacts on Other Species

All main retained and bycatch species in the fishery are evaluated under Criterion 2. Seafood Watch defines bycatch as all fisheries-related mortality or injury to species other than the retained catch. Examples include discards, endangered or threatened species catch, and ghost fishing. Species are evaluated using the same guidelines as in Criterion 1. When information on other species caught in the fishery is unavailable, the fishery's potential impacts on other species is scored according to the Unknown Bycatch Matrices, which are based on a synthesis of peer-reviewed literature and expert opinion on the bycatch impacts of each gear type. The fishery is also scored for the amount of non-retained catch (discards) and bait use relative to the retained catch. To determine the final Criterion 2 score, the score for the lowest scoring retained/bycatch species is multiplied by the discard/bait score. The Criterion 2 rating is determined as follows:

- Score >3.2 = **Green** or Low Concern
- Score >2.2 and ≤3.2 = **Yellow** or Moderate Concern
- Score ≤2.2 = **Red** or High Concern

Rating is Critical if Factor 2.3 (Fishing Mortality) is Crtitical

Guiding principles

- *Ensure all affected stocks are healthy and abundant.*
- *Fish all affected stocks at sustainable level.*
- *Minimize bycatch.*

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Criterion 2 Summary

Criterion 2 score(s) overview

This table(s) provides an overview of the Criterion 2 subscore, discards+bait modifier, and final Criterion 2 score for each fishery. A separate table is provided for each species/stock that we want an overall rating for.

Albacore			
Region / Method	**Sub Score**	**Discard Rate/Landings**	**Score**
North Pacific Stock - United States - Hawaii - Eastern Central Pacific Ocean | Northeast Pacific Ocean - Longline (deep-set) - FAO Major Area: Pacific, Northeast | Pacific, Eastern Central - Permit/License: Covers US vessels landing in Hawaii or California - RFMO: Inter-American Tropical Tuna Commission (IATTC)	1.732	1.000: < 100%	Red (1.732)
North Pacific Stock - United States - Hawaii - Northwest Pacific Ocean | Western Central Pacific Ocean - Longline (deep-set) - FAO Major Area: Pacific, Western Central | Pacific, Northwest - RFMO: Western and Central Pacific Fisheries Commission (WCPFC)	1.732	1.000: < 100%	Red (1.732)

Bigeye tuna			
Region / Method	**Sub Score**	**Discard Rate/Landings**	**Score**
Western and Central Pacific Ocean (WCPO) Stock - United States - Hawaii - Western Central Pacific Ocean - Handlines and hand-operated pole-and-lines - FAO Major Area: Pacific, Western Central	5.000	1.000: < 100%	Green (5.000)
Eastern Pacific Ocean Stock - United States - Hawaii - Eastern Central Pacific Ocean | Northeast Pacific Ocean - Longline (deep-set) - FAO Major Area: Pacific, Northeast | Pacific, Eastern Central - Permit/License: Covers US vessels landing in Hawaii or California - RFMO: Inter-American Tropical Tuna Commission (IATTC)	1.732	1.000: < 100%	Red (1.732)
Western and Central Pacific Ocean (WCPO) Stock - United States - Hawaii - Northwest Pacific Ocean | Western Central Pacific Ocean - Longline (deep-set) - FAO Major Area: Pacific, Western Central | Pacific, Northwest	1.732	1.000: < 100%	Red (1.732)

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Black marlin			
Region / Method	**Sub Score**	**Discard Rate/Landings**	**Score**
United States - Hawaii - Eastern Central Pacific Ocean | Northeast Pacific Ocean - Longline (deep-set) - FAO Major Area: Pacific, Northeast | Pacific, Eastern Central - Permit/License: Covers US vessels landing in Hawaii or California - RFMO: Inter-American Tropical Tuna Commission (IATTC)	1.732	1.000: < 100%	Red (1.732)
United States - Hawaii - Northwest Pacific Ocean | Western Central Pacific Ocean - Longline (deep-set) - FAO Major Area: Pacific, Western Central | Pacific, Northwest - RFMO: Western and Central Pacific Fisheries Commission (WCPFC)	1.732	1.000: < 100%	Red (1.732)

Blue marlin			
Region / Method	**Sub Score**	**Discard Rate/Landings**	**Score**
United States - Hawaii - Eastern Central Pacific Ocean | Northeast Pacific Ocean - Longline (deep-set) - FAO Major Area: Pacific, Northeast | Pacific, Eastern Central - Permit/License: Covers US vessels landing in Hawaii or California - RFMO: Inter-American Tropical Tuna Commission (IATTC)	1.732	1.000: < 100%	Red (1.732)
United States - Hawaii - Northwest Pacific Ocean | Western Central Pacific Ocean - Longline (deep-set) - FAO Major Area: Pacific, Western Central | Pacific, Northwest	1.732	1.000: < 100%	Red (1.732)
United States - Hawaii - Western Central Pacific Ocean - Trolling lines - FAO Major Area: Pacific, Western Central	2.644	1.000: < 100%	Yellow (2.644)

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Dolphinfish			
Region / Method	**Sub Score**	**Discard Rate/Landings**	**Score**
United States - Hawaii - Western Central Pacific Ocean - Handlines and hand-operated pole-and-lines	5.000	1.000: < 100%	Green (5.000)
United States - Hawaii - Eastern Central Pacific Ocean | Northeast Pacific Ocean - Longline (deep-set) - Permit/License: Covers US vessels landing in Hawaii or California	1.732	1.000: < 100%	Red (1.732)
United States - Hawaii - Northwest Pacific Ocean | Western Central Pacific Ocean - Longline (deep-set)	1.732	1.000: < 100%	Red (1.732)
United States - Hawaii - Eastern Central Pacific Ocean | Northeast Pacific Ocean - Longline (shallow-set)	2.236	1.000: < 100%	Yellow (2.236)
United States - Hawaii - Northwest Pacific Ocean | Western Central Pacific Ocean - Longline (shallow-set)	2.236	1.000: < 100%	Yellow (2.236)
United States - Hawaii - Western Central Pacific Ocean - Trolling lines	4.284	1.000: < 100%	Green (4.284)

Opah			
Region / Method	**Sub Score**	**Discard Rate/Landings**	**Score**
United States - Hawaii - Eastern Central Pacific Ocean | Northeast Pacific Ocean - Longline (deep-set) - FAO Major Area: Pacific, Northeast | Pacific, Eastern Central - Permit/License: Covers US vessels landing in Hawaii or California - RFMO: Inter-American Tropical Tuna Commission (IATTC)	1.732	1.000: < 100%	Red (1.732)
United States - Hawaii - Northwest Pacific Ocean | Western Central Pacific Ocean - Longline (deep-set) - FAO Major Area: Pacific, Western Central | Pacific, Northwest - RFMO: Western and Central Pacific Fisheries Commission (WCPFC)	1.732	1.000: < 100%	Red (1.732)

Draft for Review

Shortbill spearfish			
Region / Method	**Sub Score**	**Discard Rate/Landings**	**Score**
United States - Hawaii - Eastern Central Pacific Ocean | Northeast Pacific Ocean - Longline (deep-set) - Permit/License: Covers US vessels landing in Hawaii or California	1.732	1.000: < 100%	Red (1.732)
United States - Hawaii - Northwest Pacific Ocean | Western Central Pacific Ocean - Longline (deep-set)	1.732	1.000: < 100%	Red (1.732)
United States - Hawaii - Eastern Central Pacific Ocean | Northeast Pacific Ocean - Longline (shallow-set)	2.236	1.000: < 100%	Yellow (2.236)
United States - Hawaii - Northwest Pacific Ocean | Western Central Pacific Ocean - Longline (shallow-set)	2.236	1.000: < 100%	Yellow (2.236)

Sickle pomfret			
Region / Method	**Sub Score**	**Discard Rate/Landings**	**Score**
United States - Hawaii - Eastern Central Pacific Ocean | Northeast Pacific Ocean - Longline (deep-set) - FAO Major Area: Pacific, Northeast | Pacific, Eastern Central - Permit/License: Covers US vessels landing in Hawaii or California - RFMO: Inter-American Tropical Tuna Commission (IATTC)	1.732	1.000: < 100%	Red (1.732)
United States - Hawaii - Northwest Pacific Ocean | Western Central Pacific Ocean - Longline (deep-set) - FAO Major Area: Pacific, Western Central | Pacific, Northwest - RFMO: Western and Central Pacific Fisheries Commission (WCPFC)	1.732	1.000: < 100%	Red (1.732)

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Skipjack tuna			
Region / Method	**Sub Score**	**Discard Rate/Landings**	**Score**
Eastern Pacific Ocean - United States - Hawaii - Eastern Central Pacific Ocean | Northeast Pacific Ocean - Longline (deep-set) - FAO Major Area: Pacific, Northeast | Pacific, Eastern Central - Permit/License: Covers US vessels landing in Hawaii or California - RFMO: Inter-American Tropical Tuna Commission (IATTC)	1.732	1.000: < 100%	Red (1.732)
Western and Central Pacific Ocean (WCPO) Stock - United States - Hawaii - Northwest Pacific Ocean | Western Central Pacific Ocean - Longline (deep-set) - FAO Major Area: Pacific, Western Central | Pacific, Northwest	1.732	1.000: < 100%	Red (1.732)
Western and Central Pacific Ocean (WCPO) Stock - United States - Hawaii - Western Central Pacific Ocean - Trolling lines - FAO Major Area: Pacific, Western Central	2.644	1.000: < 100%	Yellow (2.644)

Striped marlin			
Region / Method	**Sub Score**	**Discard Rate/Landings**	**Score**
United States - Hawaii - Eastern Central Pacific Ocean | Northeast Pacific Ocean - Longline (deep-set) - FAO Major Area: Pacific, Northeast | Pacific, Eastern Central - Permit/License: Covers US vessels landing in Hawaii or California - RFMO: Inter-American Tropical Tuna Commission (IATTC)	1.732	1.000: < 100%	Red (1.732)
United States - Hawaii - Northwest Pacific Ocean | Western Central Pacific Ocean - Longline (deep-set) - FAO Major Area: Pacific, Western Central | Pacific, Northwest - RFMO: Western and Central Pacific Fisheries Commission (WCPFC)	1.732	1.000: < 100%	Red (1.732)

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Swordfish			
Region / Method	**Sub Score**	**Discard Rate/Landings**	**Score**
Northwestern and Central Pacific Ocean Stock - United States - Hawaii - Eastern Central Pacific Ocean | Northeast Pacific Ocean - Longline (shallow-set) - FAO Major Area: Pacific, Northeast | Pacific, Eastern Central - RFMO: Inter-American Tropical Tuna Commission (IATTC)	2.236	1.000: < 100%	Yellow (2.236)
Northwestern and Central Pacific Ocean Stock - United States - Hawaii - Northwest Pacific Ocean | Western Central Pacific Ocean - Longline (shallow-set) - FAO Major Area: Pacific, Western Central | Pacific, Northwest - RFMO: Western and Central Pacific Fisheries Commission (WCPFC)	2.236	1.000: < 100%	Yellow (2.236)

Wahoo			
Region / Method	**Sub Score**	**Discard Rate/Landings**	**Score**
United States - Hawaii - Eastern Central Pacific Ocean | Northeast Pacific Ocean - Longline (deep-set) - FAO Major Area: Pacific, Northeast | Pacific, Eastern Central - Permit/License: Covers US vessels landing in Hawaii or California - RFMO: Inter-American Tropical Tuna Commission (IATTC)	1.732	1.000: < 100%	Red (1.732)
United States - Hawaii - Northwest Pacific Ocean | Western Central Pacific Ocean - Longline (deep-set) - FAO Major Area: Pacific, Western Central | Pacific, Northwest	1.732	1.000: < 100%	Red (1.732)
United States - Hawaii - Western Central Pacific Ocean - Trolling lines - FAO Major Area: Pacific, Western Central	2.644	1.000: < 100%	Yellow (2.644)

Draft for Review

Yellowfin tuna			
Region / Method	**Sub Score**	**Discard Rate/Landings**	**Score**
Western and Central Pacific Ocean (WCPO) Stock - United States - Hawaii - Western Central Pacific Ocean - Handlines and hand-operated pole-and-lines	5.000	1.000: < 100%	Green (5.000)
Eastern Pacific Ocean Stock - United States - Hawaii - Eastern Central Pacific Ocean | Northeast Pacific Ocean - Longline (deep-set) - FAO Major Area: Pacific, Northeast | Pacific, Eastern Central - Permit/License: Covers US vessels landing in Hawaii or California - RFMO: Inter-American Tropical Tuna Commission (IATTC)	1.732	1.000: < 100%	Red (1.732)
Western and Central Pacific Ocean (WCPO) Stock - United States - Hawaii - Northwest Pacific Ocean | Western Central Pacific Ocean - Longline (deep-set) - FAO Major Area: Pacific, Western Central | Pacific, Northwest	1.732	1.000: < 100%	Red (1.732)
Western and Central Pacific Ocean (WCPO) Stock - United States - Hawaii - Western Central Pacific Ocean - Trolling lines	2.644	1.000: < 100%	Yellow (2.644)

Criterion 2 main assessed species/stocks table(s)

This table(s) provides a list of all species/stocks included in this assessment for each 'fishery' (as defined by a region/method combination). The text following this table(s) provides an explanation of the reasons the listed species were selected for inclusion in the assessment.

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United States - Hawaii - Eastern Central Pacific Ocean | Northeast Pacific Ocean - Longline (deep-set) - Flag Country: United States - FAO Major Area: Pacific, Northeast | Pacific, Eastern Central - Permit/License: Covers US vessels landing in Hawaii or California - RFMO: Inter-American Tropical Tuna Commission (IATTC)			
Sub Score: 1.732	**Discard Rate: 1.000**		**Score: 1.732**
Species	**Abundance**	**Fishing Mortality**	**Score**
Bigeye thresher shark	1.000: High Concern	3.000: Moderate Concern	Red (1.732)
False killer whale	1.000: High Concern	3.000: Moderate Concern	Red (1.732)
Black-footed albatross	1.000: High Concern	5.000: Low Concern	Yellow (2.236)
Green turtle	1.000: High Concern	5.000: Low Concern	Yellow (2.236)
Leatherback turtle	1.000: High Concern	5.000: Low Concern	Yellow (2.236)
Loggerhead turtle	1.000: High Concern	5.000: Low Concern	Yellow (2.236)
Olive Ridley turtle	1.000: High Concern	5.000: Low Concern	Yellow (2.236)
Thresher shark (Unspecified)	1.000: High Concern	5.000: Low Concern	Yellow (2.236)
Whitetip shark	1.000: High Concern	5.000: Low Concern	Yellow (2.236)
Risso's dolphin	2.330: Moderate Concern	5.000: Low Concern	Green (3.413)
Yellowfin tuna	3.670: Low Concern	5.000: Low Concern	Green (4.284)
Bigeye tuna	5.000: Very Low Concern	5.000: Low Concern	Green (5.000)
Blue shark	5.000: Very Low Concern	5.000: Low Concern	Green (5.000)

United States - Hawaii - Eastern Central Pacific Ocean | Northeast Pacific Ocean - Longline (shallow-set) - Flag Country: United States - FAO Major Area: Pacific, Northeast | Pacific, Eastern Central - RFMO: Inter-American Tropical Tuna Commission (IATTC)			
Sub Score: 2.236	**Discard Rate: 1.000**		**Score: 2.236**
Species	**Abundance**	**Fishing Mortality**	**Score**
Green turtle	1.000: High Concern	5.000: Low Concern	Yellow (2.236)
Leatherback turtle	1.000: High Concern	5.000: Low Concern	Yellow (2.236)
Loggerhead turtle	1.000: High Concern	5.000: Low Concern	Yellow (2.236)
Olive Ridley turtle	1.000: High Concern	5.000: Low Concern	Yellow (2.236)
Blue shark	5.000: Very Low Concern	5.000: Low Concern	Green (5.000)
Swordfish	5.000: Very Low Concern	5.000: Low Concern	Green (5.000)

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United States - Hawaii - Northwest Pacific Ocean | Western Central Pacific Ocean - Longline (deep-set) - Flag Country: United States - FAO Major Area: Pacific, Western Central | Pacific, Northwest - RFMO: Western and Central Pacific Fisheries Commission (WCPFC)			
Sub Score: 1.732	**Discard Rate: 1.000**		**Score: 1.732**
Species	**Abundance**	**Fishing Mortality**	**Score**
Bigeye thresher shark	1.000: High Concern	3.000: Moderate Concern	Red (1.732)
False killer whale	1.000: High Concern	3.000: Moderate Concern	Red (1.732)
Black-footed albatross	1.000: High Concern	5.000: Low Concern	Yellow (2.236)
False killer whale	1.000: High Concern	5.000: Low Concern	Yellow (2.236)
False killer whale	1.000: High Concern	5.000: Low Concern	Yellow (2.236)
Green turtle	1.000: High Concern	5.000: Low Concern	Yellow (2.236)
Leatherback turtle	1.000: High Concern	5.000: Low Concern	Yellow (2.236)
Loggerhead turtle	1.000: High Concern	5.000: Low Concern	Yellow (2.236)
Olive Ridley turtle	1.000: High Concern	5.000: Low Concern	Yellow (2.236)
Thresher shark (Unspecified)	1.000: High Concern	5.000: Low Concern	Yellow (2.236)
Risso's dolphin	2.330: Moderate Concern	5.000: Low Concern	Green (3.413)
Bigeye tuna	5.000: Very Low Concern	5.000: Low Concern	Green (5.000)
Blue shark	5.000: Very Low Concern	5.000: Low Concern	Green (5.000)
Yellowfin tuna	5.000: Very Low Concern	5.000: Low Concern	Green (5.000)
United States - Hawaii - Northwest Pacific Ocean | Western Central Pacific Ocean - Longline (shallow-set) - Flag Country: United States - FAO Major Area: Pacific, Western Central | Pacific, Northwest - RFMO: Western and Central Pacific Fisheries Commission (WCPFC)			
Sub Score: 2.236	**Discard Rate: 1.000**		**Score: 2.236**
Species	**Abundance**	**Fishing Mortality**	**Score**
Green turtle	1.000: High Concern	5.000: Low Concern	Yellow (2.236)
Leatherback turtle	1.000: High Concern	5.000: Low Concern	Yellow (2.236)
Loggerhead turtle	1.000: High Concern	5.000: Low Concern	Yellow (2.236)
Olive Ridley turtle	1.000: High Concern	5.000: Low Concern	Yellow (2.236)
Blue shark	5.000: Very Low Concern	5.000: Low Concern	Green (5.000)
Swordfish	5.000: Very Low Concern	5.000: Low Concern	Green (5.000)

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United States - Hawaii - Western Central Pacific Ocean - Handlines and hand-operated pole-and-lines - Flag Country: United States - FAO Major Area: Pacific, Western Central - RFMO: Western and Central Pacific Fisheries Commission (WCPFC)			
Sub Score: 5.000	**Discard Rate: 1.000**		**Score: 5.000**
Species	**Abundance**	**Fishing Mortality**	**Score**
Bigeye tuna	5.000: Very Low Concern	5.000: Low Concern	Green (5.000)
Yellowfin tuna	5.000: Very Low Concern	5.000: Low Concern	Green (5.000)
United States - Hawaii - Western Central Pacific Ocean - Trolling lines - Flag Country: United States - FAO Major Area: Pacific, Western Central - RFMO: Western and Central Pacific Fisheries Commission (WCPFC)			
Sub Score: 2.644	**Discard Rate: 1.000**		**Score: 2.644**
Species	**Abundance**	**Fishing Mortality**	**Score**
Dolphinfish	2.330: Moderate Concern	3.000: Moderate Concern	Yellow (2.644)
Blue marlin	3.670: Low Concern	5.000: Low Concern	Green (4.284)
Skipjack tuna	5.000: Very Low Concern	5.000: Low Concern	Green (5.000)
Yellowfin tuna	5.000: Very Low Concern	5.000: Low Concern	Green (5.000)

Per version 4 of the Standard for Fisheries (Seafood Watch 2020), the Criterion 2 score for the stock being rated is the lowest score of all the other main species caught with it (including both target and non-target, retained and discarded species), multiplied by the discard + bait use rate. A species is a main species if it meets any of the following conditions ("catch" here includes landings plus discards, and is defined in terms of weight rather than number of fish/animals):

1. A common component of the catch (as guidance, >5% of the catch in most cases), or
2. Overfished, endangered, threatened, undergoing overfishing, or otherwise a species of concern (hereafter termed "ETP species"), where catch occurs regularly and may significantly contribute to the conservation concern (i.e., more than a negligible and/or sporadic level of catch). As guidance, mortality of the species caused by this fishery is >5% of a sustainable level, or
3. Fishery under assessment is one of the main sources of fishing mortality for the species, including bait species if known (as guidance, approx. 20% or more of total fishing mortality), and
4. In fisheries that use bait, the bait species should be treated as a bycatch species if it meets the main species criteria outlined above. If the species used as bait are unknown but together account for greater than 5% of the catch and no other main species have been identified, then add "unknown finfish" with abundance and fishing mortality both scored as "moderate concern".

For this Seafood Watch assessment, condition 2 is considered met if mortality is not negligible

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or sporadic and a sustainable level of catch is unknown. Condition 2 is also met where estimated mortality exceeds **5%** of any of the following thresholds:

- a level based on an appropriate reference point (such as MSY);
- Potential Biological Removal (PBR) level for mammals. Per NOAA: "The Potential Biological Removal level is a reference point defined by the Marine Mammal Protection Act. It is the maximum number of animals, not including natural deaths, that may be removed from a marine mammal stock (i.e., population) while allowing the population to maintain or recover to its optimum sustainable population size." (https://www.fisheries.noaa.gov/feature-story/potential-biological-removal-levels-tool-conserve-marine-mammals). PBR may also apply to non-mammal species such as seabirds, where it has been calculated;
- Incidental Take Statement (ITS) level for turtles and other species listed under the United States Endangered Species Act. An ITS provides a level of 'take' for the fishery that will not jeopardize the continued existence of the species. A recent example for the Hawaii shallow set longline fishery can be found here: https://www.fisheries.noaa.gov/s3//2024-03/2177-SFD-SSLL-Supplemental-BiOp-3-12-2024-FINAL-signed.pdf

Data sources

See Appendices

Main species for each fishery

Deep-set longline

- >5% of the catch: Bigeye tuna, yellowfin tuna, blue shark
- ETP species
    - where mortality is not negligible and a sustainable level of catch is unknown: Mako shark, thresher shark, oceanic whitetip shark
    - where estimated take is greater than 5% of the PBR level: False killer whale (Hawaii pelagic stock, MHI stock, NWHI stock), Risso's dolphin (Hawaii stock), black-footed albatross
    - where estimated take exceeds 5% of the ITS level: Leatherback turtle, green turtle, loggerhead turtle, olive ridley turtle (East Pacific and West Pacific)
- Others where the fishery accounts for >20% of the mortality: None
- Main species limiting the C2 score (lowest-scoring species): False killer whale (Hawaii pelagic stock), thresher shark

Shallow-set longline

- >5% of the catch: Swordfish, blue shark
- ETP species
    - where mortality is not negligible and a sustainable level of catch is unknown: none

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    - where estimated take is greater than 5% of the PBR level: None
    - where estimated take exceeds 5% of the ITS level: Green turtle, leatherback turtle, loggerhead turtle (North Pacific), olive ridley turtle
- Others where the fishery accounts for >20% of the mortality: None
- Main species limiting the C2 score: Multiple sea turtle species

Main Hawaiian Islands troll

- >5% of the catch: Yellowfin tuna, skipjack tuna, blue marlin, dolphinfish
- ETP species: None
- Others where the fishery accounts for >20% of the mortality: None

Hawaiian handline (combined Main Hawaiian Islands and offshore fisheries)

- >5% of the catch: Yellowfin tuna, bigeye tuna
- ETP species: None
- Others where the fishery accounts for >20% of the mortality: None

Species not meeting the above conditions were not considered main species. For a full list of caught species and their main species determinations, see Appendix section.

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Criterion 2 Assessment

Scoring Guidelines

Factor 2.1 - Abundance

(same as Factor 1.1 above)

Factor 2.2 - Fishing Mortality

(same as Factor 1.2 above)

Factor 2.3 - Modifying Factor: Discards and Bait Use

Goal: Fishery optimizes the utilization of marine and freshwater resources by minimizing post-harvest loss. For fisheries that use bait, bait is used efficiently.

Scoring Guidelines: The discard rate is the sum of all dead discards (i.e. non-retained catch) plus bait use divided by the total retained catch.

Ratio of bait + discards/landings	**Factor 2.3 score**
<100%	1
>=100	0.75

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Bigeye thresher shark *(Alopias superciliosus)*

2.1 Abundance

United States - Hawaii - Eastern Central Pacific Ocean | Northeast Pacific Ocean - Longline (deep-set) - Flag Country: United States - FAO Major Area: Pacific, Northeast | Pacific, Eastern Central - Permit/License: Covers US vessels landing in Hawaii or California - RFMO: Inter-American Tropical Tuna Commission (IATTC)

United States - Hawaii - Northwest Pacific Ocean | Western Central Pacific Ocean - Longline (deep-set) - Flag Country: United States - FAO Major Area: Pacific, Western Central | Pacific, Northwest - RFMO: Western and Central Pacific Fisheries Commission (WCPFC)

High Concern

A Pacific-wide stock assessment for bigeye thresher sharks has not been performed, though a vulnerability assessment was completed for the species in 2017 (Clarke 2017b). This assessment did not estimate biomass for the Pacific stock. The IUCN lists bigeye thresher as "Vulnerable" on a global scale (Rigby et al. 2019d). Based on the IUCN status, Abundance is considered "high concern" (per line 1 in table 1.1.1 of the Seafood Watch Standard).

2.2 Fishing Mortality

United States - Hawaii - Eastern Central Pacific Ocean | Northeast Pacific Ocean - Longline (deep-set) - Flag Country: United States - FAO Major Area: Pacific, Northeast | Pacific, Eastern Central - Permit/License: Covers US vessels landing in Hawaii or California - RFMO: Inter-American Tropical Tuna Commission (IATTC)

United States - Hawaii - Northwest Pacific Ocean | Western Central Pacific Ocean - Longline (deep-set) - Flag Country: United States - FAO Major Area: Pacific, Western Central | Pacific, Northwest - RFMO: Western and Central Pacific Fisheries Commission (WCPFC)

Moderate Concern

While the 2017 vulnerability assessment for Pacific bigeye thresher suggested fishing mortality may have been above a sustainable level in some years prior to 2014, fishing mortality past 2014 has not been quantified, making current fishing mortality relative to appropriate reference points unknown (Clarke 2017b). Because it is unknown, Fishing Mortality is considered "moderate concern" (per line 3 in table 1.2.1 of the Seafood Watch Standard).

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Black-footed albatross *(Phoebastria nigripes)*

2.1 Abundance

United States - Hawaii - Eastern Central Pacific Ocean | Northeast Pacific Ocean - Longline (deep-set) - Flag Country: United States - FAO Major Area: Pacific, Northeast | Pacific, Eastern Central - Permit/License: Covers US vessels landing in Hawaii or California - RFMO: Inter-American Tropical Tuna Commission (IATTC)

United States - Hawaii - Northwest Pacific Ocean | Western Central Pacific Ocean - Longline (deep-set) - Flag Country: United States - FAO Major Area: Pacific, Western Central | Pacific, Northwest - RFMO: Western and Central Pacific Fisheries Commission (WCPFC)

High Concern

According to the International Union for Conservation of Nature (IUCN), black-footed albatross are classified as Near Threatened with an increasing population trend {BirdLife International 2017; BirdLife International 2020). The breeding season population is estimated to be 69,404 pairs (ACAP 2012). The population of black-footed albatross has remained stable since 1957, and the population is currently increasing (Arata et al. 2009). Despite the stable/increasing population, the Near Threatened IUCN status results in Abundance being considered “high concern” (per line 1 in table 1.1.1 of the Seafood Watch Standard).

Supplementary Information

The Northwestern Hawaiian Islands are a breeding ground for this species {BirdLife International 2017}. Based on counts conducted during the 2006-2007 breeding season, 64,500 pairs were estimated in colonies that support 90% of the global breeding population. Other estimates from 2000 concluded there were 275,000 birds {Birdlife International 2017}. The United States Department of Fish and Wildlife Services has determined this species does not warrant listing under the US Endangered Species Act (ESA) (76 FR 62504, October 7, 2011).

2.2 Fishing Mortality

United States - Hawaii - Eastern Central Pacific Ocean | Northeast Pacific Ocean - Longline (deep-set) - Flag Country: United States - FAO Major Area: Pacific, Northeast | Pacific, Eastern Central - Permit/License: Covers US vessels landing in Hawaii or California - RFMO: Inter-American Tropical Tuna Commission (IATTC)

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United States - Hawaii - Northwest Pacific Ocean | Western Central Pacific Ocean - Longline (deep-set) - Flag Country: United States - FAO Major Area: Pacific, Western Central | Pacific, Northwest - RFMO: Western and Central Pacific Fisheries Commission (WCPFC)

Low Concern

In the Hawaiian deep-set longline fishery, observed interactions with black-footed albatross have ranged from a low of 5 in 2004 to a high of 194 in 2018. In 2018, 168 out of the 194 black-footed albatross observed caught were discarded dead, and the expansion factor estimated takes at approximately 951 black-footed albatross (PIROP 2018; WPRFMC 2018). Average annual take in the deep-set fishery from 2018 to 2022 was 618.6 (expanded estimate) individuals (WPRFMC 2023). The potential biological removal (PBR) for fisheries that incidentally capture this species is 11,980 birds (Arata and Naughton 2009); the deep-set longline fishery accounts for just over 5% of the PBR. The deep-set fishery has under 20% observer coverage, thus fishing mortality estimates are somewhat uncertain. Fishing Mortality is considered "low concern" because the Hawaii deep-set longline fishery takes are estimated to be under 10% of the PBR (per Table 2.2.1.a of the Seafood Watch Standard).

Blue shark *(Prionace glauca)*

2.1 Abundance

North Pacific Stock - United States - Hawaii - Eastern Central Pacific Ocean | Northeast Pacific Ocean - Longline (deep-set) - Flag Country: United States - FAO Major Area: Pacific, Northeast | Pacific, Eastern Central - Permit/License: Covers US vessels landing in Hawaii or California - RFMO: Inter-American Tropical Tuna Commission (IATTC)

North Pacific Stock - United States - Hawaii - Northwest Pacific Ocean | Western Central Pacific Ocean - Longline (deep-set) - Flag Country: United States - FAO Major Area: Pacific, Western Central | Pacific, Northwest - RFMO: Western and Central Pacific Fisheries Commission (WCPFC)

North Pacific Stock - United States - Hawaii - Eastern Central Pacific Ocean | Northeast Pacific Ocean - Longline (shallow-set) - Flag Country: United States - FAO Major Area: Pacific, Northeast | Pacific, Eastern Central - RFMO: Inter-American Tropical Tuna Commission (IATTC)

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North Pacific Stock - United States - Hawaii - Northwest Pacific Ocean | Western Central Pacific Ocean - Longline (shallow-set) - Flag Country: United States - FAO Major Area: Pacific, Western Central | Pacific, Northwest - RFMO: Western and Central Pacific Fisheries Commission (WCPFC)

Very Low Concern

Blue shark is assessed as a single stock in the North Pacific. The most recent assessment was conducted in 2022 using data through 2020, and found female spawning biomass to be above the MSY level ($SSB_{current}/SSB_{MSY}$ = 1.17) (ISC 2022). Based on a stock assessment using data < 5 years old with a finding that SSB > SSB_{MSY}, abundance is considered a “very low concern" (per line 1 in table 1.2.1 of the Seafood Watch Standard).

2.2 Fishing Mortality

North Pacific Stock - United States - Hawaii - Eastern Central Pacific Ocean | Northeast Pacific Ocean - Longline (deep-set) - Flag Country: United States - FAO Major Area: Pacific, Northeast | Pacific, Eastern Central - Permit/License: Covers US vessels landing in Hawaii or California - RFMO: Inter-American Tropical Tuna Commission (IATTC)

North Pacific Stock - United States - Hawaii - Northwest Pacific Ocean | Western Central Pacific Ocean - Longline (deep-set) - Flag Country: United States - FAO Major Area: Pacific, Western Central | Pacific, Northwest - RFMO: Western and Central Pacific Fisheries Commission (WCPFC)

North Pacific Stock - United States - Hawaii - Eastern Central Pacific Ocean | Northeast Pacific Ocean - Longline (shallow-set) - Flag Country: United States - FAO Major Area: Pacific, Northeast | Pacific, Eastern Central - RFMO: Inter-American Tropical Tuna Commission (IATTC)

North Pacific Stock - United States - Hawaii - Northwest Pacific Ocean | Western Central Pacific Ocean - Longline (shallow-set) - Flag Country: United States - FAO Major Area: Pacific, Western Central | Pacific, Northwest - RFMO: Western and Central Pacific Fisheries Commission (WCPFC)

Low Concern

The 2022 stock assessment of North Pacific blue shark found that fishing mortality is below the MSY level ($F_{2017–19}/F_{MSY}$ = 0.445) (ISC 2022). Based on a stock assessment using data < 10 years old with a finding that fishing mortality is less than fishing mortality at MSY, fishing mortality is considered a “low concern” (per line 1 in table 1.2.1 of the Seafood Watch Standard).

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Supplementary Information

Blue shark is widely distributed throughout the North Pacific and dominates shark catches in that region. The primary source of known blue shark fishing mortality is oceanic longline fisheries targeting swordfish and tuna, including mostly shallow-set longline fisheries in temperate waters and deep-set longline fisheries in more tropical areas. Sharks are targeted less often than tunas and swordfish, although new Asian shark markets have been developing for over a decade and targeted fisheries for blue shark do exist (Clarke et al. 2014; ISC 2017b).

False killer whale *(Pseudorca crassidens)*

2.1 Abundance

Hawaii Pelagic Stock - United States - Hawaii - Eastern Central Pacific Ocean | Northeast Pacific Ocean - Longline (deep-set) - Flag Country: United States - FAO Major Area: Pacific, Northeast | Pacific, Eastern Central - Permit/License: Covers US vessels landing in Hawaii or California - RFMO: Inter-American Tropical Tuna Commission (IATTC)

Hawaii Pelagic Stock - United States - Hawaii - Northwest Pacific Ocean | Western Central Pacific Ocean - Longline (deep-set) - Flag Country: United States - FAO Major Area: Pacific, Western Central | Pacific, Northwest - RFMO: Western and Central Pacific Fisheries Commission (WCPFC)

High Concern

The Hawaii pelagic stock of false killer whales is not listed as threatened or endangered under the ESA, though false killer whales as a species are listed as “Near Threatened” by the IUCN (Baird 2018; NMFS 2021). The total stock size was estimated at 1,567 whales in 2017 (NMFS 2021). While the stock is not ESA-listed, its status relative to biological reference points is unknown, and Abundance is therefore considered “high concern” based on the species' IUCN status (per line 1 in table 1.1.1 of the Seafood Watch Standard).

Main Hawaiian Islands Insular Stock - United States - Hawaii - Northwest Pacific Ocean | Western Central Pacific Ocean - Longline (deep-set) - Flag Country: United States - FAO Major Area: Pacific, Western Central | Pacific, Northwest - RFMO: Western and Central Pacific Fisheries Commission (WCPFC)

High Concern

The IUCN lists false killer whales as Near Threatened with an unknown population trend (Baird 2018). The Main Hawaiian Islands Insular false killer whale stock is listed as Endangered under the ESA and Depleted/Strategic under the MMPA (NMFS 2019). The

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latest minimum population estimate for the MHI stock is 149 individuals, from 2015 (NMFS 2021). The stock is thought to have declined, but according to NOAA, its official status remains unknown. The MHI stock of false killer whales is considered "high concern" for Abundance because it is IUCN Near Threatened and ESA Endangered (per line 1 in table 1.1.1 of the Seafood Watch Standard).

Supplementary Information

The abundance estimate for the Main Hawaiian Islands Insular stock based on mark-recapture analyses of photo-identified animals have ranged from 144 to 187 animals over a 16 year survey period individuals (NMFS 2021). Extant data suggest that the MHI Insular stock abundance in the 1980s was much higher, likely in the 400-700 range, which indicates a substantial long-term decline. More recent trend data are unknown due to the variability associated with recent abundance estimates (NMFS 2019).

Northwest Hawaiian Islands Stock - United States - Hawaii - Northwest Pacific Ocean | Western Central Pacific Ocean - Longline (deep-set) - Flag Country: United States - FAO Major Area: Pacific, Western Central | Pacific, Northwest - RFMO: Western and Central Pacific Fisheries Commission (WCPFC)

High Concern

The Northwestern Hawaiian Islands stock of false killer whales is not listed as endangered or threatened on the ESA, but the species as a whole is considered "Near Threatened" by the IUCN (Baird 2018) (NMFS 2021). The minimum population estimate in 2017 was 178 (NMFS 2021). Though the stock is not ESA-listed, its status relative to biological reference points is unknown, so Abundance is considered "high concern" based on the species' IUCN listing (per line 1 in table 1.1.1 of the Seafood Watch Standard).

2.2 Fishing Mortality

Hawaii Pelagic Stock - United States - Hawaii - Eastern Central Pacific Ocean | Northeast Pacific Ocean - Longline (deep-set) - Flag Country: United States - FAO Major Area: Pacific, Northeast | Pacific, Eastern Central - Permit/License: Covers US vessels landing in Hawaii or California - RFMO: Inter-American Tropical Tuna Commission (IATTC)

Hawaii Pelagic Stock - United States - Hawaii - Northwest Pacific Ocean | Western Central Pacific Ocean - Longline (deep-set) - Flag Country: United States - FAO Major Area: Pacific, Western Central | Pacific, Northwest - RFMO: Western and Central Pacific Fisheries Commission (WCPFC)

Moderate Concern

PBR for the Hawaii pelagic stock of false killer whales is estimated at 16 whales per year. From 2015 to 2019, the mean annual take of Hawaii pelagic false killer whales (within the

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US EEZ) was 9.8, with 2018 and 2019's takes being highest since the Take Reduction Plan was implemented (NMFS 2021). No other fisheries contributed to PBR in the US EEZ during this time. Because cumulative fisheries mortality is under PBR, but the deep-set fishery is responsible for >50% of PBR, Fishing Mortality is considered “moderate concern” (per table 2.2.1.a of the Seafood Watch Standard).

Supplementary Information

A Take Reduction Team was formed in 2010 (because the PBR was exceeded from 2009-2013) to establish gear requirements, time-area closures and improved responses to entangled whales. The efficacy of this the False Killer Whale Take Reduction Plan is unknown; however, 12 false killer whales MSI events occurred in 2018 alone, and 25 occurred in 2019 (NMFS 2021). MSIs from the deep-set fishery outside of the US EEZ also remain high, despite the TRP in place, though there is a separate PBR for the stock outside of the EEZ (ibid). And in July of 2018, the Southern Exclusion Zone (SEZ) was closed pursuant to the False Killer Whale Take Reduction Plan following two false killer whale interactions within the US EEZ resulting in a M&SI event (WPRFMC 2018).

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Main Hawaiian Islands Insular Stock - United States - Hawaii - Northwest Pacific Ocean | Western Central Pacific Ocean - Longline (deep-set) - Flag Country: United States - FAO Major Area: Pacific, Western Central | Pacific, Northwest - RFMO: Western and Central Pacific Fisheries Commission (WCPFC)

Low Concern

The Hawaii-deep set fishery is a Category I fishery, indicating frequent incidental mortality or serious injuries with marine mammals occurs, and Hawaii pelagic false killer whale interactions drive this designation. The MHI stock's PBR is 0.3, and the deep-set longline fishery averaged 0.03 MSIs from 2015 to 2019 (NMFS 2021). The deep-set fishery was responsible for all takes of the MHI stock during this period. The MHI stock's Fishing Mortality is considered “low concern” in the deep-set longline fishery because cumulative fisheries mortality is less than PBR and the deep-set fishery is responsible for <50% of PBR (per table 2.2.1a of the Seafood Watch Standard).

Northwest Hawaiian Islands Stock - United States - Hawaii - Northwest Pacific Ocean | Western Central Pacific Ocean - Longline (deep-set) - Flag Country: United States - FAO Major Area: Pacific, Western Central | Pacific, Northwest - RFMO: Western and Central Pacific Fisheries Commission (WCPFC)

Low Concern

PBR for the NWHI stock is estimated at 1.4, and the deep-set longline fishery's average takes from 2015 to 2019 were 0.1, or 7% of PBR. No other fisheries contributed to PBR for this stock during this time period. Because cumulative fisheries mortality is less than PBR, and the deep-set fishery contributes <50% of PBR, Fishing Mortality is considered "low concern" (per table 2.2.1.a of the Seafood Watch Standard).

Green turtle *(Chelonia mydas)*

2.1 Abundance

United States - Hawaii - Eastern Central Pacific Ocean | Northeast Pacific Ocean - Longline (deep-set) - Flag Country: United States - FAO Major Area: Pacific, Northeast | Pacific, Eastern Central - Permit/License: Covers US vessels landing in Hawaii or California - RFMO: Inter-American Tropical Tuna Commission (IATTC)

United States - Hawaii - Northwest Pacific Ocean | Western Central Pacific Ocean - Longline (deep-set) - Flag Country: United States - FAO Major Area: Pacific, Western Central | Pacific, Northwest - RFMO: Western and Central Pacific Fisheries Commission (WCPFC)

United States - Hawaii - Eastern Central Pacific Ocean | Northeast Pacific Ocean - Longline (shallow-set) - Flag Country: United States - FAO Major Area: Pacific, Northeast | Pacific, Eastern Central - RFMO: Inter-American Tropical Tuna Commission (IATTC)

United States - Hawaii - Northwest Pacific Ocean | Western Central Pacific Ocean - Longline (shallow-set) - Flag Country: United States - FAO Major Area: Pacific, Western Central | Pacific, Northwest - RFMO: Western and Central Pacific Fisheries Commission (WCPFC)

High Concern

The IUCN has classified green sea turtles as Endangered globally with a decreasing population trend, but the Hawaiian subpopulation (Central North Pacific subpopulation) is listed as Least Concern with an increasing trend (Chaloupka and Pilcher 2019). However, the Central North Pacific DPS and East Pacific DPS, which make up the majority of takes in Hawaiian longline fisheries, are listed as Threatened on the ESA (WPRFMC 2023) (NMFS 2023). Green sea turtles have been listed on the Convention on International Trade in Endangered Species (CITES) since 1975 and are currently listed on Appendix 1 because they are threatened with extinction and international trade is prohibited. The mean annual number of nesting turtles worldwide has decreased between 48% to 67% over the past 100-150 years (Seminoff 2004). Abundance is considered "high concern" for green turtles due their global IUCN and ESA classifications (per line 1 in table 1.1.1 of the Seafood Watch Standard).

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Supplementary Information

Wallace et al. (2011, 2013) identified the Northwest Pacific Regional Management Unit (RMU) of green sea turtles as at high risk of population decline, but with low threats (i.e., combination of bycatch, take, coastal development, pollution/pathogens and climate change) (Wallace et al. 2011; Wallace et al. 2013). The southwest Pacific RMU had low risk, but high threats, while the Coral Triangle had high risk and high threats and a critical need for data. Finally, the West Central Pacific RMU had low risk and low threats (Wallace et al. 2011).

2.2 Fishing Mortality

United States - Hawaii - Eastern Central Pacific Ocean | Northeast Pacific Ocean - Longline (deep-set) - Flag Country: United States - FAO Major Area: Pacific, Northeast | Pacific, Eastern Central - Permit/License: Covers US vessels landing in Hawaii or California - RFMO: Inter-American Tropical Tuna Commission (IATTC)

United States - Hawaii - Northwest Pacific Ocean | Western Central Pacific Ocean - Longline (deep-set) - Flag Country: United States - FAO Major Area: Pacific, Western Central | Pacific, Northwest - RFMO: Western and Central Pacific Fisheries Commission (WCPFC)

Low Concern

Observed incidental takes of green sea turtles in the Hawaiian deep-set longline fishery are variable, ranging between 1 and 3 takes (all of which were mortalities) per year from 2014 to 2021 (4 to 18 expanded estimates)(WPRFMC 2023). The majority of deep-set takes are form the East Pacific green sea turtle DPS, with estimated interactions and mortalities exceeding the 3-year Incidental Take Statements (ITSs - allowable interactions set by ESA consultations) for the 2018-2020, 2019-2021, and 2020-2022 periods (ibid). The deep-set fishery has regulatory ITSs for turtles, however these ITSs are not considered hard caps and only trigger re-initiation of a consultation. In 2018, following the fishery exceeding the ITS for that year, , NMFS reinitiated consultation for the deep-set fishery and in 2023 determined that the conduct of the deep-set fishery during the period of consultation will not violate the ESA (NMFS 2023a). Further, it was found that only 0.0041% of the population - at maximum - is expected to be killed annually by the DSLL fishery (ibid). Fishing Mortality in the Hawaiian deep-set longline fishery is considered “low concern” for green sea turtles because, while the ITS has been exceeded in recent periods, the non-jeopardy finding from the most recent consultation suggests that the fishery is not a major contributor to overall mortality and does not negatively impact this stock (per line 3 in table 1.2.1 of the Seafood Watch Standard).

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Supplementary Information

Incidental capture in fisheries is considered a major threat to green sea turtles worldwide, and green sea turtles are bycatch in pelagic longline and purse seine fisheries in the Pacific (Seminoff 2004). A number of conservation-based regulations have been established to mitigate the impacts of turtle bycatch including using mackerel-type bait, gear requirements and specific circle hook standards and safe handling and release regulations (WPRFMC 2018).

United States - Hawaii - Eastern Central Pacific Ocean | Northeast Pacific Ocean - Longline (shallow-set) - Flag Country: United States - FAO Major Area: Pacific, Northeast | Pacific, Eastern Central - RFMO: Inter-American Tropical Tuna Commission (IATTC)

United States - Hawaii - Northwest Pacific Ocean | Western Central Pacific Ocean - Longline (shallow-set) - Flag Country: United States - FAO Major Area: Pacific, Western Central | Pacific, Northwest - RFMO: Western and Central Pacific Fisheries Commission (WCPFC)

Low Concern

Green sea turtle takes in the shallow-set fishery ranged from 0 to 2 from 2014 to 2021, and the species had the second-lowest sea turtle interaction rates for this fishery during this time period (lowest rates were for unidentified turtles) (WPRFMC 2023). Green turtle mortalities in this fishery have been below the regulatory 2-year Incidental Take Statements (ITS) since 2012 and are well below the total cumulative estimate (high degree of uncertainty) of green sea turtle interactions (6,500 from 1989-2015)(NMFS 2019c). While average interactions from 2018 to 2022 were >5% of the ITS of 5 turtles, they were below 1 turtle per year, and the latest BiOp concluded a non-jeopardy finding for the fishery (NMFS 2019c) (WPRFMC 2023). Fishing Mortality is considered “low concern” in the Hawaiian shallow-set longline because the fishery are not a major contributor to overall green sea turtle mortality and the fishery's operations are unlikely to create a significant adverse impact on the stock (per line 3 in table 1.2.1 of the Seafood Watch Standard).

Supplementary Information

The incidental capture in fisheries is considered a major threat to green sea turtles worldwide, and green sea turtles are bycatch in pelagic longline and purse seine fisheries in the Pacific Ocean (Seminoff 2004). A number of conservation-based regulations have been established to mitigate the impacts of turtle bycatch including using mackerel-type bait, gear requirements and specific circle hook standards and safe handling and release regulations (WPRFMC 2018).

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Leatherback turtle *(Dermochelys coriacea)*

2.1 Abundance

United States - Hawaii - Eastern Central Pacific Ocean | Northeast Pacific Ocean - Longline (deep-set) - Flag Country: United States - FAO Major Area: Pacific, Northeast | Pacific, Eastern Central - Permit/License: Covers US vessels landing in Hawaii or California - RFMO: Inter-American Tropical Tuna Commission (IATTC)

United States - Hawaii - Northwest Pacific Ocean | Western Central Pacific Ocean - Longline (deep-set) - Flag Country: United States - FAO Major Area: Pacific, Western Central | Pacific, Northwest - RFMO: Western and Central Pacific Fisheries Commission (WCPFC)

United States - Hawaii - Eastern Central Pacific Ocean | Northeast Pacific Ocean - Longline (shallow-set) - Flag Country: United States - FAO Major Area: Pacific, Northeast | Pacific, Eastern Central - RFMO: Inter-American Tropical Tuna Commission (IATTC)

United States - Hawaii - Northwest Pacific Ocean | Western Central Pacific Ocean - Longline (shallow-set) - Flag Country: United States - FAO Major Area: Pacific, Western Central | Pacific, Northwest - RFMO: Western and Central Pacific Fisheries Commission (WCPFC)

High Concern

Leatherback sea turtles have been listed as Endangered under the ESA since 1970 (NMFS 2012) and the eastern Pacific Ocean subpopulation is listed by the IUCN as Critically Endangered with a decreasing population trend (Wallace et al. 2013b). Leatherback turtles have been listed CITES since 1975 and are currently listed on Appendix 1 because they are threatened with extinction and international trade is prohibited. Over the past 25 years the population of leatherbacks in the Pacific Ocean has decreased by 97% (NOAA 2016). Leatherback Abundance is considered “high concern” based on the ESA, IUCN, and CITES listings (per line 1 in table 1.1.1 of the Seafood Watch Standard).

2.2 Fishing Mortality

United States - Hawaii - Eastern Central Pacific Ocean | Northeast Pacific Ocean - Longline (deep-set) - Flag Country: United States - FAO Major Area: Pacific, Northeast | Pacific, Eastern Central - Permit/License: Covers US vessels landing in Hawaii or California - RFMO: Inter-American Tropical Tuna Commission (IATTC)

United States - Hawaii - Northwest Pacific Ocean | Western Central Pacific Ocean - Longline (deep-set) - Flag Country: United States - FAO Major Area: Pacific, Western Central | Pacific, Northwest - RFMO: Western and Central Pacific Fisheries Commission (WCPFC)

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United States - Hawaii - Eastern Central Pacific Ocean | Northeast Pacific Ocean - Longline (shallow-set) - Flag Country: United States - FAO Major Area: Pacific, Northeast | Pacific, Eastern Central - RFMO: Inter-American Tropical Tuna Commission (IATTC)

United States - Hawaii - Northwest Pacific Ocean | Western Central Pacific Ocean - Longline (shallow-set) - Flag Country: United States - FAO Major Area: Pacific, Western Central | Pacific, Northwest - RFMO: Western and Central Pacific Fisheries Commission (WCPFC)

Low Concern

The most recent BiOp (2019) for the shallow-set fishery concluded that the continued operation of the fishery would not jeopardize the existence of leatherback turtles (NMFS 2019). However, it did reduce the shallow-set fleet-wide interaction limit to 16 leatherbacks (hard cap) and included new trip limits (2 leatherback interactions per trip). One trip reached this limit in 2022 (WPRFMC 2023). In 2020, 2021, and 2022, interactions and mortalities in the shallow-set fishery stayed below the 1-year ITS interactions and mortalities but were, on average, >5% of the ITS (ibid). In the deep-set fishery, the three-year ITS was not exceeded from 2020 to 2022, but interactions were above 5% of this ITS (NMFS 2023a) (WPRFMC 2023). However, like in the shallow-set fishery, the most recent BiOp concluded that takes in the deep-set fishery would not jeopardize the continued existence of this stock. Leatherback Fishing Mortality for both fisheries is considered “low concern" because the non-jeopardy findings indicate that the longline fisheries' contributions to fishing mortality are unlikely to adversely affect the leatherback population (per line 3 in table 1.2.1 of the Seafood Watch Standard).

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Supplementary Information

Fishing mortality is thought to be a major threat to leatherback turtles, especially for juveniles and adults that can be incidentally captured in fisheries along their migration routes (Wallace et al. 2013). Interactions between leatherbacks and the Hawaiian longline fisheries are much lower than those seen in other tuna and swordfish longline fisheries (IATTC 2018), and management measures introduced into the shallow-set fishery in 2004 have reduced leatherback interactions by 83% (Gilman et al. 2007). Example bycatch mitigation methods include using mackerel-type bait, gear deployment and type requirements such as specific circle hook standards and safe handling and release regulations (WPRFMC 2018).

From 1989-2015, 331 leatherback interactions were reported by 16 countries that operate in the WCPO, therefore the total estimated leatherback interactions was approximately 6620 for those 16 countries that participated in the areas beyond national jurisdiction. Due to lack of reporting across the Pacific Ocean, the actual number of leatherback turtles taken in longline fisheries is unknown, however most studies suggest bycatch mortality is likely a factor in the continued decline of the leatherback population (NMFS 2019).

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Loggerhead turtle *(Caretta caretta)*

2.1 Abundance

United States - Hawaii - Eastern Central Pacific Ocean | Northeast Pacific Ocean - Longline (deep-set) - Flag Country: United States - FAO Major Area: Pacific, Northeast | Pacific, Eastern Central - Permit/License: Covers US vessels landing in Hawaii or California - RFMO: Inter-American Tropical Tuna Commission (IATTC)

United States - Hawaii - Northwest Pacific Ocean | Western Central Pacific Ocean - Longline (deep-set) - Flag Country: United States - FAO Major Area: Pacific, Western Central | Pacific, Northwest - RFMO: Western and Central Pacific Fisheries Commission (WCPFC)

United States - Hawaii - Eastern Central Pacific Ocean | Northeast Pacific Ocean - Longline (shallow-set) - Flag Country: United States - FAO Major Area: Pacific, Northeast | Pacific, Eastern Central - RFMO: Inter-American Tropical Tuna Commission (IATTC)

United States - Hawaii - Northwest Pacific Ocean | Western Central Pacific Ocean - Longline (shallow-set) - Flag Country: United States - FAO Major Area: Pacific, Western Central | Pacific, Northwest - RFMO: Western and Central Pacific Fisheries Commission (WCPFC)

High Concern

The IUCN classified loggerhead turtle in the North Pacific Regional Management Unit (RMU) as “Least Concern” with an increasing population trend, but this listing is 10 years old {Casale & Matsuzawa 2015}, and loggerhead in the South Pacific RMU as “Critically Endangered” with a decreasing population trend {Limpus & Casale 2015}. Loggerhead is listed on Appendix 1 of CITES. No more recent assessments exist for either subpopulation, but SFW considers sea turtles to have high inherent vulnerability. In the absence of a stock assessment, Abundance is considered “high concern” by default for vulnerable taxa (per line 2.a on page 20 of the Seafood Watch Standard).

2.2 Fishing Mortality

United States - Hawaii - Eastern Central Pacific Ocean | Northeast Pacific Ocean - Longline (deep-set) - Flag Country: United States - FAO Major Area: Pacific, Northeast | Pacific, Eastern Central - Permit/License: Covers US vessels landing in Hawaii or California - RFMO: Inter-American Tropical Tuna Commission (IATTC)

United States - Hawaii - Northwest Pacific Ocean | Western Central Pacific Ocean - Longline (deep-set) - Flag Country: United States - FAO Major Area: Pacific, Western Central | Pacific, Northwest - RFMO: Western and Central Pacific Fisheries Commission (WCPFC)

Low Concern

From 2020 to 2022, an estimated total of 41.35 interactions with 22.87 mortalities (thus ~14 interactions/8 mortalities annually) occurred between loggerhead turtles and the deep-set longline fishery (WPRFMC 2023). The deep-set fishery's 2023 biological opinion found that, if current interaction rates remain stable, the fishery would be responsible for the death of 0.0015% of the population over the next 10 years, which is not expected to impact growth of the population, concluding in a non-jeopardy finding for the fishery. While cumulative loggerhead mortality in longline fisheries in the Pacific Ocean may be negatively impacting the population and the deep-set fishery's interaction rate is >5% of its ITS, the fishery's impact is not expected to adversely affect the population, and Fishing Mortality is therefore considered “low concern” (per line 3 in table 1.2.1 of the Seafood Watch Standard).

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Supplementary Information

In the central and western Pacific, there were 549 loggerhead sea turtles reported captured, with a total estimate (using WCPFC observer coverage rates) of 10,980 loggerheads caught from 1989-2016 for 16 countries that participated in the areas beyond national jurisdiction (NMFS 2023a). Further, an average estimated 390 loggerhead sea turtles were killed annually in WCPO longline fisheries from 2013 to 2020 (ibid). In the same time period, the mean number of estimated annual loggerhead mortalities in the deep-set fishery was <8 (WPRFMC 2023).

United States - Hawaii - Eastern Central Pacific Ocean | Northeast Pacific Ocean - Longline (shallow-set) - Flag Country: United States - FAO Major Area: Pacific, Northeast | Pacific, Eastern Central - RFMO: Inter-American Tropical Tuna Commission (IATTC)

United States - Hawaii - Northwest Pacific Ocean | Western Central Pacific Ocean - Longline (shallow-set) - Flag Country: United States - FAO Major Area: Pacific, Western Central | Pacific, Northwest - RFMO: Western and Central Pacific Fisheries Commission (WCPFC)

Low Concern

Cumulative fishery mortality for loggerhead estimates (see justification) have a high degree of uncertainty, and there are no established fishing mortality take limits or reference points for the north Pacific loggerheads. In the Hawaii shallow-set fishery, average takes of loggerheads from 2018 to 2022 were below the established ITS but above 5% of the ITS level. The 2019 NMFS BiOp concluded a non-jeopardy finding for the continued operation of the fishery and its interactions with North Pacific loggerheads, but it did find that the fishery may interact with up to 0.2% of the population in some years (NMFS 2019c). A supplemental BiOp in 2024 confirmed the non-jeopardy finding (NMFS 2024b). Based on the results of this supplemental BiOp, the fishery's impact is likely small enough to not adversely affect the population, thus, Fishing Mortality is considered “low concern” (per line 3 in table 1.2.1 of the Seafood Watch Standard).

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Supplementary Information

The Hawaii shallow-set fishery captured an estimated 417 loggerhead sea turtles annually, with about 40% mortality before it was closed by court order in 2001(NMFS 2018; NMFS 2019a; Gilman et al. 2007). Since the fishery reopened in 2004 loggerhead sea turtle interactions have been reduced by 95% due to mitigation measures {NMFS 2019a}. Between 2004 and 2018, the Hawaii shallow-set fishery captured 177 loggerhead sea turtles (average 19.2 loggerheads per year, 2014-2018) (ibid). In 2019, the shallow-set fishery closed after reaching its fleetwide hard cap for loggerheads (WPRFMC 2023). The following year, the hard cap for loggerheads was removed and replaced by an individual trip interaction limit of five turtles (ibid). There is also a fleetwide ITS of 36 turtles in place. Since these changes were instated, the fishery has not exceeded its ITS interactions or mortalities, nor has it exceeded its individual trip limit. Average interactions from 2018 to 2022 were under the ITS, at 20.2 turtles annually.

Across the Pacific, there were 549 loggerhead sea turtles reported with a total estimate of 10,980 loggerheads caught from 1989-2016 for 16 countries that participated in the areas beyond national jurisdiction, and annual average takes in longline fisheries in the Pacific range from 400-6,000 loggerheads (NMFS 2019c). Other studies have estimated higher interaction rates, and Peatman et al. (2018) estimated 6,619 to 41,180 loggerhead interactions occurred from 2003-2017 (annual average 473-2941)(Peatman et al. 2018). Artisanal and commercial fisheries operating off the coast of Baja are presumed to be responsible for a significant proportion of these mortalities (NMFS 2019b).

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Olive Ridley turtle *(Lepidochelys olivacea)*

2.1 Abundance

United States - Hawaii - Eastern Central Pacific Ocean | Northeast Pacific Ocean - Longline (deep-set) - Flag Country: United States - FAO Major Area: Pacific, Northeast | Pacific, Eastern Central - Permit/License: Covers US vessels landing in Hawaii or California - RFMO: Inter-American Tropical Tuna Commission (IATTC)

United States - Hawaii - Northwest Pacific Ocean | Western Central Pacific Ocean - Longline (deep-set) - Flag Country: United States - FAO Major Area: Pacific, Western Central | Pacific, Northwest - RFMO: Western and Central Pacific Fisheries Commission (WCPFC)

United States - Hawaii - Eastern Central Pacific Ocean | Northeast Pacific Ocean - Longline (shallow-set) - Flag Country: United States - FAO Major Area: Pacific, Northeast | Pacific, Eastern Central - RFMO: Inter-American Tropical Tuna Commission (IATTC)

United States - Hawaii - Northwest Pacific Ocean | Western Central Pacific Ocean - Longline (shallow-set) - Flag Country: United States - FAO Major Area: Pacific, Western Central | Pacific, Northwest - RFMO: Western and Central Pacific Fisheries Commission (WCPFC)

High Concern

The International Union for Conservation of Nature (IUCN) considers Olive Ridley sea turtles to be Vulnerable globally with a decreasing population trend (Abreu-Grobis and Plotkin 2008). Olive Ridley turtles have been listed as Threatened on the United States Endangered Species Act (ESA) since 1978 {FR 1978}. The breeding population off the coast of Mexico is considered Endangered under the US ESA, and all other populations in the region as considered Threatened under the ESA. Abundance is considered "high concern" because of the IUCN and ESA listings for the species (per line 1 in table 1.1.1 of the Seafood Watch Standard).

2.2 Fishing Mortality

United States - Hawaii - Eastern Central Pacific Ocean | Northeast Pacific Ocean - Longline (deep-set) - Flag Country: United States - FAO Major Area: Pacific, Northeast | Pacific, Eastern Central - Permit/License: Covers US vessels landing in Hawaii or California - RFMO: Inter-American Tropical Tuna Commission (IATTC)

United States - Hawaii - Northwest Pacific Ocean | Western Central Pacific Ocean - Longline (deep-set) - Flag Country: United States - FAO Major Area: Pacific, Western Central | Pacific, Northwest - RFMO: Western and Central Pacific Fisheries Commission (WCPFC)

Low Concern

Incidental capture of olive ridley turtles occurs worldwide, although the impact from other fisheries such as trawls and gillnets appear to have a larger negative impact compared to longlines (Wallace et al. 2013; Abreu-Grobois and Plotkin 2008}. Olive Ridley turtles are caught primarily in the deep-set longline fishery in Hawaii, which interacts with two genetic types: the Indo-West Pacific olive ridley (~26.7% of interactions) and the East Pacific olive ridleys, which include an endangered population in Mexico (NMFS 2023a). From 2004 to 2021, the Hawaii deep-set longline fishery caught an estimated 1,055 olive ridley sea turtles, with an average of 92.2% of these being dead upon haulback (ibid). Bycatch interactions in the eastern and western Pacific are under the established ITS levels, which have been exceeded in some years since being set in 2017 and 2019 (WPRFMC 2023). However, the 2023 BiOP found a non-jeopardy determination for olive ridleys in the deep-set fishery (NMFS 2023a). Fishing Mortality is considered "low concern" because of the non-jeopardy determination suggesting that fishery impacts are low enough to not significantly adversely affect the population (per line 3 in table 1.2.1 of

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the Seafood Watch Standard).

Supplementary Information

Wallace et al. (2013) found that most olive ridley populations were at low population risk but experienced variable bycatch impacts associated with longline fisheries. Other gear types (trawls, nets) ranked higher for bycatch impact risk, suggesting that cumulative fisheries mortality for olive ridleys is a concern (Wallace et al. 2013a). Fisheries occurring in the western zones tend to incur fewer turtle mortalities (annual average 19 mortalities west of 140 degrees W; annual average 64 mortalities east of 140 degrees W)(NMFS 2019c). Mitigation measures (circle hooks and mackerel bait) are in use in this fishery.

United States - Hawaii - Eastern Central Pacific Ocean | Northeast Pacific Ocean - Longline (shallow-set) - Flag Country: United States - FAO Major Area: Pacific, Northeast | Pacific, Eastern Central - RFMO: Inter-American Tropical Tuna Commission (IATTC)

United States - Hawaii - Northwest Pacific Ocean | Western Central Pacific Ocean - Longline (shallow-set) - Flag Country: United States - FAO Major Area: Pacific, Western Central | Pacific, Northwest - RFMO: Western and Central Pacific Fisheries Commission (WCPFC)

Low Concern

Olive ridley turtles are caught primarily in the deep-set longline fishery in Hawaii; however, incidental capture of olive ridley turtles occurs worldwide (trawl and purse seine impacts may be more significant)(Wallace et al. 2013; Abreu-Grobois and Plotkin 2008}. From 2014 to 2022, thirteen interactions with olive ridleys occurred, but only one mortality resulted from these interactions (WPRFMC 2023). However, average interactions from 2018 to 2022 were >5% of the fishery's ITS level (ibid). In its 2019 BiOp, NMFS concluded that the operation of the shallow-set fishery was unlikely to “jeopardize the continued existence of” olive ridley populations it interacts with (NMFS 2019c). The fishery has not exceeded its ITS limits since this BiOp (WPRFMC 2023). Because the fishery's impact is unlikely to significantly adversely impact the population (based on the non-jeopardy finding), Fishing Mortality in the Hawaii shallow-set longline fishery is considered “low concern” (per line 3 in table 1.2.1 of the Seafood Watch Standard).

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Risso's dolphin *(Grampus griseus)*

2.1 Abundance

United States - Hawaii - Eastern Central Pacific Ocean | Northeast Pacific Ocean - Longline (deep-set) - Flag Country: United States - FAO Major Area: Pacific, Northeast | Pacific, Eastern Central - Permit/License: Covers US vessels landing in Hawaii or California - RFMO: Inter-American Tropical Tuna Commission (IATTC)

United States - Hawaii - Northwest Pacific Ocean | Western Central Pacific Ocean - Longline (deep-set) - Flag Country: United States - FAO Major Area: Pacific, Western Central | Pacific, Northwest - RFMO: Western and Central Pacific Fisheries Commission (WCPFC)

Moderate Concern

The most recent (2017) minimum population estimate for Risso's dolphins within the Hawaiian Islands EEZ was 6,150 individuals; however, it is not possible to determine a population trend for this stock (NMFS 2019b). Risso's dolphins are listed by the IUCN as Least Concern (Kiszka & Braulik 2018) and are not listed as "threatened" or "endangered" under the ESA, nor designated as "depleted" under the MMPA. Based on the IUCN Least Concern determination that is <10 years old, Abundance is considered "moderate concern" (per line 3 in table 1.1.1 of the Seafood Watch Standard).

Supplementary Information

Risso's dolphins are found in the temperate and tropical zones of all the world's oceans. They tend to inhabit deeper offshore waters, especially near the continental shelf edge and slope and are deep divers (NMFS 2019b). They are also very active on the ocean surface. Under the MMPA, Risso's dolphins within the Pacific US EEZ are divided into two discrete areas: 1) Hawaiian waters (this report), and 2) waters off California, Oregon and Washington. The Hawaiian stock includes animals found both within the Hawaiian Islands EEZ and in adjacent high seas waters; however, because data on abundance, distribution, and human-caused impacts are largely lacking for high seas waters, the status of this stock is evaluated based on data from US EEZ waters of the Hawaiian Island.

2.2 Fishing Mortality

United States - Hawaii - Eastern Central Pacific Ocean | Northeast Pacific Ocean - Longline (deep-set) - Flag Country: United States - FAO Major Area: Pacific, Northeast | Pacific, Eastern Central - Permit/License: Covers US vessels landing in Hawaii or California - RFMO: Inter-American Tropical Tuna Commission (IATTC)

United States - Hawaii - Northwest Pacific Ocean | Western Central Pacific Ocean - Longline (deep-set) - Flag Country: United States - FAO Major Area: Pacific, Western Central | Pacific, Northwest - RFMO: Western and Central Pacific Fisheries Commission (WCPFC)

Low Concern

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Risso's dolphin is listed on the MMPA listing for the deep-set longline fishery in Hawaii. The current PBR estimate for the Hawaii stock is 61 dolphins per year, inside of the US EEZ only (NMFS 2021c). Observed takes inside of the EEZ are zero, but takes outside of the EEZ do occur. Total fishing mortality in the EEZ is considered to be approaching zero because of the lack of MSIs inside the EEZ, but mortalities outside of the EEZ are also considered in this assessment and are not approaching zero (NMFS 2021c). While the fishery's contribution to PBR *outside of the US EEZ* is unknown, the lack of takes inside the EEZ and the low rate of takes outside of the EEZ allow for Fishing Mortality to be considered "low concern" (per line 3 in table 1.2.1 of the Seafood Watch Standard).

Supplementary Information

While observed takes (via ~20% observer coverage) are under 5% of PBR, expanded estimates of total mortalities stemming from the deep-set fishery, on average, from 2018 to 2022 are 4.6, exceeding 5% of PBR (WPRFMC 2023). Observed takes occurred outside of the US EEZ only, though the PBR estimate is calculated for inside of the EEZ only, thus they cannot accurately be compared to the available estimate of PBR for scoring purposes.

Thresher shark (Unspecified) *(Alopias spp.)*

2.1 Abundance

United States - Hawaii - Eastern Central Pacific Ocean | Northeast Pacific Ocean - Longline (deep-set) - Flag Country: United States - FAO Major Area: Pacific, Northeast | Pacific, Eastern Central - Permit/License: Covers US vessels landing in Hawaii or California - RFMO: Inter-American Tropical Tuna Commission (IATTC)

United States - Hawaii - Northwest Pacific Ocean | Western Central Pacific Ocean - Longline (deep-set) - Flag Country: United States - FAO Major Area: Pacific, Western Central | Pacific, Northwest - RFMO: Western and Central Pacific Fisheries Commission (WCPFC)

High Concern

A number of thresher shark species are bycatch in the Hawaii deep-set longline fishery including bigeye, common, and pelagic threshers, though bigeye threshers seem to be the most commonly interacted with species (WPRFMC 2023). A recent assessment of the common thresher shark in the northeastern Pacific estimated that SB/SB_{MSY} ratio is 1.3, indicating the stock is not overfished (Teo et al. 2018). A Pacific-wide sustainability risk assessment was also conducted for bigeye thresher sharks in 2016 and found that the annual risk of fishing activities exceeding the maximum impact sustainable threshold (MIST) was 20-40% (WCPFC 2017). The IUCN lists bigeye thresher and common thresher

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as Vulnerable and pelagic thresher as Endangered (Rigby et al. 2019a; Rigby et al. 2019b; Rigby et al. 2022). Abundance for thresher sharks is considered "high concern" based on their IUCN statuses that are <10 years old (per line 1 in table 1.1.1 of the Seafood Watch Standard).

2.2 Fishing Mortality

United States - Hawaii - Eastern Central Pacific Ocean | Northeast Pacific Ocean - Longline (deep-set) - Flag Country: United States - FAO Major Area: Pacific, Northeast | Pacific, Eastern Central - Permit/License: Covers US vessels landing in Hawaii or California - RFMO: Inter-American Tropical Tuna Commission (IATTC)

United States - Hawaii - Northwest Pacific Ocean | Western Central Pacific Ocean - Longline (deep-set) - Flag Country: United States - FAO Major Area: Pacific, Western Central | Pacific, Northwest - RFMO: Western and Central Pacific Fisheries Commission (WCPFC)

Low Concern

Thresher sharks (unidentified and pelagic) are bycatch in the Hawaiian deep-set fishery. In 2022, 8,215 thresher sharks were captured in the deep-set fishery, 99.6% of which were released (WPRFMC 2023). From 2017 to 2021, an average of 499 unidentified threshers and 136 pelagic threshers were captured in the deep-set fishery (ibid). Fishing mortality data for all species across the Pacific Ocean are limited; however data from WCPFC and IATTC suggest that numbers of thresher sharks caught across WCPFC, IATTC, and Hawaiian longline fisheries are upwards of 23,000 (ibid) (IATTC 2024c; WCPFC 2024e). Based on these data, the Hawaiian deep-set longline fishery contributes <5% of fishing mortality for thresher sharks, thus it is not a substantial contributor to Fishing Mortality, which is therefore considered "low concern" (per line 3 in table 1.2.1 of the Seafood Watch Standard).

Supplementary Information

Bigeye thresher sharks are also captured in the fishery and are assessed separately based on available data from Hawaii, WCPFC, and IATTC.

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Whitetip shark *(Carcharhinus longimanus)*

2.1 Abundance

United States - Hawaii - Eastern Central Pacific Ocean | Northeast Pacific Ocean - Longline (deep-set) - Flag Country: United States - FAO Major Area: Pacific, Northeast | Pacific, Eastern Central - Permit/License: Covers US vessels landing in Hawaii or California - RFMO: Inter-American Tropical Tuna Commission (IATTC)

High Concern

Oceanic whitetip sharks have not been formally assessed in the EPO. The IUCN lists oceanic whitetip shark as “Critically Endangered” with a decreasing global population trend, and CPUE data from Hawaii suggests a significant population decline from 1995 to 2010 (Rigby et al. 2019c). Abundance is considered “high concern” based on the IUCN listing that is <10 years old (per line 1 in table 1.1.1 of the Seafood Watch Standard).

2.2 Fishing Mortality

United States - Hawaii - Eastern Central Pacific Ocean | Northeast Pacific Ocean - Longline (deep-set) - Flag Country: United States - FAO Major Area: Pacific, Northeast | Pacific, Eastern Central - Permit/License: Covers US vessels landing in Hawaii or California - RFMO: Inter-American Tropical Tuna Commission (IATTC)

Low Concern

Because a formal stock assessment for whitetip sharks in the EPO is lacking, a sustainable level of fishing mortality is unknown. IATTC has had a retention ban on oceanic whitetip sharks in place since 2011 (IATTC 2011). Oceanic whitetips were considered in the latest (2023) BiOp for the DSLL fishery, which concluded that the fishery would remove a maximum of 0.09% of the population per year (NMFS 2023a). Further, the BiOp concluded that the fishery's actions are unlikely to create biological consequences for the stock, resulting in a non-jeopardy finding (ibid). Based on this reasonable certainty that the fishery will not adversely impact the population, and that <1% of the population is impacted annually, Fishing Mortality is considered “low concern” (per line 3 in table 1.2.1 of the Seafood Watch Standard).

2.3 Discard Rate/Landings

North Pacific Stock - United States - Hawaii - Eastern Central Pacific Ocean | Northeast Pacific Ocean - Longline (deep-set) - FAO Major Area: Pacific, Northeast | Pacific, Eastern Central - Permit/License: Covers US vessels landing in Hawaii or California - RFMO: Inter-American Tropical Tuna Commission (IATTC)

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North Pacific Stock - United States - Hawaii - Northwest Pacific Ocean | Western Central Pacific Ocean - Longline (deep-set) - FAO Major Area: Pacific, Western Central | Pacific, Northwest - RFMO: Western and Central Pacific Fisheries Commission (WCPFC)

Eastern Pacific Ocean Stock - United States - Hawaii - Eastern Central Pacific Ocean | Northeast Pacific Ocean - Longline (deep-set) - FAO Major Area: Pacific, Northeast | Pacific, Eastern Central - Permit/License: Covers US vessels landing in Hawaii or California - RFMO: Inter-American Tropical Tuna Commission (IATTC)

Western and Central Pacific Ocean (WCPO) Stock - United States - Hawaii - Northwest Pacific Ocean | Western Central Pacific Ocean - Longline (deep-set) - FAO Major Area: Pacific, Western Central | Pacific, Northwest

United States - Hawaii - Eastern Central Pacific Ocean | Northeast Pacific Ocean - Longline (deep-set) - FAO Major Area: Pacific, Northeast | Pacific, Eastern Central - Permit/License: Covers US vessels landing in Hawaii or California - RFMO: Inter-American Tropical Tuna Commission (IATTC)

United States - Hawaii - Northwest Pacific Ocean | Western Central Pacific Ocean - Longline (deep-set) - FAO Major Area: Pacific, Western Central | Pacific, Northwest - RFMO: Western and Central Pacific Fisheries Commission (WCPFC)

United States - Hawaii - Northwest Pacific Ocean | Western Central Pacific Ocean - Longline (deep-set) - FAO Major Area: Pacific, Western Central | Pacific, Northwest

United States - Hawaii - Eastern Central Pacific Ocean | Northeast Pacific Ocean - Longline (deep-set) - Permit/License: Covers US vessels landing in Hawaii or California

United States - Hawaii - Northwest Pacific Ocean | Western Central Pacific Ocean - Longline (deep-set)

United States - Hawaii - Eastern Central Pacific Ocean | Northeast Pacific Ocean - Longline (shallow-set)

United States - Hawaii - Northwest Pacific Ocean | Western Central Pacific Ocean - Longline (shallow-set)

Northwestern and Central Pacific Ocean Stock - United States - Hawaii - Eastern Central Pacific Ocean | Northeast Pacific Ocean - Longline (shallow-set) - FAO Major Area: Pacific, Northeast | Pacific, Eastern Central - RFMO: Inter-American Tropical Tuna Commission (IATTC)

Northwestern and Central Pacific Ocean Stock - United States - Hawaii - Northwest Pacific Ocean | Western Central Pacific Ocean - Longline (shallow-set) - FAO Major Area: Pacific, Western Central | Pacific, Northwest - RFMO: Western and Central Pacific Fisheries Commission (WCPFC)

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< 100%

The published rate of discards in 2022 for the Hawaiian deep-set longline fishery was 20.5%, while the discard rate for the shallow-set fishery was higher at 33.5%. The majority of discards are sharks in both fisheries, with an average discard rate of just under 100% for sharks in both fisheries (WPRFMC 2023). Bait use in these fisheries is generally unknown due to limited tracking but is unlikely to account for a significant amount of weight relative to total catch. Discard rate is considered <100% based on these ratios.

Western and Central Pacific Ocean (WCPO) Stock - United States - Hawaii - Western Central Pacific Ocean - Handlines and hand-operated pole-and-lines - FAO Major Area: Pacific, Western Central

United States - Hawaii - Western Central Pacific Ocean - Trolling lines - FAO Major Area: Pacific, Western Central

United States - Hawaii - Western Central Pacific Ocean - Handlines and hand-operated pole-and-lines

United States - Hawaii - Western Central Pacific Ocean - Trolling lines

Western and Central Pacific Ocean (WCPO) Stock - United States - Hawaii - Western Central Pacific Ocean - Trolling lines - FAO Major Area: Pacific, Western Central

Western and Central Pacific Ocean (WCPO) Stock - United States - Hawaii - Western Central Pacific Ocean - Handlines and hand-operated pole-and-lines

Western and Central Pacific Ocean (WCPO) Stock - United States - Hawaii - Western Central Pacific Ocean - Trolling lines

< 100%

Troll and pole fisheries globally typically have low discard rates. For example, global estimates of 9.5% (6.4-14.4%) have been made for pole and line fisheries, and handline fisheries also have estimated discards under 100% (1.9-44.2%) (Perez Roda et al. 2019). An estimate from the Maldivian pole and line fishery suggests bycatch of non-tuna was 0.65% of the total catch, with only 0.02% of that being discarded (Miller et al. 2017). Based on existing research, discards are thought to be <100% of landings.

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Criterion 3: Management Effectiveness

Five factors are evaluated in Criterion 3: Management Strategy and Implementation, Bycatch Strategy, Scientific Research/Monitoring, Enforcement of Regulations, and Inclusion of Stakeholders. Each is scored as either 'highly effective', 'moderately effective', 'ineffective,' or 'critical'. The final Criterion 3 score is determined as follows:

- *5 (Very Low Concern) — Meets the standards of 'highly effective' for all five factors considered.*
- *4 (Low Concern) — Meets the standards of 'highly effective' for 'management strategy and implementation' and at least 'moderately effective' for all other factors.*
- *3 (Moderate Concern) — Meets the standards for at least 'moderately effective' for all five factors.*
- *2 (High Concern) — At a minimum, meets standards for 'moderately effective' for Management Strategy and Implementation and Bycatch Strategy, but at least one other factor is rated 'ineffective.'*
- *1 (Very High Concern) — Management Strategy and Implementation and/or Bycatch Management are 'ineffective.'*
- *0 (Critical) — Management Strategy and Implementation is 'critical'.*

The Criterion 3 rating is determined as follows:

- Score >3.2 = **Green** or Low Concern
- Score >2.2 and ≤3.2 = **Yellow** or Moderate Concern
- Score ≤2.2 = **Red** or High Concern

Rating is Critical if Management Strategy and Implementation is Critical.

Guiding principle

- The fishery is managed to sustain the long-term productivity of all impacted species.

Five factors are evaluated in Criterion 3: Management Strategy and Implementation, Bycatch Strategy, Scientific Research/Monitoring, Enforcement of Regulations, and Inclusion of Stakeholders. Each is scored as either 'highly effective', 'moderately effective', 'ineffective,' or 'critical'. The final Criterion 3 score is determined as follows:

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Criterion 3 Summary

Fishery	Management Strategy And Implementation	Bycatch Strategy	Scientific Data Collection and Analysis	Enforcement of and Compliance with Management Regulations	Stakeholder Inclusion	Score
United States - Hawaii - Eastern Central Pacific Ocean | Northeast Pacific Ocean - Longline (deep-set) - Flag Country: United States - FAO Major Area: Pacific, Northeast | Pacific, Eastern Central - Permit/License: Covers US vessels landing in Hawaii or California - RFMO: Inter-American Tropical Tuna Commission (IATTC)	Moderately Effective	Moderately Effective	Moderately Effective	Highly effective	Highly effective	Yellow (3.000)
United States - Hawaii - Eastern Central Pacific Ocean | Northeast Pacific Ocean - Longline (shallow-set) - Flag Country: United States - FAO Major Area: Pacific, Northeast | Pacific, Eastern Central - RFMO: Inter-American Tropical Tuna Commission (IATTC)	Moderately Effective	Highly effective	Highly effective	Highly effective	Highly effective	Yellow (3.000)
United States - Hawaii - Northwest Pacific Ocean | Western Central Pacific Ocean - Longline (deep-set) - Flag Country: United States - FAO Major Area: Pacific, Western Central | Pacific, Northwest - RFMO: Western and Central Pacific Fisheries Commission (WCPFC)	Moderately Effective	Moderately Effective	Moderately Effective	Highly effective	Highly effective	Yellow (3.000)

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Fishery	Management Strategy And Implementation	Bycatch Strategy	Scientific Data Collection and Analysis	Enforcement of and Compliance with Management Regulations	Stakeholder Inclusion	Score
United States - Hawaii - Northwest Pacific Ocean | Western Central Pacific Ocean - Longline (shallow-set) - Flag Country: United States - FAO Major Area: Pacific, Western Central | Pacific, Northwest - RFMO: Western and Central Pacific Fisheries Commission (WCPFC)	Moderately Effective	Highly effective	Highly effective	Highly effective	Highly effective	Yellow (3.000)
United States - Hawaii - Western Central Pacific Ocean - Handlines and hand-operated pole-and-lines - Flag Country: United States - FAO Major Area: Pacific, Western Central - RFMO: Western and Central Pacific Fisheries Commission (WCPFC)	Moderately Effective	Highly effective	Moderately Effective	Highly effective	Highly effective	Yellow (3.000)
United States - Hawaii - Western Central Pacific Ocean - Trolling lines - Flag Country: United States - FAO Major Area: Pacific, Western Central - RFMO: Western and Central Pacific Fisheries Commission (WCPFC)	Moderately Effective	Highly effective	Moderately Effective	Highly effective	Highly effective	Yellow (3.000)

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Criterion 3 Assessment

Scoring Guidelines

Factor 3.1 - Management Strategy and Implementation

Considerations: What type of management measures are in place? Are there appropriate management goals, and is there evidence that management goals are being met? Do managers

follow scientific advice? To achieve a highly effective rating, there must be appropriately defined management goals, precautionary policies that are based on scientific advice, and evidence that the measures in place have been successful at maintaining/rebuilding species.

Factor 3.2 - Bycatch Strategy

Considerations: What type of management strategy/measures are in place to reduce the impacts of the fishery on bycatch species and when applicable, to minimize ghost fishing? How successful are these management measures? To achieve a Highly Effective rating, the fishery must have no or low bycatch, or if there are bycatch or ghost fishing concerns, there must be effective measures in place to minimize impacts.

Factor 3.3 - Scientific Research and Monitoring

Considerations: How much and what types of data are collected to evaluate the fishery's impact on the species? Is there adequate monitoring of bycatch? To achieve a Highly Effective rating, regular, robust population assessments must be conducted for target or retained species, and an adequate bycatch data collection program must be in place to ensure bycatch management goals are met.

Factor 3.4 - Enforcement of Management Regulations

Considerations: Do fishermen comply with regulations, and how is this monitored? To achieve a Highly Effective rating, there must be regular enforcement of regulations and verification of compliance.

Factor 3.5 - Stakeholder Inclusion

Considerations: Are stakeholders involved/included in the decision-making process? Stakeholders are individuals/groups/organizations that have an interest in the fishery or that may be affected by the management of the fishery (e.g., fishermen, conservation groups, etc.). A Highly Effective rating is given if the management process is transparent, if high participation by all stakeholders is encouraged, and if there a mechanism to effectively address user conflicts.

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3.1 Management Strategy And Implementation

United States - Hawaii - Eastern Central Pacific Ocean | Northeast Pacific Ocean - Longline (deep-set) - Flag Country: United States - FAO Major Area: Pacific, Northeast | Pacific, Eastern Central - Permit/License: Covers US vessels landing in Hawaii or California - RFMO: Inter-American Tropical Tuna Commission (IATTC)

Moderately Effective

The deep-set longline fishery targets yellowfin and bigeye tunas. Main, retained species in the eastern fishery are only bigeye (E Pacific stock) and yellowfin (E Pacific stock). Pacific pelagic species are managed through a mixture of international governance (RFMOs) and national governance (NMFS and WPRFMC). Most Pacific pelagic species captured by Hawaiian fisheries are managed under a FEP, for which annual reports are produced by WPRFMC. While the tunas in this fishery have reference points and some precautionary policies in place, escolar management lacks sufficient precaution and responsiveness to stock changes.

Tunas

Tropical tunas (bigeye, yellowfin, and skipjack) captured in the EPO are managed at the RFMO level and national level using stock assessments conducted by IATTC. These stock assessments are regularly conducted and include the IATTC-adopted MSY-based target reference point and an interim limit reference point for tropical tunas (IATTC 2023a). The IATTC creates harvest control rules (HCRs) for all three tropical tunas based on stock status relative to these reference points. Currently, regulatory literature focuses HCRs on purse seine fisheries, but HCRs for other gear types are ordered to be consistent with those in purse seine fisheries, accounting for relative impacts of different gear types (IATTC 2023a). Current HCRs allow management to adopt measures to adjust F based on stock status. However, the most recent tropical tunas resolution does not define specific management actions that should be taken if stocks approach their LRPs and was not developed using management strategy evaluation (MSE), thus it lacks the robustness of a strong, highly effective HCR. There is now an MSE in development for bigeye tuna, though. IATTC also has one resolution in place specific to bigeye tuna, which focuses on a catch documentation statistical program (C-03-01).

At the national level, NMFS has the ability to set catch limits for tuna species and allows for management adaptations based on exceeding catch limits or biological concerns with tuna stocks (U.S. Office of the Federal Register 2010). Catch limits are based on stock assessments and annual SAFE reports, which are compiled by WPRFMC. Under the FEP, tunas and other species may have overfishing definitions that differ from those used by RFMOs, and relevant species are also managed using MSY control rules that help warn managers when a stock is approaching or in an overfished condition (ibid). However, NMFS-specific catch limits are not always created as separate limits from those at the

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RFMO level for pelagic species that are subject to international management measures (e.g. IATTC and WCPFC catch limits).

While bigeye and yellowfin tunas have some precautionary management in place, their RFMO-level HCR needs increased precaution based on its lack of specified management actions. Therefore, Management Strategy and Implementation is considered “moderately effective” (per lines 1 and 2.a in table 3.1.1. of the Seafood Watch Standard).

Supplementary Information

For all pelagic MUS, the WPRFMC adopts a MSY control rule. The WPRFMC also adopts a warning reference point, B_{FLAG}, set equal to B_{MSY} to provide a trigger for consideration of management action before a stock's biomass reaches the Minimum Stock Size Threshold (MSST). A stock is approaching an overfished condition when there is more than a 50% chance that the biomass will decline below the MSST within two years. The WPRFMC will work with the WCPFC and IATTC to create rebuilding plans if a species is deemed depleted by the US Magnuson Stevens National Standard 1 {WPRFMC 2009b}. In addition, the US complies with international management measures adopted by the WCPFC and IATTC, and there is a limit on permit entries into the fishery.

In 2018, NMFS issued a final rule under the Tuna Conventions Act to implement fishing management measures for tropical tunas in the EPO. This final rule established a bigeye catch limit in the EPO for all active fisheries. In 2018, NMFS published a final rule to implement recent decisions of the WCPO to implement catch limits for the US longline fleet operating in the WCPO (WPRFMC 2018). US longline fishery-specific harvest control rules and catch limits are not in place for species other than bigeye tuna at this time (WPRFMC 2018).

United States - Hawaii - Eastern Central Pacific Ocean | Northeast Pacific Ocean - Longline (shallow-set) - Flag Country: United States - FAO Major Area: Pacific, Northeast | Pacific, Eastern Central - RFMO: Inter-American Tropical Tuna Commission (IATTC)

United States - Hawaii - Northwest Pacific Ocean | Western Central Pacific Ocean - Longline (shallow-set) - Flag Country: United States - FAO Major Area: Pacific, Western Central | Pacific, Northwest - RFMO: Western and Central Pacific Fisheries Commission (WCPFC)

Moderately Effective

The eastern and western Hawaii shallow-set longline fisheries targets swordfish (N Pacific stock), which is the only main, retained species. Pacific pelagic species are managed through a mixture of international governance (RFMOs) and national governance (NMFS and WPRFMC). The WCPFC Convention requires that precautionary approaches be used in the management of highly migratory species {WCPFC 2024}. Most Pacific pelagic species captured by Hawaiian fisheries are managed under a FEP, for which

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annual reports are produced by WPRFMC. While swordfish is regularly assessed, it lacks precautionary management and a target reference point.

Billfish

WCPFC has one in force CMM for swordfish (CMM 2023-03) that builds upon a previous CMM (CMM 2022-02). These CMMs set annual fishing effort limits based on the latest ISC stock advice and confirm the harvest strategy and limit reference point for the stock. For US longline fisheries, fishing effort is limited based on the number of permit entries {WCPFC 2024}. While the RFMO-level harvest strategy for N Pacific swordfish includes a set LRP for fishing mortality, no biomass-based reference points have been defined.

While swordfish have some precautionary management in place, additional precaution (e.g. HCRs outlining management actions in response to shifting stock status, biomass reference points) is needed for this stock. Therefore, Management Strategy and Implementation is considered "moderately effective" (per lines 1 and 2.a in table 3.1.1. of the Seafood Watch Standard).

Supplementary Information

For all pelagic management unit species (MUS), the WPRFMC adopts a MSY control rule. The WPRFMC also adopts a warning reference point, B_{FLAG}, set equal to B_{MSY} to provide a trigger for consideration of management action before a stock's biomass reaches the Minimum Stock Size Threshold (MSST). A stock is approaching an overfished condition when there is more than a 50% chance that the biomass will decline below the MSST within two years. The WPRFMC will work with the WCPFC and IATTC to create rebuilding plans if a species is deemed depleted by the US Magnuson Stevens National Standard 1 {WPRFMC 2009b}. In addition, the US complies with international management measures adopted by the WCPFC and IATTC, and there is a limit on permit entries into the fishery.

United States - Hawaii - Northwest Pacific Ocean | Western Central Pacific Ocean - Longline (deep-set) - Flag Country: United States - FAO Major Area: Pacific, Western Central | Pacific, Northwest - RFMO: Western and Central Pacific Fisheries Commission (WCPFC)

Moderately Effective

The western Hawaii deep-set longline fishery targets bigeye and yellowfin tunas (WPRFMC 2023). Its main, retained species are only bigeye (W Pacific stock) and yellowfin (W Pacific stock). Pacific pelagic species are managed through a mixture of international governance (RFMOs) and national governance (NMFS and WPRFMC). Most Pacific pelagic species captured by Hawaiian fisheries are managed under a FEP, for which annual reports are produced by WPRFMC. While the tunas in this fishery have reference points and some precautionary policies in place, escolar management lacks sufficient

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precaution and responsiveness to stock changes.

Tunas

Tropical tunas (bigeye, yellowfin, and skipjack) captured in the WCPO are managed at the RFMO level and national level using stock assessments conducted by ISC for WCPFC. These stock assessments are regularly conducted and include the WCPFC-adopted limit reference point for bigeye, interim reference points for skipjack, and the adopted limit reference point for yellowfin. WCPFC has one newly-adopted CMM (CMM 2023-01) focused on tropical tuna management that builds upon a previous CMM (CMM 2021-01). These CMMs discuss management objectives for bigeye, yellowfin, and skipjack; set limit reference points; outline measures for building harvest strategies; and note target spawning depletion ratios in the absence of target reference points (WCPFC 2024a). However, the effectiveness of the newest CMM is not yet certain.

At the national level, NMFS has the ability to set catch limits for tuna species and allows for management adaptations based on exceeding catch limits or biological concerns with tuna stocks (U.S. Office of the Federal Register 2010). Catch limits are based on stock assessments and annual SAFE reports, which are compiled by WPRFMC. Under the FEP, tunas and other species may have overfishing definitions that differ from those used by RFMOs, and relevant species are also managed using MSY control rules that help warn managers when a stock is approaching or in an overfished condition (ibid). However, NMFS-specific catch limits are not always created as separate limits from those at the RFMO level for pelagic species that are subject to international management measures (e.g. IATTC and WCPFC catch limits).

While bigeye and yellowfin tunas have some precautionary management in place, the effectiveness of recent management is uncertain. Therefore, Management Strategy and Implementation is considered “moderately effective” (per lines 1 and 2.a in table 3.1.1. of the Seafood Watch Standard).

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Supplementary Information

For all pelagic MUS, the WPRFMC adopts a MSY control rule. The WPRFMC also adopts a warning reference point, B_{FLAG}, set equal to B_{MSY} to provide a trigger for consideration of management action before a stock's biomass reaches the Minimum Stock Size Threshold (MSST). A stock is approaching an overfished condition when there is more than a 50% chance that the biomass will decline below the MSST within two years. The WPRFMC will work with the WCPFC and IATTC to create rebuilding plans if a species is deemed depleted by the US Magnuson Stevens National Standard 1 {WPRFMC 2009b}. In addition, the US complies with international management measures adopted by the WCPFC and IATTC, and there is a limit on permit entries into the fishery.

In 2018, NMFS issued a final rule under the Tuna Conventions Act to implement fishing management measures for tropical tunas in the EPO. This final rule established a bigeye catch limit in the EPO for all active fisheries. In 2018, NMFS published a final rule to implement recent decisions of the WCPO to implement catch limits for the US longline fleet operating in the WCPO (WPRFMC 2018). US longline fishery-specific harvest control rules and catch limits are not in place for species other than bigeye tuna at this time (WPRFMC 2018).

United States - Hawaii - Western Central Pacific Ocean - Handlines and hand-operated pole-and-lines - Flag Country: United States - FAO Major Area: Pacific, Western Central - RFMO: Western and Central Pacific Fisheries Commission (WCPFC)

Moderately Effective

The Hawaii handline fishery targets yellowfin tuna, with the offshore handline fishery targeting bigeye (WPRFMC 2023). Both of these tunas (W Pacific stocks) are main, retained species in the fishery. Pacific pelagic species are managed through a mixture of international governance (RFMOs) and national governance (NMFS and WPRFMC). Most Pacific pelagic species captured by Hawaiian fisheries are managed under a FEP, for which annual reports are produced by WPRFMC.

Tunas

Tropical tunas (bigeye, yellowfin, and skipjack) captured in the WCPO are managed at the RFMO level and national level using stock assessments conducted by ISC for WCPFC. These stock assessments are regularly conducted and include the WCPFC-adopted limit reference point for bigeye, interim reference points for skipjack, and the adopted limit reference point for yellowfin. WCPFC has one newly-adopted CMM (CMM 2023-01) focused on tropical tuna management that builds upon a previous CMM (CMM 2021-01). These CMMs discuss management objectives for bigeye, yellowfin, and skipjack; set limit reference points; outline measures for building harvest strategies; and note target spawning depletion ratios in the absence of target reference points (WCPFC 2024a). However, the effectiveness of the newest CMM is not yet certain.

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At the national level, NMFS has the ability to set catch limits for yellowfin, bigeye, and other tuna species and allows for management adaptations based on exceeding catch limits or biological concerns with tuna stocks (U.S. Office of the Federal Register 2010). Catch limits are based on stock assessments and annual SAFE reports, which are compiled by WPRFMC. Under the FEP, tunas and other species may have overfishing definitions that differ from those used by RFMOs, and relevant species are also managed using MSY control rules that help warn managers when a stock is approaching or in an overfished condition (ibid). However, NMFS-specific catch limits are not always created as separate limits from those at the RFMO level for pelagic species that are subject to international management measures (e.g. IATTC and WCPFC catch limits).

While bigeye and yellowfin tunas have some precautionary management in place, the effectiveness of recent management is uncertain, thus Management Strategy and Implementation is considered "moderately effective" (per lines 1 and 2.a in table 3.1.1. of the Seafood Watch Standard).

Supplementary Information

For all pelagic management unit species (MUS), the WPRFMC adopts a MSY control rule. The WPRFMC also adopts a warning reference point, B_{FLAG}, set equal to B_{MSY} to provide a trigger for consideration of management action before a stock's biomass reaches the Minimum Stock Size Threshold (MSST). A stock is approaching an overfished condition when there is more than a 50% chance that the biomass will decline below the MSST within two years. The WPRFMC will work with the WCPFC and IATTC to create rebuilding plans if a species is deemed depleted by the US Magnuson Stevens National Standard 1 {WPRFMC 2009b}. In addition, the US complies with international management measures adopted by the WCPFC and IATTC, and there is a limit on permit entries into the fishery.

United States - Hawaii - Western Central Pacific Ocean - Trolling lines - Flag Country: United States - FAO Major Area: Pacific, Western Central - RFMO: Western and Central Pacific Fisheries Commission (WCPFC)

Moderately Effective

The Hawaii troll fishery targets marlins, tunas, and other pelagic species, and dolphinfish, yellowfin tuna (W Pacific stock), bigeye tuna (W Pacific stock), skipjack tuna (W Pacific stock) and blue marlin are main, retained species. Pacific pelagic species are managed through a mixture of international governance (RFMOs) and national governance (NMFS and WPRFMC). Most Pacific pelagic species captured by Hawaiian fisheries are managed under a FEP, for which annual reports are produced by WPRFMC. While some retained species in the troll fishery have reference points and precautionary policies in place, others have management that lacks sufficient precaution and responsiveness to stock changes.

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Tunas

Tropical tunas (bigeye, yellowfin, and skipjack) captured in the WCPO are managed at the RFMO level and national level using stock assessments conducted by ISC for WCPFC. These stock assessments are regularly conducted and include the WCPFC-adopted limit reference point for bigeye, interim reference points for skipjack, and the adopted limit reference point for yellowfin. WCPFC has one newly-adopted CMM (CMM 2023-01) focused on tropical tuna management that builds upon a previous CMM (CMM 2021-01). These CMMs discuss management objectives for bigeye, yellowfin, and skipjack; set limit reference points; outline measures for building harvest strategies; and note target spawning depletion ratios in the absence of target reference points (WCPFC 2024a). However, the effectiveness of the newest CMM is not yet certain.

At the national level, NMFS has the ability to set catch limits for albacore, skipjack, yellowfin, and other tuna species and allows for management adaptations based on exceeding catch limits or biological concerns with tuna stocks (U.S. Office of the Federal Register 2010). Catch limits are based on stock assessments and annual SAFE reports, which are compiled by WPRFMC. Under the FEP, tunas and other species may have overfishing definitions that differ from those used by RFMOs, and relevant species are also managed using MSY control rules that help warn managers when a stock is approaching or in an overfished condition (ibid). However, NMFS-specific catch limits are not always created as separate limits from those at the RFMO level for pelagic species that are subject to international management measures (e.g. IATTC and WCPFC catch limits).

Billfish

WCPFC lacks resolutions focusing on marlin species, except for striped marlin. A blue marlin stock assessment for the entire Pacific was recently completed in 2020 by ISC. No reference points have been adopted by WCPFC. NMFS sets annual catch limits for pelagic species including blue marlin, and MSY control rules are in place. NMFS can adjust management measures based on changes in stock status or catch limit overages.

Other Pelagics

WCPFC does not have CMMs in place for managing other pelagic species that are captured in this fishery. Annual catch limits may be set by NMFS for most pelagic species captured by Hawaii fisheries, including dolphinfish. There are also procedures in place for instances when a catch limit is exceeded, such as reducing the following year's catch limit (U.S. Office of the Federal Register 2010). Management may also be adjusted based on any biological concerns that arise. Finally, as with all pelagic management units in Hawaii fisheries, there is an MSY control rule in place that aids in defining when the stock is approaching and in an overfished state (WPRFMC 2023). However, data on dolphinfish stocks in the Pacific are lacking, reducing the ability of managers to effectively respond to stock changes or target management advice based on an understanding of current stock

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status.

While tropical tunas have some elements of precautionary management in place, blue marlin and dolphinfish lack adaptive harvest control rules, and their management is hindered by a lack of data. Therefore, Management Strategy and Implementation is considered "moderately effective" (per lines 1 and 2.a in table 3.1.1. of the Seafood Watch Standard).

Supplementary Information

For all pelagic management unit species (MUS), the WPRFMC adopts a MSY control rule. The WPRFMC also adopts a warning reference point, B_{FLAG}, set equal to B_{MSY} to provide a trigger for consideration of management action before a stock's biomass reaches the Minimum Stock Size Threshold (MSST). A stock is approaching an overfished condition when there is more than a 50% chance that the biomass will decline below the MSST within two years. The WPRFMC will work with the WCPFC and IATTC to create rebuilding plans if a species is deemed depleted by the US Magnuson Stevens National Standard 1 {WPRFMC 2009b}. In addition, the US complies with international management measures adopted by the WCPFC and IATTC, and there is a limit on permit entries into the fishery.

In 2018, NMFS issued a final rule under the Tuna Conventions Act to implement fishing management measures for tropical tunas in the EPO. This final rule established a bigeye catch limit in the EPO for all active fisheries. In 2018, NMFS published a final rule to implement recent decisions of the WCPO to implement catch limits for the US longline fleet operating in the WCPO (WPRFMC 2018). US longline fishery-specific harvest control rules and catch limits are not in place for species other than bigeye tuna at this time (WPRFMC 2018).

3.2 Bycatch Strategy

United States - Hawaii - Eastern Central Pacific Ocean | Northeast Pacific Ocean - Longline (deep-set) - Flag Country: United States - FAO Major Area: Pacific, Northeast | Pacific, Eastern Central - Permit/License: Covers US vessels landing in Hawaii or California - RFMO: Inter-American Tropical Tuna Commission (IATTC)

United States - Hawaii - Northwest Pacific Ocean | Western Central Pacific Ocean - Longline (deep-set) - Flag Country: United States - FAO Major Area: Pacific, Western Central | Pacific, Northwest - RFMO: Western and Central Pacific Fisheries Commission (WCPFC)

Moderately Effective

The Hawaiian deep-set fishery is not highly selective (discards exceed 5% of landings) and catches species of concern including sea turtles, sharks, and marine mammals. The

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Hawaiian deep-set fishery is a Category 1 fishery due to interactions with false killer whales (interactions are freqiuent and make up at least 50% of PBR), and a Take Reduction Team and Plan (TRP) has been in place since 2010. A number of management measures are in place to minimize the impacts of bycatch on non-target species and reduce takes of endangered/threatened turtles and marine mammals. Management measures and safe handling protocols have reduced mortalities for a number of turtle and marine mammal species, but mortalities and incidental takes do still occur, and the effectiveness of the TRP is somewhat uncertain because interactions with false killer whales have not consistently decreased since its implementation (WPRFMC 2023). Bycatch Strategy in the Hawaiian deep-set fishery is considered "moderately effective" because measures are in place, but there is some uncertainty around their effectiveness (per line 2 in table 3.2.1 of the Seafood Watch Standard).

Supplementary Information

Conservation measures for the deep-set fishery are similar to those in the shallow-set fishery, including safe handling and release techniques, removing trailing gear from whitetip sharks, seabird mitigation measures in certain areas (dyed bait, weighted branch lines, etc), and the use of tori lines is also required in the DSLL (WPRFMC 2023) (NOAA 2024). Whitetip shark and giant manta ray retention is also not allowed. The deep-set fishery also operated under ESA BiOps but has no hard caps based on the ITSs in its BiOps. Instead, exceeding ITSs for certain species triggers an ESA consultation, rather than a fishery closure (as is done in the shallow-set fishery) (ibid). The 2023 BiOp for the fishery found no jeopardy determinations for sensitive species (NMFS 2023a).

A Take Reduction Plan has been developed for false killer whales, including gear requirements, time-area closures, and improvements to responses to entangled whales. On July 18, 2018, NOAA Fisheries issued a temporary rule to close the Southern Exclusion Zone to deep-set longline fishing for the remainder of the calendar year, because the bycatch trigger was met per the regulations implementing the Plan. The Take Reduction Plan has helped the main Hawaiian islands stock by reducing the deep-set fishery's overlap with this stock to 5.4% of the population segment's range (NMFS 2023a). There are no observed interactions between this stock and the deep-set fishery, though the fishery may be responsible for some fishing interactions injuries seen on individual whales (ibid). However, takes of false killer whales not from this population segment do occur, and the rate of these takes has not consistently decreased since the implementation of the Take Reduction Plan (WPRFMC 2023). Sections of the fishery have been closed in the late 2010s due to false killer whale interactions, per the Take Reduction Plan (ibid). From 2014 to 2018 (2015 to 2019 for all false killer whale stocks, except Palmyra Atoll, which was 2006-2010), the majority of marine mammal takes in the fishery were well under five percent of PBR (for species with determined PBRs), but false killer whale takes from the Hawaii pelagic stock were >50% of PBR.

There are several measures in place to reduce seabird interactions with Hawaii longline

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vessels, which have been proven to be effective at reducing interactions by 83% (PIFSC 2011). Vessels are required to employ gear modifications and use hook and bait types to minimize seabird interactions (PIFSC 2011; WPRFMC 2018). The single seabird ITS from the 2012 BiOp (short-tailed albatross) was not exceeded, as no observed takes occurred for this species (WPRFMC 2023). Black-footed albatross interactions declined from 2019 to 2022, and a seabird workshop and WPRFMC meetings in recent years have led to a new tori line requirement for further reducing seabird bycatch (ibid).

Shark finning is prohibited, and there are sea turtle handling guidelines in place (WPRFMC 2018). Since 2022, the deep-set fishery has been required under federal mandate to use nylon monofilament rather than wire leaders in its lines, which reduces shark bycatch (U.S. Office of the Federal Register 2022). This requirement stems from initial voluntary switches from wire leaders to nylon by longline fishers themselves (Moore 2022). While data to confirm the results of this change are not yet available, the prohibition of wire leaders is generally expected to improove survivorship and reduce interaction rates. Vessels are required to use circle hooks and mackerel bait to reduce sea turtle interactions. The ITSs for green and olive ridley turtles were exceeded in 2018, and on October 4, 2018, NMFS reinitiated consultation for the deep-set fishery and determined that the conduct of the deep-set fishery during the period of consultation will not violate ESA Sections (WPRFMC 2018). Since this re-initiation, the fishery has exceeded its ITS for North Pacific loggerheads and both east and west Pacific olive ridleys (WPRFMC 2023). However, the 2023 BiOp found that the fishery was not likely to jeopardize these population segments' continued existence (NMFS 2023a).

United States - Hawaii - Eastern Central Pacific Ocean | Northeast Pacific Ocean - Longline (shallow-set) - Flag Country: United States - FAO Major Area: Pacific, Northeast | Pacific, Eastern Central - RFMO: Inter-American Tropical Tuna Commission (IATTC)

United States - Hawaii - Northwest Pacific Ocean | Western Central Pacific Ocean - Longline (shallow-set) - Flag Country: United States - FAO Major Area: Pacific, Western Central | Pacific, Northwest - RFMO: Western and Central Pacific Fisheries Commission (WCPFC)

Highly effective

The shallow-set fishery is not highly selective and interacts with a number of species of concern including sea turtles, seabirds, marine mammals and sharks. There are hard caps on the number of turtle and short-tailed albatross takes allowed by this fishery (WPRFMC 2018). Bycatch reduction and mitigation measures have been shown to be effective at reducing interactions by 83% (Gilman et al. 2007). The Hawaiian shallow-set fishery employs a highly effective strategy to minimize adverse impacts on bycatch species, there is evidence these measures are reducing bycatch for a number of species, and the fishery is not a Category 1 fishery. Bycatch Strategy in the Hawaiian shallow-set fishery therefore is considered “highly effective” (per lines 1, 2.b, and 3 in table 3.2.1 of the Seafood Watch

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Standard).

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Supplementary Information

Conservation measures in place for bycatch species interactions include safe handling and release techniques, seabird mitigation measures like dyed bait and weighted branch lines, removing trailing gear from hooked whitetip sharks, hard caps, and additional measures in place when operating north of the Equator (WPRFMC 2023). Bycatch is also managed through Biological Opinions for ESA-listed species interacting with the fishery. The latest (2019) BiOp did not find that the fishery was expected to jeopardize or adversely affect any sensitive species it interacts with (ibid).

The Hawaii shallow-set longline fishery operates under the ITSs in the 2019 BiOp, which covers leatherback, loggerhead, green, and olive ridley sea turtles, as well as oceanic whitetip sharks, giant manta rays, and Guadalupe fur seals (NMFS 2019c). The 1-year ITSs for leatherback turtle interactions in this fishery are used as a "hard cap" on interactions in any given year, in that the fishery will be closed for the remainder of the year if these numbers are reached. A hard cap was previously tied to loggerhead interactions as well, though this was removed in 2020.

From 2012 to 2018, the fishery did not reach the annual hard cap for either leatherback or loggerhead turtles (26 and 34, respectively, based on the 2012 Biological Opinion ITSs). In 2019, the loggerhead cap was changed to 17, which the fishery reached in March, leading to the closure of the fishery for the rest of the calendar year (WPRFMC 2023). New individual trip limits are also in place, set at five loggerheads and two leatherbacks per trip. In 2022, one trip reached the leatherback limit (ibid).

It is prohibited for the shallow-set fishery to land giant manta rays and oceanic whitetip sharks (NMFS 2019c). While interactions with oceanic whitetip sharks were high in 2022, most were released alive, and it is thought that the higher 2022 interaction rate could be due to warming waters shifting shark habitat (WPRFMC 2023). The ITSs for oceanic whitetip sharks and giant manta rays are in place to ensure the no-jeopardy conclusion for these species remains accurate; these limits were not exceeded in 2020-2022 (WPRFMC 2023).

The shallow-set fishery has 100% observer coverage, so all interactions with sensitive species are documented, including marine mammals. Most marine mammal interactions are with small dolphins. The fishery did not reach the limit laid out in the ITS from the 2019 BiOp for Guadalupe fur seals from 2020 to 2022 (WPRFMC 2023). The shallow-set fishery contributed to less than five percent of PBR for all marine mammals it interacted with in 2021 whose PBR can be determined.

One ITS from the 2012 BiOp is in place for short-tailed albatross, which had no interactions in the fishery in 2022. The fishery is not thought to substantially contribute to fishing mortality for other seabird species and has seabird mitigation measures in place. Other mitigation measures are currently being tested for potential future use (WPRFMC 2023).

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United States - Hawaii - Western Central Pacific Ocean - Handlines and hand-operated pole-and-lines - Flag Country: United States - FAO Major Area: Pacific, Western Central - RFMO: Western and Central Pacific Fisheries Commission (WCPFC)

United States - Hawaii - Western Central Pacific Ocean - Trolling lines - Flag Country: United States - FAO Major Area: Pacific, Western Central - RFMO: Western and Central Pacific Fisheries Commission (WCPFC)

Highly effective

These fisheries are highly selective. Non-tuna pelagics, alongside some tunas, are caught and retained, and there have been no interactions with protected species in either the troll or handline fisheries (WPRFMC 2023). Therefore, bycatch in trolling line, hand-operated pole-and-line, and handline fisheries is extremely low. Non-target shark species are released alive. However, most non-target species in these fisheries are retained and their management is assessed in C3.1. Therefore, bycatch management is "highly effective".

3.3 Scientific Data Collection and Analysis

United States - Hawaii - Eastern Central Pacific Ocean | Northeast Pacific Ocean - Longline (deep-set) - Flag Country: United States - FAO Major Area: Pacific, Northeast | Pacific, Eastern Central - Permit/License: Covers US vessels landing in Hawaii or California - RFMO: Inter-American Tropical Tuna Commission (IATTC)

United States - Hawaii - Northwest Pacific Ocean | Western Central Pacific Ocean - Longline (deep-set) - Flag Country: United States - FAO Major Area: Pacific, Western Central | Pacific, Northwest - RFMO: Western and Central Pacific Fisheries Commission (WCPFC)

Moderately Effective

The WPRFMC uses the results of stock assessments conducted by the WCPFC and the IATTC (and their associated scientific bodies) to inform their management strategy. The tropical tunas - including bigeye and yellowfin - are regularly assessed by the IATTC and WCPFC, and blue shark in the Pacific also has regular stock assessments performed for its two stocks. Historically, a 20% observer coverage rate was maintained for the deep-set longline fishery. The US Government Accountability Office (GAO) has noted that observer coverage in the DSLL fishery, which often falls just short of the 20% requirement, introduces uncertainty into understanding bycatch impacts due to the need for data extrapolations and potential gaps in coverage of rare interactions with ETP species (GAO 2024). Further, the achieved observer rate was 13% in 2024, and NOAA shifted the observer coverage requirement to just 7% in early 2025 {NMFS 2024}. This reduction may further the concerns expressed in the GAO report, suggesting that observer coverage, if maintained at this lower level, could be insufficient to properly

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monitor this MMPA Category I fishery. However, in June 2025, the Council authorized the required use of electronic monitoring (EM) aboard Hawaiian longline vessels, beginning in the second half of 2025 and resulting in 100% coverage by 2027 (WPRFMC 2025). Therefore, observer coverage is expected to be at sufficient levels (above 20%) by the end of 2025, and Scientific Data Collection and Analysis is considered "moderately effective" (per line 1 in table 3.3.1 of the Seafood Watch Standards).

United States - Hawaii - Eastern Central Pacific Ocean | Northeast Pacific Ocean - Longline (shallow-set) - Flag Country: United States - FAO Major Area: Pacific, Northeast | Pacific, Eastern Central - RFMO: Inter-American Tropical Tuna Commission (IATTC)

United States - Hawaii - Northwest Pacific Ocean | Western Central Pacific Ocean - Longline (shallow-set) - Flag Country: United States - FAO Major Area: Pacific, Western Central | Pacific, Northwest - RFMO: Western and Central Pacific Fisheries Commission (WCPFC)

Highly effective

The WPRFMC uses the results of stock assessments conducted by the WCPFC and the IATTC (and their associated scientific bodies) to inform their management strategy. The main species in the shallow-set fishery, swordfish and blue shark, are regularly assessed through peer-reviewed processes. Further, the shallow-set fishery has 100% observer coverage. Vessel monitoring systems and logbooks are used to collect catch and effort data (WPRFMC 2018). Scientific Data Collection and Analysis is considered "highly effective" because of the adequate observer coverage and stock assessment processes in place for the fishery's main species (per lines 1-5 in table 3.3.1 of the Seafood Watch Standard).

United States - Hawaii - Western Central Pacific Ocean - Handlines and hand-operated pole-and-lines - Flag Country: United States - FAO Major Area: Pacific, Western Central - RFMO: Western and Central Pacific Fisheries Commission (WCPFC)

United States - Hawaii - Western Central Pacific Ocean - Trolling lines - Flag Country: United States - FAO Major Area: Pacific, Western Central - RFMO: Western and Central Pacific Fisheries Commission (WCPFC)

Moderately Effective

The WPRFMC uses the results of stock assessments conducted by the WCPFC and the IATTC (and their associated scientific bodies) to inform their management strategy. Bigeye, skipjack, and yellowfin tuna stocks are regularly monitored and assessed (IATTC 2018; ISC 2017; Mckechnie et al. 2017). Other targeted and retained species in handlines and troll lines are data-limited and lack stock assessments (e.g. wahoo and dolphinfish, two primary target species). There is no observer program in place for the non-longline

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Hawaiian pelagic fisheries, so bycatch is reported directly by fishers and may be underreported (WPRFMC 2023). Based on current reporting, though, the fisheries are not expected to interact with sensitive species or catch low-value, throwaway species. Fisher reports and logbooks are used to collect catch and effort data (WPRFMC 2018). Scientific Data Collection and Analysis is considered "moderately effective" because while some retained species have regular stock assessments performed, others lack these assessments (per line 1 in table 3.3.1 of the Seafood Watch Standard).

3.4 Enforcement of and Compliance with Management Regulations

United States - Hawaii - Eastern Central Pacific Ocean | Northeast Pacific Ocean - Longline (deep-set) - Flag Country: United States - FAO Major Area: Pacific, Northeast | Pacific, Eastern Central - Permit/License: Covers US vessels landing in Hawaii or California - RFMO: Inter-American Tropical Tuna Commission (IATTC)

United States - Hawaii - Northwest Pacific Ocean | Western Central Pacific Ocean - Longline (deep-set) - Flag Country: United States - FAO Major Area: Pacific, Western Central | Pacific, Northwest - RFMO: Western and Central Pacific Fisheries Commission (WCPFC)

United States - Hawaii - Western Central Pacific Ocean - Handlines and hand-operated pole-and-lines - Flag Country: United States - FAO Major Area: Pacific, Western Central - RFMO: Western and Central Pacific Fisheries Commission (WCPFC)

United States - Hawaii - Western Central Pacific Ocean - Trolling lines - Flag Country: United States - FAO Major Area: Pacific, Western Central - RFMO: Western and Central Pacific Fisheries Commission (WCPFC)

United States - Hawaii - Eastern Central Pacific Ocean | Northeast Pacific Ocean - Longline (shallow-set) - Flag Country: United States - FAO Major Area: Pacific, Northeast | Pacific, Eastern Central - RFMO: Inter-American Tropical Tuna Commission (IATTC)

United States - Hawaii - Northwest Pacific Ocean | Western Central Pacific Ocean - Longline (shallow-set) - Flag Country: United States - FAO Major Area: Pacific, Western Central | Pacific, Northwest - RFMO: Western and Central Pacific Fisheries Commission (WCPFC)

Highly effective

One of the primary objectives of the WPRFMC is to encourage compliance with fishery regulations (WPRFMC 2018). Management measures are implemented by the Pacific Islands Regional Office and the NOAA Office of Law Enforcement and the US Coast Guard enforce these regulations. Either full or partial observer coverage additionally fosters compliance with fishery regulations. All longline vessels must have VMS systems in place that are monitored by the NMFS and submit logbooks (WPRFMC 2018). Thorough monitoring and enforcement is exemplified through actions such as fishery

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closures once sea turtle hard caps are reached in the shallow-set fishery. Enforcement and Compliance is considered “highly effective” because effective enforcement measures are in place (per lines 1-2 in table 3.4.1 of the Seafood Watch Standard).

3.5 Stakeholder Inclusion

United States - Hawaii - Eastern Central Pacific Ocean | Northeast Pacific Ocean - Longline (deep-set) - Flag Country: United States - FAO Major Area: Pacific, Northeast | Pacific, Eastern Central - Permit/License: Covers US vessels landing in Hawaii or California - RFMO: Inter-American Tropical Tuna Commission (IATTC)

United States - Hawaii - Northwest Pacific Ocean | Western Central Pacific Ocean - Longline (deep-set) - Flag Country: United States - FAO Major Area: Pacific, Western Central | Pacific, Northwest - RFMO: Western and Central Pacific Fisheries Commission (WCPFC)

United States - Hawaii - Western Central Pacific Ocean - Handlines and hand-operated pole-and-lines - Flag Country: United States - FAO Major Area: Pacific, Western Central - RFMO: Western and Central Pacific Fisheries Commission (WCPFC)

United States - Hawaii - Western Central Pacific Ocean - Trolling lines - Flag Country: United States - FAO Major Area: Pacific, Western Central - RFMO: Western and Central Pacific Fisheries Commission (WCPFC)

United States - Hawaii - Eastern Central Pacific Ocean | Northeast Pacific Ocean - Longline (shallow-set) - Flag Country: United States - FAO Major Area: Pacific, Northeast | Pacific, Eastern Central - RFMO: Inter-American Tropical Tuna Commission (IATTC)

United States - Hawaii - Northwest Pacific Ocean | Western Central Pacific Ocean - Longline (shallow-set) - Flag Country: United States - FAO Major Area: Pacific, Western Central | Pacific, Northwest - RFMO: Western and Central Pacific Fisheries Commission (WCPFC)

Highly effective

The WPRFMC utilizes a FEP advisory panel that advises the Council on fishery management issues, a pelagic FEP team that oversees the development and implementation of the plans of the Science and Statistical Committee, a FEP Standing Committee, and a Regional Ecosystem Advisory Committee. Stakeholders and the public are allowed to make comments and suggestions to proposed amendments to the FEP as well as attend annual public meetings and provide public testimony (WPRFMC 2018). The WPRFMC's Stakeholder Inclusion is considered “highly effective” because all major groups are involved, mechanisms are in place to address user conflicts, and there is transparency in management decision making (per lines 1-5 in table 3.5.1 of the Seafood Watch Standard).

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Criterion 4: Impacts on the Habitat and Ecosystem

This Criterion assesses the impact of the fishery on seafloor habitats, and increases that base score if there are measures in place to mitigate any impacts. The fishery's overall impact on the ecosystem and food web and the use of ecosystem-based fisheries management (EBFM) principles is also evaluated. Ecosystem Based Fisheries Management aims to consider the interconnections among species and all natural and human stressors on the environment. The final score is the geometric mean of the impact of fishing gear on habitat score (factor 4.1 + factor 4.2) and the Ecosystem Based Fishery Management score. The Criterion 4 rating is determined as follows:

- Score >3.2 = **Green** or Low Concern
- Score >2.2 and ≤3.2 = **Yellow** or Moderate Concern
- Score ≤2.2 = **Red** or High Concern

Guiding principles

- Avoid negative impacts on the structure, function or associated biota of marine habitats where fishing occurs.
- Maintain the trophic role of all aquatic life.
- Do not result in harmful ecological changes such as reduction of dependent predator populations, trophic cascades, or phase shifts.
- Ensure that any enhancement activities and fishing activities on enhanced stocks do not negatively affect the diversity, abundance, productivity, or genetic integrity of wild stocks.
- Follow the principles of ecosystem-based fisheries management.

Rating cannot be Critical for Criterion 4.

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Criterion 4 Summary

Fishery	Physical Impact of Fishing Gear on the Habitat/Substrate	Modifying Factor: Mitigation of Gear Impacts	Ecosystem-based Fisheries Management	Score
United States - Hawaii - Eastern Central Pacific Ocean | Northeast Pacific Ocean - Longline (deep-set) - Flag Country: United States - FAO Major Area: Pacific, Northeast | Pacific, Eastern Central - Permit/License: Covers US vessels landing in Hawaii or California - RFMO: Inter-American Tropical Tuna Commission (IATTC)	Score: 5	Score: 0	Moderate Concern	**Green (3.873)**
United States - Hawaii - Eastern Central Pacific Ocean | Northeast Pacific Ocean - Longline (shallow-set) - Flag Country: United States - FAO Major Area: Pacific, Northeast | Pacific, Eastern Central - RFMO: Inter-American Tropical Tuna Commission (IATTC)	Score: 5	Score: 0	Moderate Concern	**Green (3.873)**
United States - Hawaii - Northwest Pacific Ocean | Western Central Pacific Ocean - Longline (deep-set) - Flag Country: United States - FAO Major Area: Pacific, Western Central | Pacific, Northwest - RFMO: Western and Central Pacific Fisheries Commission (WCPFC)	Score: 5	Score: 0	Moderate Concern	**Green (3.873)**
United States - Hawaii - Northwest Pacific Ocean | Western Central Pacific Ocean - Longline (shallow-set) - Flag Country: United States - FAO Major Area: Pacific, Western Central | Pacific, Northwest - RFMO: Western and Central Pacific Fisheries Commission (WCPFC)	Score: 5	Score: 0	Moderate Concern	**Green (3.873)**

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Fishery	Physical Impact of Fishing Gear on the Habitat/Substrate	Modifying Factor: Mitigation of Gear Impacts	Ecosystem-based Fisheries Management	Score
United States - Hawaii - Western Central Pacific Ocean - Handlines and hand-operated pole-and-lines - Flag Country: United States - FAO Major Area: Pacific, Western Central - RFMO: Western and Central Pacific Fisheries Commission (WCPFC)	Score: 5	Score: 0	Moderate Concern	Green (3.873)
United States - Hawaii - Western Central Pacific Ocean - Trolling lines - Flag Country: United States - FAO Major Area: Pacific, Western Central - RFMO: Western and Central Pacific Fisheries Commission (WCPFC)	Score: 5	Score: 0	Moderate Concern	Green (3.873)

Criterion 4 Assessment

Scoring Guidelines

Factor 4.1 - Physical Impact of Fishing Gear on the Habitat/Substrate

Goal: The fishery does not adversely impact the physical structure of the ocean habitat, seafloor or associated biological communities.

- *5 - Fishing gear does not contact the bottom*
- *4 - Vertical line gear*
- *3 - Gears that contacts the bottom, but is not dragged along the bottom (e.g. gillnet, bottom longline, trap) and is not fished on sensitive habitats. Or bottom seine on resilient mud/sand habitats. Or midwater trawl that is known to contact bottom occasionally. Or purse seine known to commonly contact the bottom.*
- *2 - Bottom dragging gears (dredge, trawl) fished on resilient mud/sand habitats. Or gillnet, trap, or bottom longline fished on sensitive boulder or coral reef habitat. Or bottom seine except on mud/sand. Or there is known trampling of coral reef habitat.*
- *1 - Hydraulic clam dredge. Or dredge or trawl gear fished on moderately sensitive habitats (e.g., cobble or boulder)*
- *0 - Dredge or trawl fished on biogenic habitat, (e.g., deep-sea corals, eelgrass and maerl) Note: When multiple habitat types are commonly encountered, and/or the habitat classification is uncertain, the score will be based on the most sensitive, plausible habitat type.*

Factor 4.2 - Modifying Factor: Mitigation of Gear Impacts

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Goal: Damage to the seafloor is mitigated through protection of sensitive or vulnerable seafloor habitats, and limits on the spatial footprint of fishing on fishing effort.

- *+1 —>50% of the habitat is protected from fishing with the gear type. Or fishing intensity is very low/limited and for trawled fisheries, expansion of fishery's footprint is prohibited. Or gear is specifically modified to reduce damage to seafloor and modifications have been shown to be effective at reducing damage. Or there is an effective combination of 'moderate' mitigation measures.*
- *+0.5 —At least 20% of all representative habitats are protected from fishing with the gear type and for trawl fisheries, expansion of the fishery's footprint is prohibited. Or gear modification measures or other measures are in place to limit fishing effort, fishing intensity, and spatial footprint of damage caused from fishing that are expected to be effective.*
- *0 —No effective measures are in place to limit gear impacts on habitats or not applicable because gear used is benign and received a score of 5 in factor 4.1*

Factor 4.3 - Ecosystem-Based Fisheries Management

Goal: All stocks are maintained at levels that allow them to fulfill their ecological role and to maintain a functioning ecosystem and food web. Fishing activities should not seriously reduce ecosystem services provided by any retained species or result in harmful changes such as trophic cascades, phase shifts or reduction of genetic diversity. Even non-native species should be considered with respect to ecosystem impacts. If a fishery is managed in order to eradicate a non-native, the potential impacts of that strategy on native species in the ecosystem should be considered and rated below.

- *5 — Policies that have been shown to be effective are in place to protect species' ecological roles and ecosystem functioning (e.g. catch limits that ensure species' abundance is maintained at sufficient levels to provide food to predators) and effective spatial management is used to protect spawning and foraging areas, and prevent localized depletion. Or it has been scientifically demonstrated that fishing practices do not have negative ecological effects.*
- *4 — Policies are in place to protect species' ecological roles and ecosystem functioning but have not proven to be effective and at least some spatial management is used.*
- *3 — Policies are not in place to protect species' ecological roles and ecosystem functioning but detrimental food web impacts are not likely or policies in place may not be sufficient to protect species' ecological roles and ecosystem functioning.*
- *2 — Policies are not in place to protect species' ecological roles and ecosystem functioning and the likelihood of detrimental food impacts are likely (e.g. trophic cascades, alternate stable states, etc.), but conclusive scientific evidence is not available for this fishery.*
- *1 — Scientifically demonstrated trophic cascades, alternate stable states or other detrimental food web impact are resulting from this fishery.*

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4.1 Physical Impact of Fishing Gear on the Habitat/Substrate

United States - Hawaii - Eastern Central Pacific Ocean | Northeast Pacific Ocean - Longline (deep-set) - Flag Country: United States - FAO Major Area: Pacific, Northeast | Pacific, Eastern Central - Permit/License: Covers US vessels landing in Hawaii or California - RFMO: Inter-American Tropical Tuna Commission (IATTC)

United States - Hawaii - Northwest Pacific Ocean | Western Central Pacific Ocean - Longline (deep-set) - Flag Country: United States - FAO Major Area: Pacific, Western Central | Pacific, Northwest - RFMO: Western and Central Pacific Fisheries Commission (WCPFC)

United States - Hawaii - Eastern Central Pacific Ocean | Northeast Pacific Ocean - Longline (shallow-set) - Flag Country: United States - FAO Major Area: Pacific, Northeast | Pacific, Eastern Central - RFMO: Inter-American Tropical Tuna Commission (IATTC)

United States - Hawaii - Northwest Pacific Ocean | Western Central Pacific Ocean - Longline (shallow-set) - Flag Country: United States - FAO Major Area: Pacific, Western Central | Pacific, Northwest - RFMO: Western and Central Pacific Fisheries Commission (WCPFC)

Score: 5

Although pelagic longlines are surface and midwater fisheries, contact with the seabed can occasionally occur in shallow-set fisheries (Gilman et al. 2012; Passfield and Gilman 2010). However, these effects are still considered to be a low risk to bottom habitats, and the pelagic Hawaiian longline fisheries receive a score of “5”.

United States - Hawaii - Western Central Pacific Ocean - Handlines and hand-operated pole-and-lines - Flag Country: United States - FAO Major Area: Pacific, Western Central - RFMO: Western and Central Pacific Fisheries Commission (WCPFC)

United States - Hawaii - Western Central Pacific Ocean - Trolling lines - Flag Country: United States - FAO Major Area: Pacific, Western Central - RFMO: Western and Central Pacific Fisheries Commission (WCPFC)

Score: 5

Trolling line and hand-operated pole and line gear does not come into contact with the ocean floor. Therefore, risk to the bottom habitat is minimal, and these fisheries receive a score of “5”.

4.2 Modifying Factor: Mitigation of Gear Impacts

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United States - Hawaii - Eastern Central Pacific Ocean | Northeast Pacific Ocean - Longline (deep-set) - Flag Country: United States - FAO Major Area: Pacific, Northeast | Pacific, Eastern Central - Permit/License: Covers US vessels landing in Hawaii or California - RFMO: Inter-American Tropical Tuna Commission (IATTC)

United States - Hawaii - Northwest Pacific Ocean | Western Central Pacific Ocean - Longline (deep-set) - Flag Country: United States - FAO Major Area: Pacific, Western Central | Pacific, Northwest - RFMO: Western and Central Pacific Fisheries Commission (WCPFC)

United States - Hawaii - Western Central Pacific Ocean - Handlines and hand-operated pole-and-lines - Flag Country: United States - FAO Major Area: Pacific, Western Central - RFMO: Western and Central Pacific Fisheries Commission (WCPFC)

United States - Hawaii - Western Central Pacific Ocean - Trolling lines - Flag Country: United States - FAO Major Area: Pacific, Western Central - RFMO: Western and Central Pacific Fisheries Commission (WCPFC)

United States - Hawaii - Eastern Central Pacific Ocean | Northeast Pacific Ocean - Longline (shallow-set) - Flag Country: United States - FAO Major Area: Pacific, Northeast | Pacific, Eastern Central - RFMO: Inter-American Tropical Tuna Commission (IATTC)

United States - Hawaii - Northwest Pacific Ocean | Western Central Pacific Ocean - Longline (shallow-set) - Flag Country: United States - FAO Major Area: Pacific, Western Central | Pacific, Northwest - RFMO: Western and Central Pacific Fisheries Commission (WCPFC)

Score: 0

Not applicable because gear used is benign and fishery received a score of “5” for 4.1.

4.3 Ecosystem-based Fisheries Management

United States - Hawaii - Eastern Central Pacific Ocean | Northeast Pacific Ocean - Longline (deep-set) - Flag Country: United States - FAO Major Area: Pacific, Northeast | Pacific, Eastern Central - Permit/License: Covers US vessels landing in Hawaii or California - RFMO: Inter-American Tropical Tuna Commission (IATTC)

United States - Hawaii - Northwest Pacific Ocean | Western Central Pacific Ocean - Longline (deep-set) - Flag Country: United States - FAO Major Area: Pacific, Western Central | Pacific, Northwest - RFMO: Western and Central Pacific Fisheries Commission (WCPFC)

United States - Hawaii - Eastern Central Pacific Ocean | Northeast Pacific Ocean - Longline (shallow-set) - Flag Country: United States - FAO Major Area: Pacific, Northeast | Pacific, Eastern Central - RFMO: Inter-American Tropical Tuna Commission (IATTC)

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United States - Hawaii - Northwest Pacific Ocean | Western Central Pacific Ocean - Longline (shallow-set) - Flag Country: United States - FAO Major Area: Pacific, Western Central | Pacific, Northwest - RFMO: Western and Central Pacific Fisheries Commission (WCPFC)

Moderate Concern

Longline fisheries in Hawaii catch ecologically important species including tunas, billfish, and sharks. Of these, only bigeye tuna and yellowfin tuna in the DSLL fishery and swordfish in the SSLL fishery are main, retained species. Species caught in the Hawaii longline fisheries are managed under a Fishery Ecosystem Plan (Pelagic FEP). In 2015, the WPRFMC, in partnership with NMFS Pacific Islands Fisheries Science Center, local fishery resource management agencies, and the NMFS Pacific Islands Regional Office (PIRO), agreed to revise and expand the contents of future annual reports to include the range of ecosystem elements, including protected species interactions, oceanographic parameters, essential fish habitat review, and marine planning activities. Stock trends and ecosystem information in the FEP provide regional fishery management councils and NMFS with information for determining the annual catch limits for each stock in the fishery, documenting significant trends or changes in the resource, marine ecosystems, and fishery over time; implementing required Essential Fish Habitat (EFH) provisions; and assessing the relative success of existing relevant state and Federal fishery management programs (WPRFMC 2018). However, harvest control rules explicitly protecting the ecosystem role of yellowfin, bigeye, and swordfish at the RFMO level are lacking. There are catch limits and/or hard caps in place in management to protect some target (bigeye) and non-target (turtles, false killer whales) species. A number of closed areas are in place to preserve habitat and ecosystem function across the Hawaiian Archipelago. While sharks captured in Hawaiian longline fisheries are nearly all released, post-release survival rates are not necessarily 100%, and management measures to prevent their capture, regardless of retention, are not in place. Many billfish lack harvest control rules at the RFMO level, preventing protection of the full extent of their stocks.

EBFM in the Hawaiian longline fisheries is considered “moderate concern” for ecosystem-based management because some policies are in place to protect ecosystem function, but the ecosystem role of large tunas and swordfish is not fully protected via current management measures (per line 2.a in table 4.3.1 of the Seafood Watch Standard).

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Supplementary Information

A number of area closures or Marine Managed Areas (MMAs) exist in the Hawaiian Islands. The USFWS prohibits fishing within the Howland Island, Jarvis Island, and Baker Island National Wildlife Refuge (NWR) boundaries. The USFWS manages Johnston Atoll as a National Wildlife Refuge, and Hawaiian breeding locations for some species of bird, including the black-footed albatross, are protected under the US National Wildlife Refuge system of State of Hawaii Seabird Sanctuaries and there is a 50 nautical mile Protected Species Zone surrounding the Northwestern Hawaiian Islands. In addition, the Hawaiian Islands Humpback Whale National Marine Sanctuary has been in place since 1992 (WPRFMC 2018).Evidence also suggests that the Kona coast is a spawning area for several large pelagic species (Hyde et al. 2005; Paine et al. 2008).

United States - Hawaii - Western Central Pacific Ocean - Handlines and hand-operated pole-and-lines - Flag Country: United States - FAO Major Area: Pacific, Western Central - RFMO: Western and Central Pacific Fisheries Commission (WCPFC)

United States - Hawaii - Western Central Pacific Ocean - Trolling lines - Flag Country: United States - FAO Major Area: Pacific, Western Central - RFMO: Western and Central Pacific Fisheries Commission (WCPFC)

Moderate Concern

Troll and handline fisheries catch ecologically important species including tunas (both fisheries) and billfish (troll fisheries only). In the handline fisheries (MHI and offshore), main species are bigeye and yellowfin tunas, while main species in the troll fishery are more varied and include multiple tunas, marlins, and large pelagic finfish (see 3.1 for a full list). Species caught in the Hawaii pelagic fisheries are managed under a Fishery Ecosystem Plan (Pelagic FEP). In 2015, the WPRFMC, in partnership with NMFS Pacific Islands Fisheries Science Center, local fishery resource management agencies, and the NMFS Pacific Islands Regional Office (PIRO), agreed to revise and expand the contents of future annual reports to include the range of ecosystem elements, including protected species interactions, oceanographic parameters, essential fish habitat review, and marine planning activities. Evidence also suggests that the Kona coast is a spawning area for several large pelagic species (Hyde et al. 2005; Paine et al. 2008). Stock trends and ecosystem information in the FEP provide regional fishery management councils and NMFS with information for determining the annual catch limits for each stock in the fishery, documenting significant trends or changes in the resource, marine ecosystems, and fishery over time, implementing required Essential Fish Habitat (EFH) provisions, and assessing the relative success of existing relevant state and Federal fishery management programs (WPRFMC 2018). There are catch limits and/or hard caps in place in management to protect some target (bigeye) species. A number of closed areas are in place to preserve habitat and ecosystem function across the Hawaiian Archipelago. Blue and striped marlin, which are retained main species in troll lines, lack harvest control rules

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at the RFMO level, preventing protection of the full extent of their stocks.

The WPRFMC created the Hawaii Pelagic Fishery Ecosystem Plan that establishes a framework for Ecosystem-Based Fisheries Management (EBFM) in U.S. waters, and provides ten objectives to assist in its implementation. There are no efforts underway to assess the impacts of trolling line and hand-operated pole and line gears on the Hawaiian pelagic ecosystems.

Because this fishery catches apex predators, detrimental food web impacts are possible. There is some ecosystem-based management in place; however stronger policies may be needed to fully protect the ecological role of harvested species. Therefore, EBFM is considered "moderate concern" (per line 2.a in table 4.5.1 of the Seafood Watch Standard).

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Scientific review does not constitute an endorsement of the Seafood Watch® program, or its seafood recommendations, on the part of the reviewing scientists. Seafood Watch® is solely responsible for the conclusions reached in this report.

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Appendix A: Deep-Set Longline 2022 Catch (includes discards and landings)

Data sources for the deep-set longline fishery in the 2023 Pelagic FEP report include logbooks, commercial dealer data, and observer program data.

Species	Total Catch (# of Fish)	Average Weight (lb)	Total Weight (lb)	Retained?	Main Species?
Albacore	11,538.0	37.0	426,906.0	Yes	No*
Bigeye	171,447.0	83.0	14,230,101.0	Yes	Yes (>5% of catch)
Bluefin	11.0	245.0	2,695.0	Yes	No
Skipjack	12,586.0	18.0	226,548.0	Yes	No*
Yellowfin	83,969.0	64.0	5,374,016.0	Yes	Yes (>5% of catch)
Other Tunas	0.0	0.0	0.0	N/A	No
Swordfish	3,629.0	130.0	471,770.0	Yes	No
Blue Marlin	7,109.0	137.0	973,933.0	Yes	No*
Striped Marlin	11,133.0	55.0	612,315.0	Yes	No*
Shortbill Spearfish	11,031.0	26.0	286,806.0	Yes	No*
Other Billfishes	453.0	89.5	40,543.5	Yes	No
Mahimahi	35,735.0	11.0	393,085.0	Yes	No*
Wahoo	17,501.0	32.0	560,032.0	Yes	No*
Moonfish	4,955.0	106.0	525,230.0	Yes	No*
Oilfish	9,644.0	20.0	192,880.0	Yes	No
Pomfret	31,683.0	13.0	411,879.0	Yes	No*
Other Finfish	6,281.0	19.0	119,339.0	Yes	No
Blue Shark	78,643.0	211.8	16,652,655.3	No	Yes (>5% of catch)
Mako Sharks	1,587.0	184.0	292,008.0	No	Yes (ETP status)
Thresher Sharks	8,215.0	183.0	1,503,345.0	No	Yes (ETP status)
Oceanic Whitetip Shark	384.0	115.0	44,160.0	No	Yes (ETP status)
Silky Shark	233.0	250.0	58,250.0	No	No
Other Sharks	247.0	200.0	49,400.0	No	No
Longnose Lancetfish*	217,244.0	5.0	1,086,220.0	No	No
Escolar	53,089.0	20.0	1,061,780.0	No	No
Pelagic Stingray*	8,526.0	110.0	937,860.0	No	No

Figure 8: Catch of target and bycatch species in deep-set Hawaiian longlines in 2022. Note that when average weight of individuals was not provided, other sources were used to determine average weight of the species. Starred species in the Species column have catch data from 2021 rather than 2022, as 2022 numbers are not yet provided. Those marked with an asterisk in the Main Species column, while not meeting SFW main species criteria, are included in C1 in order to produce a rating. Source: (WPRFMC 2023), see tables 25 (data from the Pacific Islands ROP), 26 (data from logbooks and dealers), and 27.

Note that while the number of individual black marlin caught in the DSLL fishery is not provided, average weight of each individual is provided, and black marlin catch is lumped into the "other billfishes" category in the above table. While exact catch of black marlin is unknown, the species is included in C1 in this assessment in order to produce a rating, as it is a retained species in the fishery and is commercially sold. This is true for all species marked "No*" in the "Main Species?" column.

Species for whom >20% of mortality stems from a single fishery also meet main species criteria under SFW guidelines, but, as can be noted in the above table, no species meet this specific requirement in Hawaiian fisheries. This is because mortality stemming from Hawaiian fisheries is much smaller than mortality stemming from fisheries at the RFMO (IATTC, WCPFC) level, such that Hawaiian fisheries are not responsible for 20% of the total mortality of any affected stocks.

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The majority of mako sharks caught in Hawaiian longlines are shortfin mako sharks, and catch of all mako sharks in the DSLL and SSLL fisheries is under 5% of MSY for the N Pacific shortfin mako stock, thus this species is excluded from C2. While silky sharks are Vulnerable on a global scale, their latest assessment in the WCPO suggests this stock is healthy, so they are not a main species (based on 5% of catch and 20% of mortality) in the Hawaii WCPO DSLL fishery. Further, though the EPO stock has not been evaluated, silky shark catch in Hawaii DSLLs is extremely small compared to catch in other EPO fisheries (e.g. over 34,000 individuals caught in EPO purse seines in 2022 versus 233 individuals in DSLL, split between EPO and WCPO). Therefore, their catch can be considered negligible, and they are excluded as a main species from the EPO DSLL fishery as well. A general "sharks" category is not included in C2 (to account for the 'other sharks' data in the above table) because it would score similarly to sharks already included in this assessment. Mako sharks, thresher sharks, and oceanic whitetip sharkss are all species of concern according to their IUCN statuses, and they meet main species requirements because a sustainable level of mortality is unknown for their stocks, thus the contribution of the deep-set fishery to a sustainable level of mortality is unknown. Of the above species that do meet main species requirements, sharks and longnose lancetfish are included in C2 rather than C1 because they are not retained species.

Finally, pomfret in the above table is represented in this assessment by sickle pomfret in C1.

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Appendix B: Shallow-Set Longline 2022 Catch (includes discards and landings)

Data sources for the shallow-set longline fishery in the 2023 Pelagic FEP report include logbooks, commercial dealer data, and observer program data.

Species	Total Catch (# of Fish)	Average Weight (lb)	Total Weight (lb)	Retained?	Main Species?
Albacore	1,395.0	28.0	39,060.0	Yes	No
Bigeye Tuna	954.0	106.0	101,124.0	Yes	No
Bluefin Tuna	4.0	210.0	840.0	Yes	No
Skipjack Tuna	31.0	18.0	558.0	Yes	No
Yellowfin Tuna	1,067.0	92.0	98,164.0	Yes	No
Other Tunas	0.0	0.0	0.0	N/A	No
Swordfish	9,611.0	169.0	1,624,259.0	Yes	Yes (>5% of catch)
Blue Marlin	49.0	182.0	8,918.0	Yes	No
Striped Marlin	388.0	65.0	25,220.0	Yes	No
Shortbill Spearfish	62.0	26.0	1,612.0	Yes	No*
Other Billfishes	12.0	42.0	504.0	Yes	No
Mahimahi	1,501.0	9.0	13,509.0	Yes	No*
Wahoo	35.0	35.0	1,225.0	Yes	No
Moonfish	29.0	80.0	2,320.0	Yes	No
Oilfish	227.0	29.0	6,583.0	Yes	No
Pomfret	6.0	12.0	72.0	Yes	No
Other Finfish	13.0	21.3	276.3	Yes	No
Blue Shark	6,355.0	211.8	1,345,671.3	No	Yes (>5% of catch)
Mako Sharks	713.0	175.0	124,775.0	No	No
Thresher Sharks	44.0	243.0	10,692.0	No	No
Oceanic Whitetip Shark	26.0	115.0	2,990.0	No	No
Silky Shark	5.0	250.0	1,250.0	No	No
Other Sharks	5.0	200.0	1,000.0	No	No
Longnose Lancetfish*	2,480.0	20.0	49,600.0	No	No
Escolar*	521.0	99.0	51,579.0	Yes	No
Pelagic Stingray*	171.0	110.0	18,810.0	Yes	No

Figure 9: Catch of target and bycatch species in shallow-set Hawaiian longlines in 2022. Note that when average weight of individuals was not provided, other sources were used to determine average weight of the species. Starred species in the Species column have catch data from 2021 rather than 2022, as 2022 numbers are not yet provided. Those marked with an asterisk in the Main Species column, while not meeting SFW main species criteria, are included in C1 in order to produce a rating. Source: (WPRFMC 2023), see tables 29, 30, and 31.

Species marked "No*" in the "Main Species?" column do not meet main species requirements but are included in C1 in order to produce a SFW rating. Species for whom >20% of mortality stems from a single fishery also meet main species criteria under SFW guidelines, but, as can be noted in the above table, no species meet this specific requirement in Hawaiian fisheries. This is because mortality stemming from Hawaiian fisheries is much smaller than mortality stemming from fisheries at the RFMO (IATTC, WCPFC) level, such that Hawaiian fisheries are not responsible for 20% of the total mortality of any affected stocks.

Mako sharks, thresher sharks, oceanic whitetip sharks, and silky sharks are all species of concern according to their IUCN statuses. The majority of mako sharks caught in Hawaiian longlines are shortfin mako sharks, and catch of all mako sharks in the DSLL and SSLL fisheries is under 5% of MSY for the N Pacific shortfin mako stock, thus this species is excluded from C2. Note that while thresher sharks, oceanic whitetip shark, and silky shark are captured in the

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SSLL fisheries, their catch is considered sporadic in comparison to the total number of sets and hooks deployed in the fishery, thus they do not meet main species requirements and therefore also are not included in C2 in this assessment. The catch of 'other sharks' is also sporadic with respect to the total number of deployed hooks in the fishery.

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Appendix C: Deep-Set Marine Mammal Interactions

Species (Stock)	PBR Estimate Available?	Main Species?	In LOF?
Bottlenose dolphin (Hawaii pelagic)	No	No (total MSI is approaching zero)	Yes
False killer whale (Hawaii pelagic)	Yes	Yes (estimated take >5% of PBR)	Yes
False killer whale (MHI)	Yes	Yes (estimated take >5% of PBR)	Yes
False killer whale (NWHI)	Yes	Yes (estimated take >5% of PBR)	Yes
Risso's dolphin (Hawaii)	Yes	Yes (estimated take >5% of PBR)	Yes
Rough-toothed dolphin (Hawaii)	Yes	No (estimated take <5% of PBR)	Yes
Short-finned pilot whale (Hawaii)	Yes	No (estimated take <5% of PBR)	Yes
Striped dolphin (Hawaii)	Yes	No (estimated take <5% of PBR)	No
Pantropical spotted dolphin (Hawaii pelagic)	Yes	No (estimated take <5% of PBR)	No
Blainville's beaked whale (Hawaii)	Yes	No (estimated take <5% of PBR)	No
Kogia spp. (dwarf - Hawaii; pygmy - Hawaii)	No (dwarf); Yes (pygmy)	No (total MSI for dwarf approaching zero; estimated take for pygmy <5% of PBR)	Yes
Pygmy killer whale (Hawaii)	Yes	No (estimated take <5% of PBR)	No
Humpback whale (Hawaii)	Yes	No (estimated take <5% of PBR)	No
Sperm whale (Hawaii)	Yes	No (estimated take <5% of PBR)	No

Figure 10: Summary of marine mammals designated and rejected as main species in the Hawaii deep-set longline fisheries. PBR estimates are available via NOAA's marine mammal stock assessments (see https://www.fisheries.noaa.gov/national/marine-mammal-protection/marine-mammal-stock-assessment-reports-species-stock); take estimates are available via stock assessments and tables 70-72 in (WPRFMC 2023); and the LOF is available via https://www.fisheries.noaa.gov/national/marine-mammal-protection/list-fisheries-summary-tables.

Note that estimated mean take in the deep-set fishery was zero in the most recently available 5-year period for the following marine mammals: striped dolphin, pantropical spotted dolphin, pygmy killer whale, humpback whale, and sperm whale.

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Appendix D: Shallow-Set Marine Mammal Interactions

Species (Stock)	PBR Estimate Available?	Main Species?	In LOF?
Bottlenose dolphin (Hawaii pelagic)	No	No (total MSI is approaching zero)	Yes
False killer whale (Hawaii pelagic)	Yes	No (estimated take <5% of PBR)	Yes
Risso's dolphin (Hawaii)	Yes	No (estimated take <5% of PBR)	Yes
Rough-toothed dolphin (Hawaii)	Yes	No (estimated take <5% of PBR)	No
Ginkgo-toothed beaked whale (N/A)	No	No (estimated take is zero)	No
Striped dolphin (Hawaii)	Yes	No (estimated take <5% of PBR)	Yes
Short-beaked common dolphin (CA/OR/WA)	Yes	No (estimated take <5% of PBR)	No
Blainville's beaked whale (Hawaii)	Yes	No (estimated take <5% of PBR)	No
Kogia spp. (dwarf - Hawaii; pygmy - Hawaii)	No (dwarf); Yes (pygmy)	No (estimated dwarf take is zero; estimated take for pygmy <5% of PBR)	No
Pygmy sperm whale (Hawaii)	Yes	No (estimated take <5% of PBR)	No
Guadalupe fur seal (N/A)	Yes	No (estimated take <5% of PBR)	Yes
Bryde's whale (Hawaii)	Yes	No (estimated take <5% of PBR)	No
Humpback whale (Hawaii)	Yes	No (estimated take <5% of PBR)	No
Fin whale (Hawaii)	Yes	No (estimated take <5% of PBR)	No

Figure 11: Summary of marine mammals designated and rejected as main species in the Hawaii shallow-set longline fisheries. PBR estimates are available via NOAA's marine mammal stock assessments (see https://www.fisheries.noaa.gov/national/marine-mammal-protection/marine-mammal-stock-assessment-reports-species-stock); take estimates are available via stock assessments and tables 56-62 in (WPRFMC 2023); and the LOF is available at https://www.fisheries.noaa.gov/national/marine-mammal-protection/list-fisheries-summary-tables.

Note that estimated mean take in the shallow-set fishery was zero in the most recently available 5-year period for the following marine mammals: rough-toothed dolphin, Ginkgo-toothed beaked whale, striped dolphin, short-beaked common dolphin, Blainville's beaked whale, dwarf and pygmy sperm whale, Bryde's whale, humpback whale, and fin whale.

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Appendix E: Deep-Set Seabird Interactions

Species	Average Take	ITS/PBR	Main Species?
Laysan albatross	262.6	PBR ~ 32,000 - 35,000	No (estimated take <5% of PBR)
Black-footed albatross	618.6	PBR = 11,980	Yes (estimated take >5% of PBR)
Unidentified albatross	0	N/A	No (estimated take is 0)
Short-tailed albatross	0	ITS: 2 every 5 years	No (estimated take is 0)
Booby species	5.2	N/A	No (estimated take is negligible)
Sooty shearwater	1.4	N/A	No (estimated take is negligible)
Unidentified shearwater	9.8	N/A	No (estimated take is negligible)

Figure 12: Interactions between Hawaii deep-set longlines and seabirds, based on data from 2018 to 2022. Data source: tables 76-77 in (WPRFMC 2023).

Note that (Arata and Naughton 2009) estimates black-footed albatross PBR as 11,980 individuals per year, and (Bakker et al. 2018)'s supplementary figure S4 indicates that Laysan albatross PBR used in Arata and Naughton's report is between ~32,000 and 35,000. Thus, while black-footed albatross takes are just over 5% of estimated PBR in the deep-set fishery, Laysan albatross takes are <1% of PBR.

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Appendix F: Shallow-Set Seabird Interactions

Species	Average Take	ITS/PBR	Main Species?
Laysan albatross	17.8	PBR ~ 32,000 - 35,000	No (estimated take <5% of PBR)
Black-footed albatross	29.4	PBR = 11,980	No (estimated take <5% of PBR)
Northern fulmar	0.2	N/A	No (estimated take is negligible)
Short-tailed albatross	0	ITS: 1 every 5 years	No (estimated take is 0)
Unidentified gull	0	N/A	No (estimated take is 0)
Unidentified shearwater	0	N/A	No (estimated take is 0)

Figure 13: Interactions between Hawaii shallow-set longlines and seabirds, based on data from 2018 to 2022. Data source: table 63 in (WPRFMC 2023).

Note that (Arata and Naughton 2009) estimates black-footed albatross PBR as 11,980 individuals per year, and (Bakker et al. 2018)'s supplementary figure S4 indicates that Laysan albatross PBR used in Arata and Naughton's report is between ~32,000 and 35,000. Thus, neither Laysan nor black-footed albatross takes are >5% of estimated PBR in the shallow-set fishery.

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Appendix G: Deep-Set Sea Turtle Interactions

Species	3-Year Estimated Interactions (Mortalities)	ITS Interactions (M)	Main Species?
Leatherback turtle	62.61 (22.60)	72 (27)	Yes (take is >5% of a sustainable limit)
Green turtle (E Pacific)	25.17 (24.1)	12 (12)	Yes (take is >5% of a sustainable limit)
Loggerhead turtle	41.35 (22.87)	18 (13)	Yes (take is >5% of a sustainable limit)
Olive Ridley turtle (E Pacific)	137.1 (129.59)	141 (134)	Yes (take is >5% of a sustainable limit)
Olive Ridley turtle (W Pacific)	42 (40)	40.95 (38.71)	Yes (take is >5% of a sustainable limit)
Unidentified hard shell	0	N/A	No (estimated take is 0)

Figure 14: Interactions with sea turtles in the Hawaiian deep-set longline fishery, totaled across 2020-2022, and compared to 3-year ITSs. Data source: tables 68-69 in (WPRFMC 2023).

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Appendix H: Shallow-Set Sea Turtle Interactions

Species	Average Interactions	Limits	Main Species?
Green turtle	0.4	5 (ITS)	Yes (take is >5% of a sustainable limit)
Leatherback turtle	5.4	21 (ITS); 16 (fleetwide hard cap); 2 (trip hard cap)	Yes (take is >5% of a sustainable limit)
Loggerhead turtle (N Pacific)	20.2	36 (ITS); 5 (trip hard cap)	Yes (take is >5% of a sustainable limit)
Olive Ridley turtle	1.4	5 (ITS)	Yes (take is >5% of a sustainable limit)
Unidentified hard shell	0.2	N/A	No (estimated take is negligible)

Figure 15: Interactions between Hawaii shallow-set longlines and sea turtles, based on data from 2018 to 2022. Data source: tables 52-54 in (WPRFMC 2023).

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Appendix I: Catch in MHI Troll Fishery

Data are more limited for troll and handline fisheries due to confidentiality measures, but supporting data for landings figures in the WPRFMC 2023 report were used to determine main species (WPRFMC 2023). Data sources for the troll fishery in the 2023 Pelagic FEP report include Hawaii Division of Aquatic Resources (HDAR) fishing report data, which consists of monthly fisher catch reports and dealer data.

Species	Total Catch (lbs)	Main Species?
Yellowfin Tuna	4,285,907	Yes (>5% of catch)
Skipjack Tuna	964,525	Yes (>5% of catch)
Blue Marlin	1,360,463	Yes (>5% of catch)
Striped Marlin	113,853	No
Dolphinfish	2,132,117	Yes (>5% of catch)
Wahoo	319,132	No*

Figure 16: Total catch (2018-2022) in pounds in the MHI troll fishery, estimated via tables A-100 and tables A-102 through A-104 in (WPRFMC 2023). Note that species marked with an asterisk in the 'Main Species?' column are not main species but are included in C1 to produce a rating.

WPRFMC provides CPUE in lbs/day and total number of days fished for its MHI troll, MHI handline, and offshore handline fisheries (note that this assessment combines the two handline fisheries into one) (see tables A-100 and A-102 through A-104 for trolls, tables A-105 and A-107 for MHI handlines, and tables A1-08 and A-110 in (WPRFMC 2023)). Total catch for each species was estimated by multiplying reported pounds per day fished for each species by total number of fishing days. Based on a lack of bycatch data (due to the lack of an observer program), the Seafood Watch Unidentified Bycatch Matrix (UBM) would point toward the inclusion of finfish and sharks in troll and pole fisheries. However, tables A-81 and A-83 through A-87 in (WPRFMC 2023) indicate that catch of other pelagic management units (PMUs), e.g. sharks, pomfrets, and opah, in 'other gear' (which includes both handlines and trolls) in Hawaiian fisheries are negligible. Further, table 33 in the same report indicates very low reported bycatch numbers in the MHI troll fishery. Thus, these data can be used to overrule the use of the UBM, and the only main species in these fisheries are those that were determined to make up ~5% of the catch via the supporting data tables noted above in (WPRFMC 2023).

Appendix J: Catch in Hawaiian Handline Fisheries

Data sources for the handline fisheries in the 2023 Pelagic FEP report include HDAR monthly catch report data and dealer data.

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Species	Total Catch (lbs)	Main Species?
Yellowfin Tuna	3,082,501	Yes (>5% of catch)
Albacore	95,640	No
Bigeye Tuna	210,232	No

Figure 17: Total catch (2018-2022) in pounds in the MHI handline fishery, estimated via tables A-105 and A-107 in (WPRFMC 2023).

Species	Total Catch (lbs)	Main Species?
Bigeye Tuna	1,577,234	Yes (>5% of catch)
Yellowfin Tuna	254,567	Yes (>5% of catch)
Dolphinfish	6,741	No*

Figure 18: Total catch (2018-2022) in pounds in the offshore handline fishery, estimated via tables A-108 and A-110 in (WPRFMC 2023). Note that species marked with asterisks in the 'Main Species?' column are not main species but are included in C1 to produce a rating.

Note that for the purposes of this assessment, these two handlines were considered together as one, thus main species were determined via data from both fisheries.

Total catch for each species was estimated by multiplying reported pounds per day fished for each species by total number of fishing days. See above appendix for the troll fishery for additional information on data calculations and main species decisions.

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