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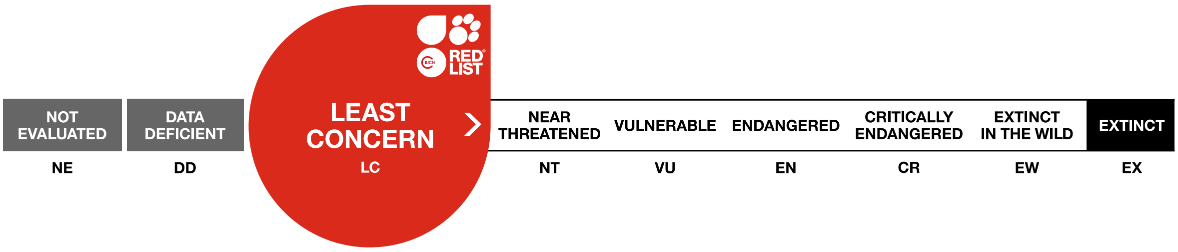
Katsuwonus pelamis, Skipjack Tuna

Assessment by: Collette, B.B., Boustany, A., Fox, W., Graves, J., Juan Jorda, M. & Restrepo, V.



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Taxonomy

Kingdom	Phylum	Class	Order	Family
Animalia	Chordata	Actinopterygii	Perciformes	Scombridae

Scientific Name: *Katsuwonus pelamis* (Linnaeus, 1758)

Synonym(s):

- *Euthynnus pelamis* (Linnaeus, 1758)
- *Scomber pelamides* Lacepede, 1801
- *Scomber pelamis* Linnaeus, 1758
- *Thynnus vagans* Lesson, 1829

Regional Assessments:

- Gulf of Mexico
- Europe
- Mediterranean

Common Name(s):

- English: Skipjack Tuna, Oceanic Bonito, Oceanic Skipjack, Skipjack, Skipjack Tuna, Skipjack Tuna, Stripy
- French: Bonite, Bonite Folle, Bonite Ventre Rayé, Bonite a Ventre Raye, Bonite à Ventre Rayé, Bonitou, Bounicou, Listao, Thonine à Ventre Rayé, Ton Rayé
- Spanish; Castilian: Atún, Atún De Altura, Barrilete, Barrilete Listado, Bonita, Bonito, Bonito De Altura, Bonito De Veintre Rayado, Bonito Del Sur, Bonito Listado, Bonito Oceánico, Bonitol, Cachorreta, Cachureta, Cachurreta, Descargamento, Lampo, Listado, Listado, Llampua, Merma, Palomida, Picosa, Rayada
- Albanian: Palamida
- Arabic: Af Muss, Boussenna, Dabub, Ghzel, Hargheiba, L'bakoura, Sacheto, Sheikh, Thonine, Tunna
- Danish: Bugstribet bonit, Bugstribet bonnit
- Dutch; Flemish: Gestreepte tonijn, Tonijn
- German: Bauchstreifiger bonito, Bonito, Echter bonito, Gestreifter thunfisch, Thunfisch, Thunfischwurst
- Greek, Modern (1453-): Pelamide, Pelamit, Rigina, Tonina, Tónnos Macrypteros
- Hawaiian: Aku, Aku kina'u
- Italian: Culurita, Impiriali, Nzimburu, Paamia, Paamie, Palaja steddara, Palametiedde, Palamida, Palamito, Palamitu maiaticus, Palometa, Tonina, Tonnella, Tonnetto
- Japanese: Katsuo, Nagakoban, Namaribushi, Tsuna Hamu
- Maltese: Palamidu, Pelamis, Pizzutu, Plamtu bla rigi
- Norwegian: Bonit, Stripet pelamide
- Polish: Bonite, Bonito
- Portuguese: Atum-bonito, Barriga-listada, Bonito, Bonito de barriga listada, Bonito de ventre rayado, Bonito rajado, Bonito-barriga-listada, Bonito-de-barriga listada, Bonito-de-barriga-listada, Bonito-de-barriga-listrada, Bonito-de-barriga-riscada, Bonito-listado, Bonito-listrado, Bonito-oceânico, Bonito-rajado, Gaiado, Gaiado ou melancia, Gayado, Listado, Melancia, Sarpanansa, Serra
- Russian: Katsuo, Malayj Tunets-bonito, Okamasu, Policanto, Polosatyi Tunets, Skios
- Swedish: Bonit

- Turkish: Çizgiliorkinoz baliği, Çizgiliton baliği
- Vietnamese: Cá ngừ vằn

Taxonomic Source(s):

Fricke, R., Eschmeyer, W.N. and Van der Laan, R. (eds). 2021. Eschmeyer's Catalog of Fishes: genera, species, references. Updated 04 May 2021. Available at: http://researcharchive.calacademy.org/research/ichthyology/catalog/fishcatmain.asp..

Taxonomic Notes:

Some authors have included Skipjack Tuna in the genus *Euthynnus*, but recent authors agree with its placement in the monotypic genus *Katsuwonus* (Collette and Graves 2019).

Assessment Information

Red List Category & Criteria: Least Concern ver 3.1

Year Published: 2021

Date Assessed: January 15, 2021

Justification:

See the Supplementary Information for a glossary of abbreviations and acronyms used throughout this assessment.

Skipjack Tuna are very important in commercial fisheries and, although heavily exploited, are not considered to be overfished. The species is fast-growing, relatively short-lived, and highly productive. Based on stock-size weighted changes in B/B_{MSY} or SSB/SSB_0 in the Western and Central Pacific, Indian and West Atlantic Oceans, there has been an estimated 2–24% decline in the population globally over the past three generation lengths or 10 years (e.g. given available data ranges of 2003/2008–2013/2018). Overfishing is likely not occurring in any of the stocks, but may have occurred in 10% or more of the species' range sometime over the past five years.

This species is listed as Least Concern under criterion A1. As this species has a circumglobal distribution and a very large global population size, it does not meet any of the thresholds for criteria B, C or D, and criterion E cannot be applied because a quantitative analysis of future extinction probability is not available. However, it is important to note that there is no adequate measure of population trends for this species in the Eastern Pacific, and that an estimate of no change in the East Atlantic population is based on visual inspection of CPUE trends. Additionally, fishing mortality is continuously increasing for both adults and juveniles in at least the Western and Central Pacific, and the 2017 provisional catch estimate for the Eastern Atlantic is greater than recommended.

For further information about this species, see Supplementary Material.

Previously Published Red List Assessments

2011 – Least Concern (LC)
https://dx.doi.org/10.2305/IUCN.UK.2011-2.RLTS.T170310A6739812.en

Geographic Range

Range Description:

Skipjack Tuna are circumglobal in seas warmer than 15–18 °C. They are found throughout the warm Atlantic including the Gulf of Mexico and Caribbean Sea. They are common in the eastern Atlantic including the Gulf of Guinea and the Mediterranean Sea but are absent from the Black Sea. They are widespread throughout the Indo-West Pacific. In the eastern Pacific, they have been reported from Gulf of Alaska to northern Chile, including waters of the oceanic islands (Collette and Graves 2019).

Country Occurrence:

Native, Extant (resident): Algeria; American Samoa; Angola; Anguilla; Antigua and Barbuda; Aruba; Australia; Bahamas; Bangladesh; Barbados; Belgium; Belize; Benin; Bermuda; Bonaire, Sint Eustatius and Saba; Brazil; Brunei Darussalam; Cabo Verde; Cambodia; Cameroon; Canada; Cayman Islands; Chile; China; Christmas Island; Cocos (Keeling) Islands; Colombia; Comoros; Congo; Congo, The Democratic Republic of the; Cook Islands; Costa Rica; Cuba; Curaçao; Cyprus; Côte d'Ivoire; Djibouti; Dominica; Dominican Republic; Ecuador; Egypt; El Salvador; Equatorial Guinea; Fiji; France; French Guiana; French Polynesia; Gabon; Gambia; Germany; Ghana; Gibraltar; Greece; Grenada; Guadeloupe; Guam; Guatemala; Guinea; Guinea-Bissau; Guyana; Haiti; Honduras; Hong Kong; India; Indonesia; Iran, Islamic Republic of; Ireland; Israel; Italy; Jamaica; Japan; Kenya; Kiribati; Lebanon; Liberia; Libya; Madagascar; Malaysia; Maldives; Malta; Marshall Islands; Martinique; Mauritania; Mauritius; Mexico; Micronesia, Federated States of ; Monaco; Montserrat; Morocco; Mozambique; Myanmar; Namibia; Nauru; Netherlands; New Caledonia; New Zealand; Nicaragua; Nigeria; Niue; Norfolk Island; Northern Mariana Islands; Oman; Pakistan; Palau; Panama; Papua New Guinea; Peru; Philippines; Portugal; Puerto Rico; Réunion; Saint Barthélemy; Saint Helena, Ascension and Tristan da Cunha; Saint Kitts and Nevis; Saint Lucia; Saint Martin (French part); Saint Vincent and the Grenadines; Samoa; Sao Tome and Principe; Senegal; Seychelles; Sierra Leone; Singapore; Sint Maarten (Dutch part); Slovenia; Solomon Islands; Somalia; South Africa; Spain; Sri Lanka; Suriname; Sweden; Syrian Arab Republic; Taiwan, Province of China; Tanzania, United Republic of; Thailand; Togo; Tokelau; Tonga; Trinidad and Tobago; Tunisia; Turkey; Turks and Caicos Islands; Tuvalu; United Arab Emirates; United Kingdom; United States; United States Minor Outlying Islands; Uruguay; Vanuatu; Venezuela, Bolivarian Republic of; Viet Nam; Virgin Islands, British; Virgin Islands, U.S.; Wallis and Futuna; Yemen

Native, Presence Uncertain: Norway

FAO Marine Fishing Areas:

Native: Atlantic - northeast

Native: Pacific - western central

Native: Atlantic - southeast

Native: Mediterranean and Black Sea

Native: Atlantic - southwest

Native: Atlantic - western central

Native: Pacific - northwest

Native: Pacific - southwest

Native: Pacific - eastern central

Native: Indian Ocean - eastern

Native: Pacific - southeast

Native: Atlantic - eastern central

Native: Pacific - northeast

Native: Indian Ocean - western

Native: Atlantic - northwest

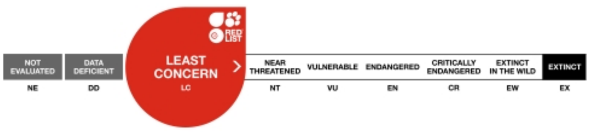
Distribution Map

Legend

EXTANT (RESIDENT)

Compiled by:

IUCN (International Union for Conservation of Nature) 2021



The boundaries and names shown and the designations used on this map do not imply any official endorsement, acceptance or opinion by IUCN.

Population

Skipjack comprise about 60% of the commercial tuna catch worldwide and are mostly used for canning. As of 2014, global landings of Skipjack Tuna exceeded three million metric tonnes (mt), the third highest fisheries catch, exceeded only by Alaskan Pollack and Peruvian Anchovy. They are captured near the surface mostly with purse seine gear and increasingly in association with FADS (fish aggregating devices). They are also caught on pole-and-line gear, troll, handline, in gill nets, drift nets, longlines, and by recreational fishers.

Global catches of Skipjack Tuna increased from 165,000 metric tons (mt) in the 1950s, to over one million mt in the late 1980s, to over two million mt in the 2000s, and are currently in excess of three million mt. Skipjack stocks are assessed and managed by four recognized tuna regional fisheries management organizations (Collette and Graves 2019), in the Eastern Pacific, the Central and Western Pacific, Indian Ocean, and the Atlantic and Mediterranean Sea.

Two methods were used to estimate the change in population size for Skipjack within each management region over the last three generation lengths, or 10 years. In the first method ("method 1"), the change was calculated based on the linear per cent change in population size over the three generation lengths using approximately 3-year averages for the endpoints. In the second method ("method 2"), and to account for non-linear trends, the average annual per cent change in population size over the time period for which data are available was calculated, and then used to estimate the change in population size over the last three generation lengths, assuming an exponential decline.

Skipjack data for the Indian Ocean were extracted via digitization. To ensure annual data, prior to estimating changes in population size, where more than one data point existed for any given year, the average of those data points was taken. If, conversely, no data point corresponded to a year, we estimated that data point as the average of the preceding and following years. Data beyond annual catches for the Eastern Pacific, in the form of an adequate population abundance proxy, were unavailable and we therefore assumed zero change in population size. The same assumption was also made for the Eastern Atlantic due to the relative abundance index for the species exhibiting no consistent trend over the last 10 years.

In summary, based on stock-size weighted changes in B/B_{MSY} or SSB/SSB_0 in the Western and Central Pacific, the Indian Ocean and the West Atlantic, and an assumed zero change elsewhere, there has been an estimated 2–24% decline globally over the past three generation lengths (10 years). Individual stocks were weighted by the average of the three highest historical catch estimates rather than MSY, as the latter is not known for all stocks. Details regarding these estimates are given below for each stock. In the majority of the Skipjack Tuna's range, the species is estimated to not be overfished and overfishing is not likely to be occurring.

Eastern Pacific Ocean

Purse-seine catches account for most of the Skipjack Tuna landings in the Eastern Pacific. Catches were less than 50,000 mt until the late 1970s, increasing to an average of 130,000 mt in the late 1970s-early 1980s, followed by a 10-year period of about 70,000 mt, increasing again with the expansion of the floating object fisheries in the mid-1990s. Currently (2010–2019), the catches ranged between 150,000 and 350,000 mt, with the highest catches registered in 2019 (IATTC 2020). Skipjack recruitment in the

Eastern Pacific region is highly variable and is thought to be the reason for the large variations in annual catches and apparent stock size (Maunder 2019, Collette and Graves 2019, IATTC 2020). The catch in 2018 was 288,636 mt (IATTC 2019).

Skipjack Tuna is notoriously a difficult species to assess. Detecting the effect of fishing on the population with standard fisheries data and stock assessment methods is difficult due to the species' high and variable productivity (i.e. annual recruitment constitutes a large proportion of total biomass). This is especially true for the Eastern Pacific stock as a result of the lack of age-composition data, and in particular tagging data, which are needed for conventional stock assessments of Skipjack (Maunder 2019). Neither the biomass- nor fishing mortality-based reference points, nor the indicators that they are compared against, are available for Skipjack. Recent data- and model-based indicators are near its reference levels (IATTC 2020). Moreover, some fishery indicators are close to or in excess of historical reference levels, and the substantial increase in number of sets on floating objects in recent years is concerning (ISSF 2020a).

For the Eastern Pacific stock, productivity and susceptibility analysis for the tropical tuna fishery in the region indicated that Skipjack and Bigeye have about the same susceptibility to purse-seine fishing gear, and that Skipjack Tuna is much more productive than Bigeye Tuna (*Thunnus obesus*) (IATTC 2020). Biomass and the fishing mortality that corresponds to MSY (F_{MSY}) are, respectively, negatively and positively correlated with productivity, while susceptibility is related to fishing mortality. Since Skipjack and Bigeye have about the same susceptibility, the status of Skipjack can be inferred from the status of Bigeye, based on the 2020 assessment that used a risk analysis approach. Thus, there is less than 50% probability that F_{MSY} has been exceeded ($P(F/F_{MSY})>1$) = 50%), and less than 53% probability that S_{cur} is below the dynamic S_{MSY} ($P(S/S_{MSY\_d})<1$ = 53%). Tagging data that may inform a stock assessment for Skipjack is currently being collected.

It is therefore assumed that the Skipjack population in the Eastern Pacific has remained more or less constant over the past 10 years, and the stock is not overfished or subject to overfishing (ISSF 2020b). Based on the three largest historical catch estimates in IATTC (2020), the Eastern Pacific represents about 10% of this species global population.

Western and Central Pacific Ocean

The Western and Central Pacific Ocean is responsible for the greatest production of Skipjack Tuna throughout the world's oceans. Landings, primarily by purse seine vessels, increased from under 350,000 mt in the 1960s, to over one million mt in 1990, and reached two million mt in the 2010s (Collette and Graves 2019). The total provisional catch in 2018 was 1,795,048 mt (WCPFC 2019a).

Based on the most recent (2019) stock assessment, Skipjack Tuna in the Western and Central Pacific is moderately exploited and the level of fishing mortality is sustainable. The stock is above the adopted Limit Reference Point and fished at less than F_{MSY} rates with 100% probability. The median value of F_{recent}/F_{MSY} over the uncertainty grid of 54 models used to determine stock status is 0.45. The median SB_{recent}/SB_{MSY} is 2.58. The stock is therefore not overfished or subject to overfishing. However, fishing mortality is continuously increasing for both adults and juveniles, and spawning biomass is at its historically lowest level (WCPFC 2019a).

Based on median B/B_{MSY} and using method 1, there has been an estimated 27% decline in the Western and Central Pacific population between 2008 and 2018, and 0% change using method 2. This stock is not overfished nor subject to overfishing (ISSF 2020b). Based on the three largest historical catch estimates in WCPFC (2019a), the Western and Central Pacific represents about 62% of this species global population.

Indian Ocean

In the Indian Ocean, Skipjack are captured in a variety of fisheries, with the purse seine, gill net, drift nets, and pole and line fisheries each contributing between 20 and 35% of the landings which were 394,000 mt in 2015. Skipjack landings in the Indian Ocean reached 100,000 mt in the mid-1980s, exceeded 400,000 mt in the 2000s, peaking at 600,000 mt in the mid-2000s (Collette and Graves 2019). The catch in 2016 was 446,723 t (IOTC 2017a).

The 2017 stock assessment results are significantly different from the previous (2014 and 2011) assessments. The difference is mainly due to: (1) the correction of an error in small fish selectivity specification in the previous assessment; (2) the addition of tag-release mortality in the model; and (3) the assumption that effort creep is 1% per year since 1995 for the standardized European purse seine CPUE. The 2017 assessment indicates that the stock is at the target biomass reference point and that current and historical fishing mortality rates are below the target. Current spawning stock biomass relative to unexploited levels is 40%. On the weight of this and other evidence, Skipjack was determined to not be overfished or currently subject to overfishing (IOTC 2017a).

Based on the time series of median SSB/SSB_0 from the agreed Indian Ocean (IO) grid models presented in IOTC (2017b) and using method 1, there has been an estimated 36% decline in the Indian Ocean population between 2006 and 2016. Using method 2, the estimated decline is 12% over the past 10 years. However, in the Indian Ocean, Skipjack is not overfished nor subject to overfishing (ISSF 2020b). Based on the three largest historical catch estimates in IOTC (2017a), the Indian Ocean represents about 18% of this species global population.

Atlantic Ocean and Mediterranean Sea

Skipjack are managed as two stocks in the Atlantic Ocean, with the eastern stock contributing about 85% of the landings. In total, Skipjack landings in the Atlantic gradually increased from over 100,000 mt in the 1970s to over 250,000 mt in the 2010s, with considerable year-to-year variation. Purse-seine catches account for more than 80% of Atlantic Skipjack landings overall, with baitboat catches representing a little less than 20% (Collette and Graves 2019). The Mediterranean is currently considered a separate stock. Catch has increased in the Mediterranean Sea in recent years, but statistics from this region are incomplete (Collette and Graves 2019).

The preliminary estimates of catches made in 2018 in the East Atlantic amounted to 282,427 t, which is an increase of about 85% as compared to the average of 2005–2009 (IATTC 2020). Relative biomass (B_{2013}/B_{MSY}) is likely greater than 1, and mortality due to fishing (F_{2013}/F_{MSY}) is likely less than 1. It is therefore unlikely that the stock in the Eastern Atlantic is overfished or that overfishing is occurring. It is, however, recommended that the catch and effort levels do not exceed the level of 2012–2013 catch or effort given the (1) lack of quantitative findings for the eastern stock assessment, and (2) pending additional data (including on FADs and on the ongoing Atlantic Tropical Tuna Tagging Program) being submitted which are needed to improve the stock assessment. The 2017 provisional catch (2018 catch) exceeds this level by 11% (27%). In addition, increasing harvests and fishing effort for Skipjack could cause involuntary consequences for other species that, in certain fisheries, are caught together with Skipjack (ICCAT 2017, 2020). According to ISSF (2020b), the Eastern Atlantic stock is not overfished and overfishing is not occurring.

The relative abundance index (scaled CPUE index) for the Eastern Atlantic Skipjack (ICCAT 2017) does not exhibit a consistent trend for the last 10 years of data (approx. 2002–2012). We therefore assumed zero change in population trends for that stock. The relative size of the stock was estimated by averaging the three highest historical catch estimates in ICCAT 2017 (p. 63, SKJ-Table 1). The data range from 1993 to 2017, but from SKJ-Figure 3 it can be seen that catches were less prior to 1993 (ICCAT 2017).

In the Western Atlantic, the 2017 preliminary catch estimate is 23,276 t (close to the 2018 estimate of 22,873 t). Relative biomass (B_{2013}/B_{MSY}) is probably close to 1.3 and mortality due to fishing (F_{2013}/FMSY) is probably close to 0.7. The stock is determined not to be overfished or subject to overfishing. However, it is recommended that catches not exceed the MSY, currently around 30,000–32,000 t (ICCAT 2017).

In summary, based on B/B_{MSY}, and using method 1, there has been an estimated 3% decline in the Western Atlantic between 2003 and 2013. Using method 2, the decline is 4% over the past 10 years. Both the Western Atlantic and Eastern Atlantic populations are not overfished nor subject to overfishing (ISSF 2020b). Based on the three largest historical catch estimates (ICCAT 2017, ICCAT 2014), the Western Atlantic represents about 2% of this species global population, and the Eastern Atlantic about 8% of its global population. Mediterranean Skipjack have not been assessed, due to lack of data.

For further information about this species, see Supplementary Material.

Current Population Trend: Decreasing

Habitat and Ecology (see Appendix for additional information)

Skipjack Tuna are pelagic and oceanodromous in offshore waters to depths of 330 m (Collette and Graves 2019), with Schaefer and Fuller (2007) recording a dive as deep as 596 m. Their lower temperature limit appears to be about 18 °C, but the upper temperature limit apparently varies with size, from 30 °C or more for small fish to 25 °C for the largest fish. Skipjack are also limited to water with unusually high concentrations of dissolved oxygen, at least 3.0–3.5 ml/l (4–5 ppm) for long-term survival. Larval Skipjack Tuna occur from the lower portion of the mixed layer to the upper portion of the thermocline in a temperature range of 20–25 °C and a salinity range of 33.6–35.5.

Skipjack Tuna exhibit a strong tendency to school in surface waters often in association with floating objects, sharks, and whales, but apparently not in the Mediterranean Sea. They often form mixed schools with small Yellowfin Tuna (*Thunnus albacares*) and Bigeye Tuna (*T. obesus*) when associated with floating objects, and in the Western Atlantic are commonly found in schools with Blackfin Tuna (*T. atlanticus*). The species feeds on fishes, squids, and crustaceans. It is preyed upon by large pelagic fishes, particularly billfishes. Skipjack Tuna are very fast-growing, relatively short-lived, and extremely fecund (Collette and Graves 2019).

Longevity, as calculated from growth rings on the first dorsal spine or sagittal otolith, is estimated to be at least seven years (Collette and Graves 2019). Age of first maturity is estimated to be 1.5 years (Maunder and Harley 2005). In the Western and Central Pacific Ocean, about 50% of the fish are mature by 0.75 years and more than 90% of fish become mature after about 1.5 years (WCPFC, 2019b). Size at first maturity is 40–55 cm Fork Length (FL), depending on the area (Collette and Nauen 1983, Matsumoto *et al*. 1984, Wild and Hampton 1994, Schaefer 2001). Estimated length at 50% maturity for females is 42–43 cm in the Atlantic and the Indian oceans (Cayre and Farrugio 1986, Stequert and Ramcharrun 1996, Collette and Graves 2019), and 47–56 cm, from southern to northern latitudes, in the Eastern Pacific Ocean (Schaefer and Fuller 2018). In the Western and Central Pacific Ocean, Skipjack mature at a length of around 50 cm FL (Ohashi *et al*. 2019, WCPFC 2019b).

Sex ratio is about 1:1 but fisheries that rely on young immature fish are dominated by females, while those that capture older fish are mostly male. This species spawns repeatedly, after reaching sexual maturity and with sufficient energy reserves, at sea surface temperatures of 24–30 °C: throughout the year in the Caribbean and other equatorial waters, and from spring to early fall in subtropical waters, with the spawning season becoming shorter as distance from the equator increases (Collette 2010). Batch fecundity increases with body length but is highly variable. Individual batch fecundity ranges from 80,000 eggs for a 44 cm female from Madagascar to 1.25 million eggs for a large (75 cm) female from the Seychelles Islands (Collette 2010, Collette and Graves, 2019). The estimated average batch fecundity, based on counts of late-stage migratory-nucleus or hydrated stages of oocytes from 129 fish from the eastern Pacific, was 296,475 oocytes, and the estimated mean relative fecundity was 54.9 oocytes per gram of body weight (Schaefer and Fuller 2018).

Maximum size recorded is 111 cm FL and 34.5 kg (Bayliff 1988, Garcia-Coll *et al*. 1986, Collette 2010, Collette and Graves 2019). The IGFA all-tackle gamefish record is a 45 lb, 4 oz. (20.54 kg) Skipjack caught over Flathead Bank in Baja California, Mexico in November 1996 (IGFA 2020).

Generation length for this species is estimated to be 3–4 years, following methods in Collette *et al*. 2011, and changes in population size are therefore estimated over 10 years.

Systems: Marine

Use and Trade

This species is extremely important in industrial commercial fisheries.

Threats **(see Appendix for additional information)**

Continued increases in purse-seine fleet capacities and targeting Skipjack within mixed species tuna aggregations associated with fish aggregating devices has resulted in increased catches of small Yellowfin and Bigeye Tunas, resulting in growth overfishing of both of the latter species in some management areas, and has also raised concerns about the sustainability of Skipjack catches (Collette and Graves 2019). In the tropical Pacific, increasingly El Niño-like conditions, including rising ocean temperatures, may lead to Skipjack shifting its distribution eastward and to higher latitudes, and be subject to a reduction in absolute biomass (Gilman *et al*. 2016). The current eastward extension (westward contraction) of Skipjack Tuna in the equatorial region during El Niño (La Niña) phases are caused by changes in temperature, prey and dissolved oxygen concentration (Lehodey *et al*. 2020).

Eastern Pacific Ocean

Skipjack Tuna is not deemed to be overfished or subject to overfishing. However, recent catches are historically high and the substantial increase in numbers of sets on floating objects in recent years is concerning (ISSF 2020b).

Western and Central Pacific Ocean

Recent fishing mortality does not exceed F_{MSY} but fishing mortality is continuously increasing for both adults and juveniles (WCPFC 2019a).

Indian Ocean

Skipjack Tuna appears to not be overfished or subject to overfishing (IOTC 2017a).

Atlantic Ocean

Numerous changes have taken place in the Skipjack fishery since the early 1990s (e.g. the progressive use of FADs and the fishing area expanding latitudinally and westwards) and these have caused an increase in the catchability of Skipjack and in the proportion of exploited biomass. The main fisheries are the purse seine fisheries of Belize, Curaçao, EU-France, EU-Spain, Ghana, Guinea, Panama and Cabo Verde, followed by the baitboat fisheries of EU-Portugal, EU-Spain, Ghana and Senegal. Based on the preliminary 2017 catch estimate, catch has increased by 91% compared to the 2005–2009 average. In the Western Atlantic the main fishery is the Brazilian baitboat fishery, followed by the Venezuelan purse seine fleet. Estimation of "faux poissons," or the unreported catch of mixed, unidentifiable species, which is mainly composed of Skipjack should be improved to reduce uncertainty of the total Skipjack catches (ICCAT 2017).

Conservation Actions (see Appendix for additional information)

Skipjack Tuna is listed as a highly migratory species in Annex I of the 1982 Convention on the Law of the Sea (FAO Fisheries Department 1994).

Stock assessments and reference points for Skipjack in the Eastern Pacific are highly uncertain. Developing alternative methods to assess and manage the species that are not sensitive to these uncertainties would therefore be beneficial (IATTC 2019), and indeed the IATTC recently concluded a large-scale conventional tagging program (V. Restrepo pers. comm., July 2020). The most comprehensive method to develop and test alternative assessment methods and management strategies would be full management strategy evaluation (MSE) for Skipjack. However, developing MSE is time-consuming and is yet to be conducted for Skipjack (IATTC 2019). The main conservation measure put in place by the IATTC are Resolutions C-17-01 and C-17-02, which includes an annual fishing closure for purse seine vessels with a carrying capacity in excess of 182 tons. This measure calls for, amongst other restrictions, limits on the number of active FADs purse seiners can have (ISSF 2020b).

In the Atlantic, the main binding ICCAT conservation measure is Recommendation 19-02, a multi-annual plan for tropical tunas. This plan prohibits purse seine and baitboat vessels fishing on floating objects, including their support vessels' activities, in the high seas or EEZs during January-February (January–March in 2021). In addition, drifting FADs are not allowed to be deployed during the 15 days prior to the closure and there can be no more than 350 (300 in 2021) FADs with operational buoys at any one time per vessel (ISSF 2020b).

In the Western and Central Pacific there is an area-wide temporal closure on FAD sets, but the numbers of FAD sets has been increasing annually (Collette and Graves 2019), both here and potentially elsewhere in the species' range (V. Restrepo pers. comm., July 2020). No more than 350 FADs with activated instrumented buoys can be deployed at sea at any one time per purse seine vessel (ISSF 2020b).

In the Indian Ocean, Skipjack Tuna is not overfished or undergoing overfishing based on the most recent (2017) stock assessment. However, it can respond rapidly to ambient foraging conditions driven by ocean productivity because of its specific life history traits. There should be close monitoring of environmental indicators to inform on the potential increase/decrease in stock productivity (IOTC 2017a). IOTC has adopted an annual catch limit of 470,029 tonnes for Skipjack for the period 2018–2020 following application of the Harvest Control Rule in Resolution 16/02. A ban on discards of Skipjack, Bigeye and Yellowfin Tuna by purse seine vessels is established in Resolution 19/05 (ISSF 2020b).

Credits

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Authority/Authorities: IUCN SSC Tuna and Billfish Specialist Group

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External Resources

For Supplementary Material, and for Images and External Links to Additional Information, please see the Red List website.

Appendix

Habitats

(http://www.iucnredlist.org/technical-documents/classification-schemes)

Habitat	Season	Suitability	Major Importance?
9. Marine Neritic -> 9.1. Marine Neritic - Pelagic	-	Suitable	-
10. Marine Oceanic -> 10.1. Marine Oceanic - Epipelagic (0-200m)	-	Suitable	-

Use and Trade

(http://www.iucnredlist.org/technical-documents/classification-schemes)

End Use	Local	National	International
Food - human	Yes	Yes	Yes

Threats

(http://www.iucnredlist.org/technical-documents/classification-schemes)

Threat	Timing	Scope	Severity	Impact Score
5. Biological resource use -> 5.4. Fishing & harvesting aquatic resources -> 5.4.2. Intentional use: (large scale) [harvest]	Ongoing	Whole (>90%)	Slow, significant declines	Medium impact: 7
	Stresses:	2. Species Stresses -> 2.1. Species mortality		

Conservation Actions in Place

(http://www.iucnredlist.org/technical-documents/classification-schemes)

Conservation Action in Place
In-place research and monitoring
Action Recovery Plan: No
Systematic monitoring scheme: Yes
In-place species management
Harvest management plan: Yes
In-place education
Subject to any international management / trade controls: Yes

Conservation Actions Needed

(http://www.iucnredlist.org/technical-documents/classification-schemes)

Conservation Action Needed
3. Species management -> 3.1. Species management -> 3.1.1. Harvest management
3. Species management -> 3.1. Species management -> 3.1.2. Trade management
5. Law & policy -> 5.4. Compliance and enforcement -> 5.4.2. National level
5. Law & policy -> 5.4. Compliance and enforcement -> 5.4.3. Sub-national level

Research Needed

(http://www.iucnredlist.org/technical-documents/classification-schemes)

Research Needed
1. Research -> 1.2. Population size, distribution & trends
1. Research -> 1.4. Harvest, use & livelihoods
3. Monitoring -> 3.1. Population trends
3. Monitoring -> 3.2. Harvest level trends
3. Monitoring -> 3.3. Trade trends

Additional Data Fields

Distribution
Lower depth limit (m): 596
Upper depth limit (m): 0
Population
Population severely fragmented: No
Habitats and Ecology
Generation Length (years): 3-4
Movement patterns: Full Migrant

The IUCN Red List Partnership

The IUCN Red List of Threatened Species™ is produced and managed by the IUCN Global Species Programme, the IUCN Species Survival Commission (SSC) and The IUCN Red List Partnership.

The IUCN Red List Partners are: ABQ BioPark; Arizona State University; BirdLife International; Botanic Gardens Conservation International; Conservation International; Missouri Botanical Garden; NatureServe; Re:wild; Royal Botanic Gardens, Kew; Sapienza University of Rome; Texas A&M University; and Zoological Society of London.