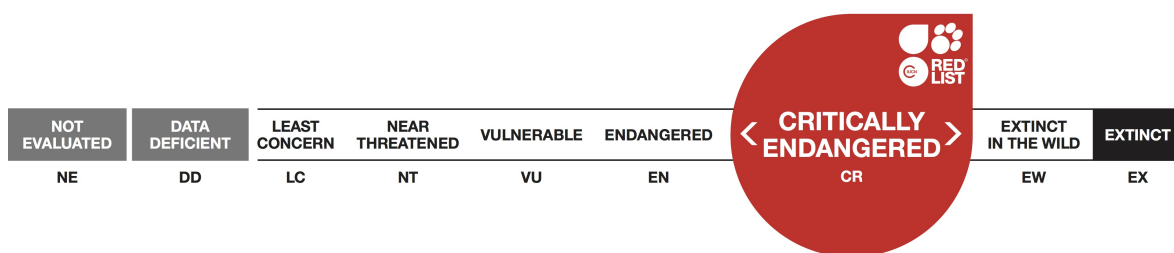




Squatina argentina, Argentine Angelshark

Assessment by: Cuevas, J.M., Awruch, C.A., Barreto, R., Charvet, P., Chiaramonte, G.E., Dolphine, P., Faria, V., Paesch, L. & Rincon, G.



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Taxonomy

Kingdom	Phylum	Class	Order	Family
Animalia	Chordata	Chondrichthyes	Squatiniiformes	Squatinaidae

Taxon Name: *Squatina argentina* (Marini, 1930)

Synonym(s):

- *Rhina argentina* Marini, 1930

Common Name(s):

- English: Argentine Angelshark, Longfin Angelshark
- Spanish: Angelito, Angelote argentino, Pez Ángel

Taxonomic Source(s):

Fricke, R., Eschmeyer, W.N. and Van der Laan, R. (eds). 2019. Eschmeyer's Catalog of Fishes: genera, species, references. Updated 04 February 2019. Available at: <http://researcharchive.calacademy.org/research/ichthyology/catalog/fishcatmain.asp>. (Accessed: 04 February 2019).

Taxonomic Notes:

There is some controversy concerning the taxonomy and nomenclature of *Squatina* species of the Southwest Atlantic. *Squatina occulta* described by Vooren and da Silva (1991) has been regarded as being a junior synonym of *S. guggenheim* by Soto (2001) in a species-level checklist of the region. Although evidence was not given to support this statement, Bernardes *et al.* (2005) followed Soto's proposal. However, later studies have re-evaluated the species' validity. The validity of *S. occulta* Vooren and da Silva, 1991 as a distinct species has been confirmed through the study of mitochondrial DNA by Stelbrink *et al.* (2010) and in a comparative study of Southwest Atlantic *Squatina* neurocrania (Carvalho *et al.* 2012). Both studies also recognized *S. argentina*, *S. guggenheim*, and *S. occulta* as the only valid species in the Southwest Atlantic (preceding the description of new species since that time, *S. david* and *S. varii*).

Assessment Information

Red List Category & Criteria: Critically Endangered A2bd [ver 3.1](#)

Year Published: 2019

Date Assessed: August 5, 2017

Justification:

The Argentine Angelshark (*Squatina argentina*) is a small (to 138 cm total length) demersal shark species that occurs in waters in the Southwest Atlantic from Santa Catarina, Brazil, south to Buenos Aires, Argentina. This species inhabits sandy substrates at depths of 51-320 m. The species has a relatively slow life history, giving birth to 7-11 pups with a biennial or possibly triennial reproductive cycle. The Argentine Angelshark is targeted and/or caught as bycatch in demersal trawl, gillnet, and longline fisheries, and is sold and utilized for human consumption (although angel sharks are protected in Brazil).

Angel sharks are notoriously difficult to identify, and catches are typically reported at the generic level and therefore include at least three species that are native to the region (the Argentine Angelshark, the Hidden Angelshark (*S. occulta*), and the Angular Angelshark (*S. guggenheim*)). Declines in CPUE during research trawls in southern Brazil indicate that the population declined substantially in the mid-late 1990s. Further research data corroborates this, indicating the equivalent of a reduction of more than 90% over three generation lengths (46.5 years). There is also heavy fishing pressure in Uruguay and Argentina, where the Argentine Angelshark is caught alongside the Hidden Angelshark and the Angular Angelshark. Landings data indicate a reduction of angel sharks in the Argentinean-Uruguayan Common Fishing Zone of over 70% over three generations, and datasets further south in Argentina indicate a reduction of over 90% over a similar timeframe (although these landings likely consist mostly of Angular Angelshark). Due to heavy fishing pressure across its range, reported declines in landings and research surveys, and the species' low productivity, it is inferred that this species has undergone, on balance, a population reduction of at least 80% over the past three generations (46.5 years). Therefore, the Argentine Angelshark is listed as Critically Endangered A2bd. Strict regulations for limits to fisheries catch are needed, as is the identification and protection of critical habitat.

Previously Published Red List Assessments

2006 – Endangered (EN)

<http://dx.doi.org/10.2305/IUCN.UK.2006.RLTS.T39329A10202418.en>

2000 – Data Deficient (DD)

Geographic Range

Range Description:

The Argentine Angelshark is endemic to the Southwest Atlantic and is found from Santa Catarina State in Brazil to 39°S off Buenos Aires Province, Argentina (Vaz and Carvalho 2013). There is also an unconfirmed report of the species from Rio de Janeiro (Vooren and Klippel 2005).

Country Occurrence:

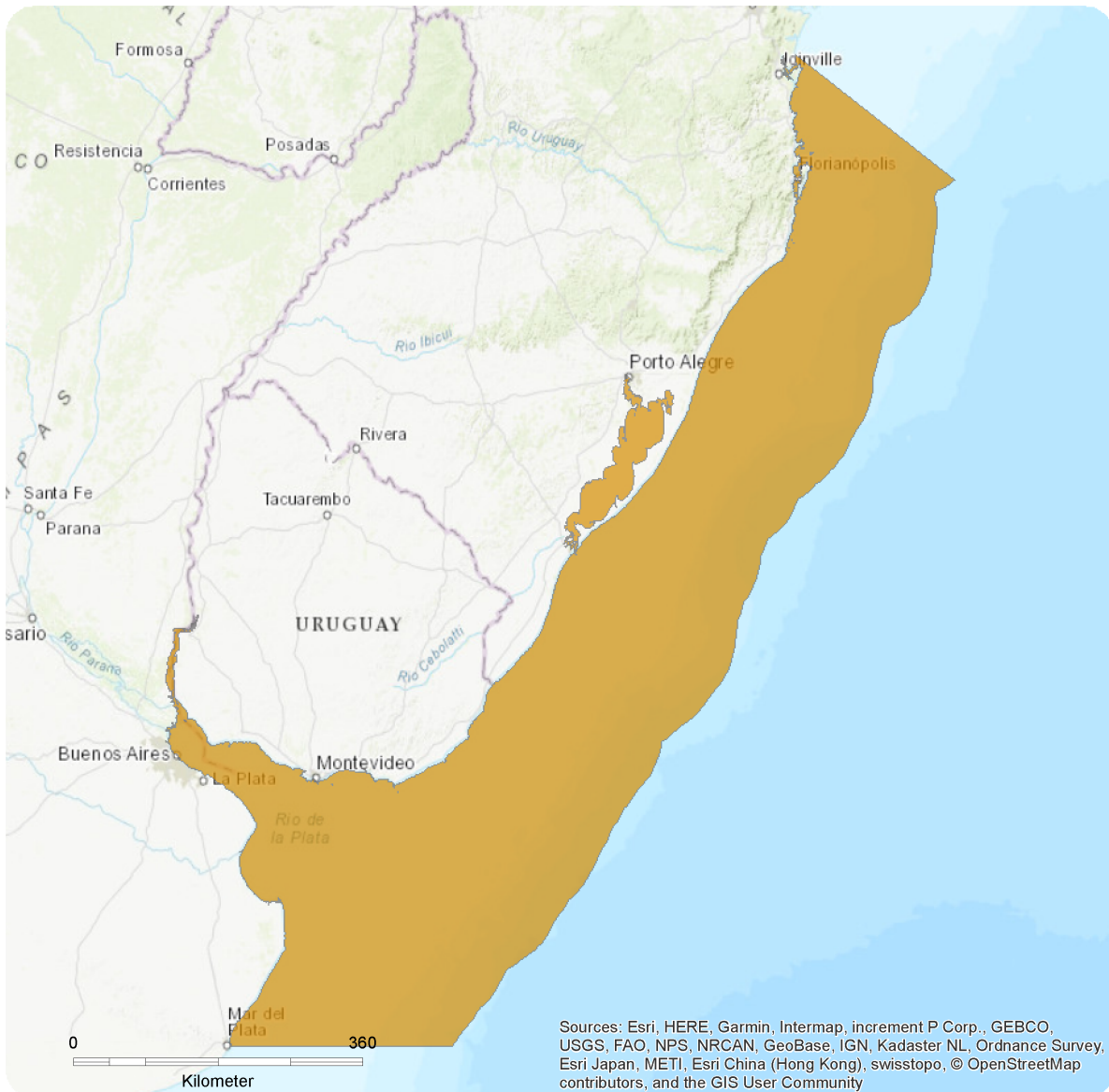
Native: Argentina (Buenos Aires); Brazil (Rio Grande do Sul, Santa Catarina); Uruguay

FAO Marine Fishing Areas:

Native: Atlantic - southwest

Distribution Map

Squatina argentina



Range

Extant (resident)

Compiled by:

IUCN SSC Shark Specialist Group



Population

Angel shark identification in the Southwest Atlantic is difficult, and therefore catches are typically reported for the genus rather than at the species level. There are three species with overlapping ranges, depths, and habitat types in the region (Angular Angelshark, Argentine Angelshark, and Hidden Angelshark), and all are likely to face similar threats and fishing pressure.

Southern Brazil

Angel sharks are heavily fished in southern Brazil and significant reductions have been documented there. In the mid-1980s, the Argentine Angelshark was common and abundant in scientific research trawls on the outer shelf and upper slope of Rio Grande do Sul (Vooren and Klippel 2005). During this period, commercial fishing in the area had not yet begun, and a resident population of this species with high natural abundance existed. Annual catches of angel shark (*Squatina* spp.) peaked at about 2,000 t in 1986-1989 and again in 1993, and then decreased to 900 t in 2003 (equivalent to a reduction of 93% over three generations). Angel shark CPUE by otter trawl and pair trawl during research cruises on the continental shelf decreased by about 85% from 1984 to 2002 (CEPERG 2003, Miranda and Vooren 2003, Vooren and Klippel 2005).

An angel shark bottom gillnet fishery commenced around 1990 and angel sharks used to be caught in the 2000s in large amounts by this gear (Miranda and Vooren 2003). Detailed analysis of two independent sets of scientific fishing data at depths of 100-500 m constitutes evidence that between 1986 and 2002 the abundance of both Hidden and Argentine Angelsharks experienced a reduction of around 80% on the shelf and upper slope in the area between Cabo de Santa Marta Grande (28°40'S) and Arroio Chuí (33°50'S), which is equivalent to a reduction of >98% over three generations. Data on scientific fishing and commercial fishing together are evidence that between 1986 and 2002 there was a reduction of about 80% for angel sharks on the southern Brazilian slope (Vooren and Klippel 2005). Another dataset indicates that there was an 86% reduction in Argentine Angelshark between 1986 and 2001 (R. Barreto unpubl. data 2018).

Research trawl surveys of the outer shelf in the years 1986/87 and 2001/02 confirmed that in southern Brazil the abundance of Angular Angelshark has decreased to 15% of its original level and this is attributed to recruitment overfishing primarily due to the bottom gillnet fishery (Vooren and Klippel 2005).

Argentinean-Uruguayan Common Fishing Zone (AUCFZ)

The Argentine Angelshark is uncommon in Uruguay and Argentina in commercial landings but is taken as bycatch in industrial and artisanal fisheries. In Uruguay, angel sharks are caught by trawling on the platform and declared as “angelito”. Annual catches of Angular, Argentine, and Hidden Angelsharks together in Uruguay were about 300 t in the years 1998-2001 (Paesch and Domingo 2003). The estimated capture has been 200 to 400 metric tons (MT) per year between 1997 and 2005. Between 1997 and 2010, the average declared landings of angel sharks was 277 t and decreased to less than 50 t in 2011 and 2012 to rise again to 170 t in 2013 (Domingo *et al.* 2015). There is no clear trend in the landings data from Uruguay from 1996 to 2018 (CTMFM 2018). There are no statistics by species, but during research surveys in the Argentinean-Uruguayan Common Fishing Zone (AUCFZ), Milessi *et al.* (2001) found that Angular Angelshark was the dominant species in the catch.

Argentinian landings in the AUCFZ declined by 51% between 1996 and 2017, equivalent to a 78% reduction over three generation lengths (CTMFM 2018).

Argentina (south of the Argentinean-Uruguayan Common Fishing Zone)

In Argentina, the three species of the genus are landed together as “pez ángel” and it is probable that more than 90% of the landed angel sharks are Angular Angelshark (G. Chiaramonte unpubl. data 2018). The declared landings of all angel sharks in Argentina decreased by 45% from 2007-2016 with a total of 39509.7 MT and an average of 3950.8 MT (J.-M. Cuevas unpubl. data 2018), which is equivalent to a reduction of 95% over three generations. Again, it is stressed that these landings trends are probably not appropriate to assign to this species, as most of the landed angel sharks have been Angular Angelshark. Overall, given documented declines in landings and research trawls, the presence of heavy fishing pressure across its range, and its relatively low productivity, it is inferred that this species has undergone a population reduction of at least 80% over the past three generations (46.5 years).

For further information about this species, see [Supplementary Material](#).

Current Population Trend: Decreasing

Habitat and Ecology (see Appendix for additional information)

The Argentine Angelshark is a demersal shark that inhabits shelf and upper slope waters between 51 and 320 m depth (Ebert *et al.* 2013). The species is an ambush predator and prefers soft substrates, especially sand. Like other angel sharks, the Argentine Angelshark is lecithotrophic viviparous with two functional ovaries (Vooren and Klippel 2005). This species gives birth to 7-11 pups (Vooren and da Silva 1991), with most females carrying 9 or 10 young (Vooren and Klippel 2005). The reproductive cycle is two to three years. This species reaches a maximum size of 138 cm total length (TL) and matures at approximately 120 cm TL for both sexes (da Silva 1996). Argentine Angelsharks are estimated to have a generation length of approximately 15.5 years, based on the similarly-sized and closely-related Hidden Angelshark (Vooren and Klippel 2005).

Systems: Marine

Use and Trade

Although this species is officially protected in Brazil, it is still retained and sold in markets (Almerón-Souza *et al.* 2018). It is used for its meat, which is known locally as *caçãõ anjo*, which is more valuable than other shark meat marketed simply as *caçãõ* (Vooren and Klippel 2005, Barreto *et al.* 2017, Almerón-Souza *et al.* 2018).

In Uruguay, the species is targeted for its meat in gillnet and bottom trawl fisheries and is also caught as bycatch on demersal longlines (Domingo *et al.* 2008).

In Argentina, this species is not targeted directly in fisheries, but is caught as bycatch in demersal trawl and gillnet fisheries. Angel sharks are sold locally and consumed fresh (*pollo de mar*) and/or salted and dried (*bacalao argentino*) (Chiaramonte 1998).

Threats (see Appendix for additional information)

The Argentine Angelshark is threatened by being caught as bycatch in demersal trawl and gillnet fisheries, and it was also previously targeted.

In southern Brazil, directed fisheries using bottom-gillnets on the outer shelf and upper slope developed rapidly between the 1990s and early 2000s and depleted this species (Vooren and Klippel 2005). At the beginning of the 2000s, another fishery developed in the area for the anglerfish *Lophius gastrophysis* with bottom gillnets at depths of 130 to 600 m, and this species was caught as bycatch (Perez and Wahrlich 2005, Mafra Pio *et al.* 2016). Since 2004, both of these fisheries have been closed, but angel sharks are still captured illegally by trawl and gillnet fisheries and landed without skins in clandestine ports (Montealegre-Quijano unpubl. data 2017).

The nocturnal habits of angel sharks render them susceptible to bottom gillnets which are set at night, and increases in captures during the 1990s are attributed to the introduction of this gear on the shelf and slope off southern Brazil at that time. Gillnets were reported as six times more effective at catching angel sharks than trawling alone (Vooren and Klippel 2005).

Part of this species' southern distribution in the Argentina-Uruguay Common Fishing Zone overlaps with the Patagonian scallop (*Zygochlamis patagonica*) bottom trawl fishery, which is likely to catch this species as bycatch.

Conservation Actions (see Appendix for additional information)

In Brazil, trawling in inshore waters is prohibited and all angel sharks are protected, but enforcement of this regulation has been and still is not sufficient (Vooren and Klippel 2005, Montealegre-Quijano unpubl. data 2017). The conservation status of this species will rely heavily upon the successful implementation of these management arrangements. Full observer coverage onboard domestic vessels should provide accurate monitoring of trends in the future. Molecular markers of *Squatina* spp. have been determined for future identification of these species in local markets (Falcão *et al.* 2014).

In September 2018, the government of the state of Rio Grande do Sul approved a law that extends the range in which fishing with trawls is prohibited. With the sanction and regulation of the law, the protected area will be increased from 3 nautical miles (5.5 km) offshore to 12 nautical miles (22.2 km) offshore.

The Argentine Angelshark is classified as Critically Endangered (A2bd+4bd) in Brazil (ICMBio 2016). The Angular and Hidden Angelsharks are also both classified as Critically Endangered there, and all three of these species are fully protected in Brazil as of 2014 by the normative instructions numbers 5 and 445.

The Total Allowable Catch (TAC) for chondrichthyans in the Argentina and Uruguay Common Fishing Zone (AUCFZ) is regulated by the Binational Technical Commission (*Comisión Técnica Mixta del Frente Marítimo*). Only 3 groups are regulated by a TAC limit each year: the smoothhound *Mustelus schmitti*, the angel sharks *Squatina* spp. and skates (Rajiformes). The TAC for angel sharks was constant between 2012 and 2016 (2,600 tonnes) and only in 2012 was this exceeded, with a total catch of 2709.2 t for Argentina and 27 t for Uruguay.

There is only one specifically managed fishing area for chondrichthyans in the Argentine Sea and is located inside the Argentina and Uruguay Common Fishing Zone between 36° and 37°S. This coastal

area of about 4,562 km² is closed from October to March and protects diverse species and reproductive stages of demersal and benthic chondrichthyans (Colonello *et al.* 2014), including angel sharks. The total amount of days changes between years and it is applied to all type of vessels using bottom net trawling.

Nursery areas of the species have not been found in southern Brazil and may exist further south off Uruguay and/or Argentina. A new abundance estimate in southern Brazil is urgently needed after almost a decade of no take protection in the country. At the same time an assessment of the relative composition of each species in commercial landings in each country is needed.

The species was assessed by the US National Oceanic and Atmospheric Administration to determine whether its status warranted listing under the US Endangered Species Act (Casselberry and Carlson 2015). The species was listed as Endangered as a result in 2017.

Research and monitoring of population size and landings are needed across this species' range.

Credits

Assessor(s): Cuevas, J.M., Awruch, C.A., Barreto, R., Charvet, P., Chiaramonte, G.E., Dolphine, P., Faria, V., Paesch, L. & Rincon, G.

Reviewer(s): Kyne, P.M. & Pollom, R.

Contributor(s): Vooren, C.M.

**Facilitators(s) and
Compiler(s):** Pollom, R.

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Appendix

Habitats

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

Habitat	Season	Suitability	Major Importance?
9. Marine Neritic -> 9.4. Marine Neritic - Subtidal Sandy	Resident	Suitable	-
11. Marine Deep Benthic -> 11.1. Marine Deep Benthic - Continental Slope/Bathyl Zone (200-4,000m) -> 11.1.2. Soft Substrate	Resident	Suitable	-

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 -> 5.4.3. Unintentional effects: (subsistence/small scale) [harvest]	Ongoing	Majority (50-90%)	Unknown	Unknown
	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%)	Unknown	Unknown
	Stresses:	2. Species Stresses -> 2.1. Species mortality		

Conservation Actions in Place

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

Conservation Actions in Place
In-Place Research, Monitoring and Planning
Action Recovery plan: No
Systematic monitoring scheme: No
In-Place Land/Water Protection and Management
Conservation sites identified: No
Occur in at least one PA: Unknown
Area based regional management plan: No
Invasive species control or prevention: Not Applicable
In-Place Species Management
Harvest management plan: No
Successfully reintroduced or introduced benignly: No

Conservation Actions in Place
Subject to ex-situ conservation: No
In-Place Education
Subject to recent education and awareness programmes: No
Included in international legislation: No
Subject to any international management/trade controls: No

Conservation Actions Needed

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

Conservation Actions Needed
3. Species management -> 3.1. Species management -> 3.1.1. Harvest management
5. Law & policy -> 5.1. Legislation -> 5.1.1. International level
5. Law & policy -> 5.1. Legislation -> 5.1.2. National level
5. Law & policy -> 5.1. Legislation -> 5.1.3. Sub-national level
5. Law & policy -> 5.2. Policies and regulations
5. Law & policy -> 5.3. Private sector standards & codes
5. Law & policy -> 5.4. Compliance and enforcement -> 5.4.1. International level
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 -> 1.3. Life history & ecology
1. Research -> 1.5. Threats
2. Conservation Planning -> 2.1. Species Action/Recovery Plan
2. Conservation Planning -> 2.2. Area-based Management Plan
2. Conservation Planning -> 2.3. Harvest & Trade Management Plan
3. Monitoring -> 3.1. Population trends
3. Monitoring -> 3.2. Harvest level trends
3. Monitoring -> 3.3. Trade trends

Research Needed

3. Monitoring -> 3.4. Habitat trends

Additional Data Fields**Distribution**

Continuing decline in area of occupancy (AOO): Unknown

Extreme fluctuations in area of occupancy (AOO): Unknown

Continuing decline in extent of occurrence (EOO): Unknown

Extreme fluctuations in extent of occurrence (EOO): Unknown

Continuing decline in number of locations: Unknown

Extreme fluctuations in the number of locations: Unknown

Lower depth limit (m): 320

Upper depth limit (m): 51

Population

Continuing decline of mature individuals: Yes

Extreme fluctuations: Unknown

Population severely fragmented: Unknown

Continuing decline in subpopulations: Unknown

Extreme fluctuations in subpopulations: Unknown

All individuals in one subpopulation: Unknown

Habitats and Ecology

Continuing decline in area, extent and/or quality of habitat: No

Generation Length (years): 15.5

Movement patterns: Unknown

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