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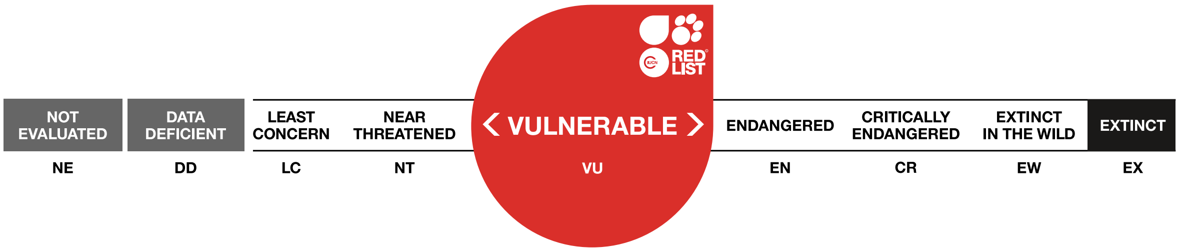
Squalus acanthias, Spiny Dogfish

Assessment by: Finucci, B., Cheok, J., Chiaramonte, G.E., Cotton, C.F., Dulvy, N.K., Kulka, D.W., Neat, F.C., Pacoureau, N., Rigby, C.L., Tanaka, S. & Walker, T.I.



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Taxonomy

Kingdom	Phylum	Class	Order	Family
Animalia	Chordata	Chondrichthyes	Squaliformes	Squalidae

Scientific Name: *Squalus acanthias* Linnaeus, 1758

Regional Assessments:

- Mediterranean
- Europe

Infra-specific Taxa Assessed:

- Squalus acanthias Australasia subpopulation
- Squalus acanthias Black Sea subpopulation
- Squalus acanthias Mediterranean subpopulation
- Squalus acanthias Northeast Atlantic subpopulation
- Squalus acanthias Northwest Atlantic subpopulation
- Squalus acanthias South America subpopulation
- Squalus acanthias Southern Africa subpopulation

Common Name(s):

- English: Spiny Dogfish, Picked Dogfish, Spurdog
- French: Aiguillat commun
- Spanish; Castilian: Cazón Espinoso

Taxonomic Source(s):

Fricke, R., W.N. Eschmeyer and R. Van der Laan (eds.). 2020. Eschmeyer's catalog of fishes: Genera, species, references. Available at: http://researcharchive.calacademy.org/research/ichthyology/catalog/fishcatmain.asp. (Accessed: March 2020).

Taxonomic Notes:

While there are reported subpopulations of *Squalus acanthias* (Linnaeus, 1758) elsewhere in the world, the North Pacific subpopulation is now considered a separate species, *Squalus suckleyi* (Girard, 1854) (see Ebert *et al*. 2010). Further taxonomic studies on this genus are required, including in relation to Mediterranean and Black Sea subpopulations. In Europe, three subpopulations are inferred to occur.

Assessment Information

Red List Category & Criteria: Vulnerable A2bd ver 3.1

Year Published: 2020

Date Assessed: November 21, 2019

Justification:

The Spiny Dogfish (*Squalus acanthias*) is a medium-sized (to 200 cm total length) shark known from a global distribution in boreal and temperate waters in all oceans, except for the North Pacific and

Southern Ocean. It has been recorded in both inshore and offshore marine habitats from the surface to 1,978 m, with most records occurring at depths <600 m. Historically, the species has been intensively fished across most of its range, taken as targeted and incidental catch by hand line, demersal gillnet, trawl, dredge, and longline in artisanal, industrial, and recreational fisheries. Its distribution overlaps with intensive fishing activities while its aggregative behaviour increases its catchability. The large-scale, targeted fishing pressure that led to overfishing of the North Atlantic stock has decreased markedly, although incidental catch in multi-species fisheries continues. Retention bans have been implemented in the European Union. In the Northeast Atlantic, considerable stock recovery has been achieved through long-term, science-based catch limits. In the South Pacific, New Zealand has a long history of managing Spiny Dogfish fisheries through quotas. Elsewhere, management measures are lacking. Given the history of Spiny Dogfish depletion that has taken decades of management to address, as well as the species' inherent susceptibility to incidental capture and overfishing, precautionary, stringent management is advised for all stocks. Globally, the population of Spiny Dogfish is estimated to have reduced by 30–49% over the last three generations (51 years), based on abundance data and levels of exploitation, and the species is assessed as Vulnerable A2bd.

Previously Published Red List Assessments

2016 – Vulnerable (VU)
https://dx.doi.org/10.2305/IUCN.UK.2016-1.RLTS.T91209505A2898271.en

Geographic Range

Range Description:

The Spiny Dogfish has a global distribution, present in boreal and temperate waters in the Northeast and Northwest Atlantic, including the Mediterranean and Black Seas, the Southeast Pacific and Southwest Atlantic off South America, the Southeast Atlantic off South Africa, and the Southwest Pacific and Eastern Indian Oceans off Australia and New Zealand (Ebert *et al.* 2013).

Country Occurrence:

Native, Extant (resident): Albania; Algeria; Argentina; Australia; Belgium; Bosnia and Herzegovina; Brazil; Bulgaria; Canada; Chile; Croatia; Cyprus; Denmark; Egypt; Faroe Islands; France; Gambia; Georgia; Germany; Gibraltar; Greece; Greenland; Iceland; Ireland; Israel; Italy; Lebanon; Libya; Malta; Mauritania; Monaco; Montenegro; Morocco; Namibia; Netherlands; New Zealand; Norway; Palestine, State of; Portugal (Madeira); Romania; Russian Federation; Saint Pierre and Miquelon; Senegal; Slovenia; South Africa; Spain (Canary Is.); Sweden; Syrian Arab Republic; Tunisia; Turkey; Ukraine; United Kingdom; United States; Uruguay; Western Sahara

Presence Uncertain & Origin Uncertain: Portugal (Azores)

FAO Marine Fishing Areas:

Native: Atlantic - southwest

Native: Atlantic - western central

Native: Pacific - southeast

Native: Mediterranean and Black Sea

Native: Atlantic - southeast

Native: Atlantic - eastern central

Native: Atlantic - northwest

Native: Pacific - southwest

Native: Atlantic - northeast

Native: Indian Ocean - eastern

Distribution Map

Legend

EXTANT (RESIDENT)

Compiled by:

International Union for Conservation of Nature (IUCN) 2019

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

Population

Population genetics show little or no mixing between Northern and Southern Hemisphere populations, and limited genetic mixing between some stocks with overlapping range (Veríssimo *et al.* 2010). There are suspected to be three distinct subpopulations (Northeast Atlantic, Mediterranean Sea, Black Sea) in European waters. Where population trend data were available, data were analysed over three generation lengths (51 years) using a Bayesian state-space framework (Winker *et al.* 2020). This analysis yields an annual rate of change, a median change over three generation lengths, and the probability of the most likely IUCN Red List category percent change over three generations (see the Supplementary Information).

The International Council for Exploration of the Sea (ICES) Working Group on Elasmobranch Fishes (WGEF) considers Northeast Atlantic Spiny Dogfish, ranging from Barents Sea to Bay of Biscay, to be a single stock, and uses data collected from this area for developing assessments and management advice (ICES-WGEF 2018). Total biomass and recruitment of Spiny Dogfish in this region declined considerably between the 1960s to the mid-2000s; more recent trends suggest the stock stabilised over last decade and has started to recover. Total biomass is estimated at 390,358 t, approximately 20% of historic levels (ICES-WGEF 2018). Analysis of international and national surveys available from the International Bottom Trawl Survey (IBTS) between 1970–2004 showed annual catch rates of Spiny Dogfish from the North Sea declining over time (Daan *et al.* 2005). This is considered the most comprehensive survey data set available for the North Sea. Using the ICES and IBTS data, the trend analysis revealed an annual rate of reduction of 1.4%, consistent with an estimated median reduction of 63.7% over three generation lengths (51 years), with the highest probability of 50–79% reduction over three generation lengths.

In the Mediterranean Sea, evidence of considerable population reduction (>90%) has been reported across part of the range of Spiny Dogfish (based on commercial and research trawl surveys over 1972–2004 period, Ferretti *et al.* 2005). Between 1994–2004, the European Union program Mediterranean International Trawl Survey Program (MEDITS) provided indices of summer abundance per standardized area (per km2) from the Alboran to the Aegeans Seas in weight and number (Serena *et al.* 2009a). The Spiny Dogfish was found to be one of the most abundant species by weight with estimated biomass of 6,700 mt; however, the spatial distribution of the species was found to be fairly confined, with the Spiny Dogfish reported in only 5% of tows (Serena *et al.* 2009a). No trends in abundance were observed over this time period. Combining nominal catch-per-unit-effort (CPUE) trawl (catch per km², Ferretti *et al.* 2005) and relative abundance trawl data (kg/km², Serena *et al.* 2009a), the trend analysis revealed an annual rate of reduction of 9.7%, consistent with an estimated median reduction of 99.4% over three generation lengths, with the highest probability of 80–99% reduction over three generation lengths (51 years). This is, however, not considered representative of the species' entire Mediterranean distribution. In the Black Sea, the 2017 rate of fishing mortality was estimated to be nearly ten times higher than the fishing mortality reference point and the stock here is considered depleted (GFCM, 2018a).

The Spiny Dogfish population in the Northwest Atlantic straddles the Canada-US boundary, with most of the population found in US waters in most years (DFO 2014). Since 1930, up to 24,000 mt of the species was landed annually, with most catch reported from the US. In Canada, landings were small pre-1979, but averaged 1,000-2,000 mt annually until 2002, increased to 2,500 mt between 2000–2008 and have been markedly lower in recent years (5 mt in 2010). The most recent stock assessment determine that the population is not overfished and not experiencing overfishing, with the current spawning stock biomass is estimated at ~100,000 t (235 million pounds) (NOAA 2019). The 2018 biomass was 67% of the target (MAFMC 2019). The U.S. Northeast Fisheries Science Center (NEFSC) spring survey, associated with a 51-year time series, is considered to be the best reflection of regional population trends for the species. The biomass index from this survey has shown high inter-annual variability, but a general upward trend across the series. On the Scotian Shelf of Canada, surveys have shown similar upward fluctuating trends (DFO 2014). Using relative female biomass estimates between 1970–2018 (D.W. Kulka unpubl. data 2019), the trend analysis revealed an annual rate of increase of 1.5%, consistent with an estimated median increase of 345.3% over three generation lengths (51 years), with the highest probability of no reduction over three generation lengths.

In New Zealand, the Spiny Dogfish is considered to have a relatively large population, with an estimated total industrial catch of 24,865 t reported between 2008–09 and 2012–13 fishing years (Ford *et al.* 2015). Relative biomass estimates from fisheries independent research trawl surveys have showed stable or increasing trends since the early 1990s (FNZ 2019). Using relative biomass estimates from fisheries independent research trawl surveys from Chatham Rise (1992–2010), Sub-Antarctic (1991–93, 2000–2009), East Coast South Island (1991–2018), and West Coast South Island (1992–2017) off New Zealand (FNZ 2019), the trend analysis revealed an annual rate of increase of 1.7%, consistent with an estimated increase of 120.5% over three generation lengths, with the highest probability of no major reductions in population over three generation lengths.

Elsewhere, catches of the species are relatively small, with <1 t reported from South African industrial fisheries between 2010–12 (da Silva *et al*. 2015). In Argentina, species-specific data are not available. Landings of all sharks in Argentina increased from ~6,000 to ~30,000 mt between 1979–1996 (Chiaramonte, 1998), and between the 2000–2012, an average of 38,000 t of sharks were landed annually (Bernasconi and Navarro 2014). In Chile, Spiny Dogfish catches observed in an artisanal longline skate fishery were greater in terms of fish size and CPUE in the 1990s compared to those in 2003–04 (Quiroz *et al.* 2008). It is inferred the species has undergone some population reduction in this region.
Across the regions, the Spiny Dogfish was estimated to be declining in the Northeast Atlantic and Mediterranean, and increasing in the Northwest Atlantic and South Pacific. To estimate a global population trend, the estimated three generation population trends for each region were weighted according to the relative size of each region. The overall estimated median reduction was 51.9%, with the highest probability of no major reduction over three generation lengths (51 years). However, due to uncertainty in some regional estimated trends, inferred declines in the Southwest Atlantic, and high levels of exploitation, expert judgement elicitation was used to estimate a global population reduction of 30–49% over three generation lengths (51 years). Therefore, the Spiny Dogfish is assessed as Vulnerable A2bd.

For further information about this species, see Supplementary Material.

Current Population Trend: Decreasing

Habitat and Ecology **(see Appendix for additional information)**

The Spiny Dogfish is found inshore in enclosed and open bays and estuaries, as well as offshore along the continental and insular slopes from the surface to 1,978 m, with most records occurring at depths <600 m (Serena *et al.* 2009, Ebert *et al.* 2013, Weigmann 2016). It reaches a maximum length of 200 cm total length (TL), although maximum size is highly variable across regions and most individuals are <100 cm TL (Ebert *et al.* 2013). Maturity is also regionally variable; males mature between 52–100 cm TL and females mature 66–120 cm TL (Ebert *et al. 2*013). Reproduction is aplacental viviparous, litter size is 1–32 pups, gestation is 12–24 months, and size-at-birth is between 18–33 cm TL (Ford, 1921, Ebert *et al.* 2013). Using estimates from the Northwest Atlantic, female age-at-maturity is 9.1 years and maximum age is 24 years (Bubley *et al.* 2013), therefore generation length is 17 years.

Systems: Marine

Use and Trade

The species is used extensively for its flesh, fins, and liver oil, with most Atlantic products destined for the European Union (EU) market (Dell'Apa *et al.* 2013). In the Pacific, catch from New Zealand is used domestically, as well as exported to other countries, including Australia and South Korea (e.g., Seafood NZ 2018).

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

The Spiny Dogfish is taken as targeted and incidental catch by hand line, demersal gillnet, trawl, dredge, and longline in artisanal, industrial, and recreational fisheries. While targeted fishing pressure in the Atlantic Ocean has declined markedly, the species is still susceptible to capture as bycatch in multi-species fisheries (Rago and Sosebee 2014, da Silva *et al.* 2015, ICES-WGEF 2018, FNZ 2019). Aggregative behaviour increases the catchability of mature (and usually pregnant) females (ICES-WGEF 2018). In European Union (EU) industrial fisheries, the species is generally discarded due to bans on retention, transshipment, and landing (e.g. ICES-WGEF 2018). Post-release mortality varies depending on handling techniques and gear type (e.g up to ~30% in trawl fisheries); at vessel mortality has been estimated as high as ~39% for gillnet fisheries (Ellis *et al.* 2017).

Historically, the species has been intensively fished off Europe since the early 1900s (mainly in the North and Irish Seas), primarily by British and Norwegian fleets, and later by French and Irish fleets (Bonfil 1994). As of 2010, science-based regulations ended EU industrial fisheries targeting Spiny Dogfish in the Northeast Atlantic; landings are still reported from Norway (between 216–313 t annually since 2011) (ICES-WGEF 2018). Some ICES member countries may be reporting landings of the Spiny Dogfish under a generic name (e.g. *Squalus* sp.) In the Mediterranean, most targeted fishing ceased in the 1970s with the decline in stock; however, unregulated and incidental capture still occurs in the Mediterranean and Black Seas (e.g. Ţoţoiu *et al.* 2016, Bonanomi *et al.* 2018). In the Mediterranean, Spiny Dogfish is considered a bycatch species, but catches are fully commercialized (Serena *et al.* 2009b, Farrugio and Soldo 2013). Targeted fisheries in the Black Sea were once operated by Turkey, Russia, and Ukraine; following reductions of Spiny Dogfish stock in the region observed in the 1990s, most of the fisheries closed and today Bulgaria is the only country with a targeted fishery in the region (Shlyakhov and Daskalov 2008). Landings of Spiny Dogfish from the Northwest Atlantic peaked in 1974 at ~25,000 t, and again in 1996 at ~28,000 t; the majority of landings between 1979–2000 were reported from the United States fisheries. The driver behind these fisheries has been international trade to satisfy the European market demand (Dell'Apa *et al.* 2013). The species is currently not commercially fished in Canada, but is reported as bycatch in industrial and recreational fisheries (DFO 2020). Spiny Dogfish is still fished commercially in U.S.waters, but according to the 2018 stock status update, the population is not currently overfished or subject to overfishing (NOAA 2019).

In Africa, Spiny Dogfish is infrequently reported (<1 t between 2010–12) from South African industrial demersal longline fisheries, including those targeting sharks (da Silva *et al.* 2015). Some African countries, particularly Mauritania, appear to be intensifying Spiny Dogfish fishing to supply the European market demand in recent years (FAO 2009, Dell'Apa *et al.* 2013).

In Argentina, the Spiny Dogfish is reported as bycatch in industrial fisheries (e.g. Cedrola *et al.* 2012, Crespi-Abril *et al.* 2013). Catches have been difficult to monitor since the species may be misidentified, reported under a generic category of "shark", or processed at sea (making species identification not possible) and historically, the species was discarded for lack of commercial value (Chiaramonte 1998). Increased commercial landings of the species were first noted in the early 2000s after the collapse of Argentina's primary fishery, hake (*Merluccius hubbsi*). It has not been possible to estimate the volume of Spiny Dogfish landings, but it is known that the species is not as frequently landed as other regional sharks (Narrownose Smoothhound, *Mustelus schmitti*, and Tope, *Galeorhinus galeus*) (G. Chiaramonte pers. comm. 22/04/2020). Retention of the species is largely influenced by international market forces (Chiaramonte 2006). Increased exploitation from South American countries (e.g. Argentina, Brazil, Uruguay, and Chile) is expected if European demand increases; exports of the species from Argentina increased after strict management measures began to take effect in the US around 2000 (Dell'Apa *et al.* 2013). In Argentina, fisheries are characterized by declining catches, a shift to species of lower trophic levels, and an increase in catch coming from overexploited stocks (Pauly and Zeller 2015). Nearly two thirds of all Argentina stocks were overexploited or collapsed in 2014 (Pauly and Zeller 2015). The species is reported in both Chilean (SUBPESCA 2017) and Argentinian hake fisheries (Núñez *et al.* 2018); the latter of which has 566 trawlers in operation.

In the Southwest Pacific, New Zealand data pre-1980 are unavailable, but landings were likely to be negligible given its low value (Francis 1998, FNZ 2019). Landings increased in the late 1980s and 1990s, but fluctuated considerably depending on market forces and the species availability and the amount of effort directed at target species (Francis 1998). Spiny Dogfish is one of the primary bycatch species in New Zealand offshore fisheries (Finucci *et al.* 2019) and the most reported chondrichthyan from New Zealand fisheries (Francis 2015). In Australia, the species has been reported from Tasmanian recreational gillnet fisheries (Fordham 2005), as well as industrial trawl, dropline, and longline fisheries; average annual industrial catch is low (<4 t) and it is thought the species has minimal exposure to fishing gear (Walker and Gason 2007).

In addition to fishing activities, Spiny Dogfish may be threatened by habitat loss and degradation. Coastal development, pollution, dredging, and bottom trawling affect coastal or demersal habitat that the species' prey relies on (ASMFC 2002). In Chile, spatial overlap of nursery areas and aquaculture farms have been identified; the effect of this interaction appears to influence the diet of the Spiny Dogfish, but any effect on the species' reproductive output is unknown (Gaitán-Espitia *et al.* 2017).

Conservation Actions **(see Appendix for additional information)**

The Spiny Dogfish is subject to species-specific management action across much of its range. North Atlantic populations that have been seriously overfished are now protected by strict science-based catch limits that have so far resulted in significant rebuilding off the United States (e.g., ICES-WGEF 2018).

Given the species' sensitive life history, susceptibility to incidental capture, and persistent market demand, management programs should be continued and expanded to other regions to ensure recovery of stocks and sustainability over the long-term. In the Northeast Atlantic, a maximum landing length of 100 cm was introduced in European Union (EU) waters (including the Mediterranean) in 2009 to deter the targeting of mature females. The Spiny Dogfish Total Allowable Catch (TAC) for EU Member States reporting to ICES was reduced by 90% in 2010, and set to zero in 2011 (ICES-WGEF 2018). In 2011, the EU prohibited targeting, retaining, transshipping, and landing Northeast Atlantic Spiny Dogfish for all EU and third country vessels in EU waters of ICES areas 2, 3, 4, 5, 6, 7, 8, 9 and 10; discards above 50 kg are to be reported (Shark Trust 2019). In 2016, a TAC of 270 t of Spiny Dogfish was allocated for EU and international Northeast Atlantic waters (subareas 1, 5–8, 10, and 12) to vessels participating in bycatch avoidance programs, with each vessel allowed to land up to 2 t of dead catch per month. In Norway, a number of Spiny Dogfish management actions are in place, including a ban on targeted fisheries in 2011 (ICES-WGEF 2018). In the Black Sea, to reduce fishing mortality of several fish stock, including Spiny Dogfish, a number of management measures have been implemented, with Turkey closing its industrial trawl fisheries in Turkish waters of the Black Sea (GFCM 2018b). In the Northwest Atlantic, Spiny Dogfish catch limits have been established by both U.S. and Canadian fisheries management agencies under separate actions (no bilateral management agreement exists). In the U.S., Spiny Dogfish fisheries are jointly managed by the Mid-Atlantic and New England Fishery Management Council, in conjunction with the Atlantic States Marine Fisheries Commission (ASMFC) (NOAA 2019). In 2000, the federal Spiny Dogfish Fishery Management Plan (FMP) established science-based commercial quotas and trip limits, initially implemented to end the targeting of pregnant females. State shares of the annual commercial quotas are allocated through the ASMFC. Recreational take is a minimal component of fishing mortality; access to the fishery is not limited, but a permit is required to fish in federal waters (MAFMC 2019). In Canada, the species is managed with science-based commercial quotas (DFO 2020).

In the Southwest Atlantic, there are a number of chondrichthyan-specific management actions that may indirectly benefit the Spiny Dogfish, including retention bans, area closures, and move-on rules when chondrichthyans exceed 30% of a vessel's catch in a fishing event.

In the Southwest Pacific, the Spiny Dogfish is managed in New Zealand through annual Individual Transferable Quotas (ITQs) since 2004. The species is also listed under Schedule 6 of the Fisheries Act, which allows fish to be returned to the sea if they are likely to survive upon return, and that the return takes place as soon as possible (FNZ 2019). The Northern Hemisphere population of Spiny Dogfish is listed on Appendix II of the Convention on the Conservation of Migratory Species of Wild Animals (CMS) and Annex I of its Migratory Sharks Memorandum of Understanding (CMS Secretariat 2019). Through these listings, CMS Party Range States have committed to collaborate toward regional conservation, but no specific actions have been agreed under CMS since the listing in 2008.

Credits

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Authority/Authorities: IUCN SSC Shark Specialist Group (sharks and rays)

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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 -> 9.3. Marine Neritic - Subtidal Loose Rock/pebble/gravel	Resident	Suitable	Yes
9. Marine Neritic -> 9.4. Marine Neritic - Subtidal Sandy	Resident	Suitable	Yes
9. Marine Neritic -> 9.10. Marine Neritic - Estuaries	Resident	Suitable	Yes
10. Marine Oceanic -> 10.1. Marine Oceanic - Epipelagic (0-200m)	Resident	Suitable	Yes
11. Marine Deep Benthic -> 11.1. Marine Deep Benthic - Continental Slope/Bathyl Zone (200-4,000m)	-	-	-

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 -> 5.4.1. Intentional use: (subsistence/small scale) [harvest]	Ongoing	Majority (50-90%)	-	Low impact: 5
	Stresses:	2. Species Stresses -> 2.1. Species mortality		
5. Biological resource use -> 5.4. Fishing & harvesting aquatic resources -> 5.4.2. Intentional use: (large scale) [harvest]	Ongoing	Majority (50-90%)	-	Low impact: 5
	Stresses:	2. Species Stresses -> 2.1. Species mortality		
5. Biological resource use -> 5.4. Fishing & harvesting aquatic resources -> 5.4.3. Unintentional effects: (subsistence/small scale) [harvest]	Ongoing	Majority (50-90%)	-	Low impact: 5
	Stresses:	2. Species Stresses -> 2.1. Species mortality		
5. Biological resource use -> 5.4. Fishing & harvesting aquatic resources -> 5.4.4. Unintentional effects: (large scale) [harvest]	Ongoing	Majority (50-90%)	-	Low impact: 5
	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: Yes
Systematic monitoring scheme: Yes
In-place land/water protection
Conservation sites identified: No
Area based regional management plan: No
Occurs in at least one protected area: Unknown
Invasive species control or prevention: Not Applicable
In-place species management
Harvest management plan: Yes
Successfully reintroduced or introduced benignly: No
Subject to ex-situ conservation: No
In-place education
Subject to recent education and awareness programmes: Yes
Included in international legislation: Yes
Subject to any international management / trade controls: Yes

Conservation Actions Needed

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

Conservation Action Needed
5. Law & policy -> 5.4. Compliance and enforcement -> 5.4.2. National level

Research Needed

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

Research Needed
1. Research -> 1.2. Population size, distribution & trends
1. Research -> 1.3. Life history & ecology
2. Conservation Planning -> 2.1. Species Action/Recovery Plan
3. Monitoring -> 3.1. Population trends
3. Monitoring -> 3.2. Harvest level trends

Additional Data Fields

Distribution
Lower depth limit (m): 1,978
Upper depth limit (m): 0
Habitats and Ecology
Generation Length (years): 17

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: Arizona State University; BirdLife International; Botanic Gardens Conservation International; Conservation International; NatureServe; Royal Botanic Gardens, Kew; Sapienza University of Rome; Texas A&M University; and Zoological Society of London.