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Paralichthys patagonicus, Patagonian Flounder

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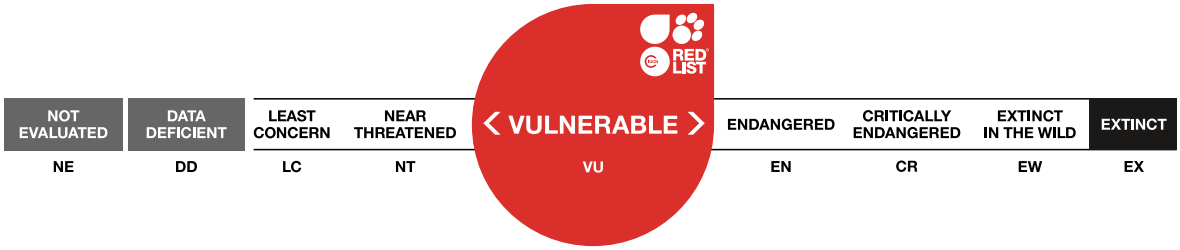

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Taxonomy

Kingdom	Phylum	Class	Order	Family
Animalia	Chordata	Actinopterygii	Pleuronectiformes	Paralichthyidae

Scientific Name: *Paralichthys patagonicus* Jordan, 1889

Common Name(s):

- English: Patagonian Flounder
- Spanish; Castilian: Lenguado Patagónico

Assessment Information

Red List Category & Criteria: Vulnerable A2bcd ver 3.1

Year Published: 2020

Date Assessed: December 6, 2019

Justification:

This demersal species occurs from southern Brazil to northern Argentina and is taken in multi-species commercial fisheries that target demersal fishes through much of its range. For purposes of this assessment, half of the global population is considered to occur in Brazil and the other half in Uruguay and Argentina. According to landings and catch per unit effort data, the population in Brazil is overexploited and declined by at least 30-60% over the past three generation lengths, or about a 30-year time period. According to stock assessment and fisheries data, there is no decline detected in the demersal fish stock in Argentina and Uruguay and abundance indices show an increase in recent years (since 2014). Fishing effort continues at an unsustainable level in Brazil, the fishery is not well-monitored and conservation measures are insufficient. Conservation measures in Argentina and Uruguay include a total allowable catch limit and regular monitoring of stock status. In addition to fishing, this species is exposed to pollution in estuaries that may be impacting the survivability of some individuals. Based on declines in half of its global population (Brazil), at least a 30% global-level decline is suspected to have occurred over the past three generation lengths; therefore, it is listed as Vulnerable A2bcd. It is recommended to improve fisheries monitoring, including the collection of species-specific data, as well as implement conservation measures to reduce effort in Brazilian fisheries.

Geographic Range

Range Description:

This species is distributed in the southwestern Atlantic from Cabo Frio, Rio de Janeiro, Brazil to southern San Jorge Gulf, Argentina. Records from Chile are misidentifications (J.M. Díaz de Astarloa pers. comm. 2019). It can be found between 6-120 metres depth, but is more common between 70-100 m (Díaz de Astarloa and Fabre 2003).

Country Occurrence:

Native, Extant (resident): Argentina; Brazil; Uruguay

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FAO Marine Fishing Areas:

Native: Atlantic - southwest

Distribution Map

Legend

EXTANT (RESIDENT)

Compiled by:

IUCN Marine Biodiversity Unit/GMSA 2019

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

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Population

This species is common and abundant in parts of its range (Díaz de Astarloa and Fabre 2003). *Paralichthys isosceles* and *P. patagonicus* are sympatric, but *P. patagonicus* has a higher abundance than *P. isosceles* (J.M. Díaz de Astarloa pers. comm. 2019). It is captured and landed with other *Paralichthys* species, and catches of *P. isosceles* are very low when compared to *P. orbignyanus* and *P. patagonicus* (Díaz de Astarloa 2002).

Brazil: In Brazil, this species is taken in flounder fisheries (Díaz de Astarloa *et al*. 2018). Stock assessments are not conducted for Brazil (J. Vieira pers. comm. 2019). The fishery is considered totally exploited or overexploited. The longevity, sexual maturity and growth of this species suggest it is susceptible to growth overfishing (Araújo and Haimovici 2000). Landings from Santa Catarina State represent 60% of the overall catch, and the catch of *Paralichthys* species are mostly comprised of *P. patagonicus*. From 1950 to 2010, landings in Brazil peaked in the 1970s at 6,000 tonnes and then declined to 3-4,000 t through the 1980s, 1990s and 2000s, which represents a 50% decline over a 39 year time period (1971 to 2010). Estimated exploitation rates in southern Brazil indicate catches were no longer sustainable in the mid-1980s (Araújo and Haimovici 2000b). In southern Brazil, annual landings (combined with *P. orbignyanus*) surpassed 2,000 t in 1989 and have declined since (Araújo and Haimovici 2000a, Díaz de Astarloa 2002). Landings of *P. patagonicus* in 1986 were 1,800 t, and from 1986 to 2000, landings fluctuated slightly between 1,000 and 2,500 t. In 2010, landings of this species in southeastern Brazil totaled 745 t (Walsh *et al.* 2015), which represents a decline of about 63% from 1989 to 2010. Flatfish fisheries in Brazil were developed during the 1980s when artisanal fisheries moved to shallow coastal waters and started using double-rig trawling gear, the most efficient gear in capturing *Paralichthys* species (Díaz de Astarloa 2002). Effort has remained the same or increased over time and catch per unit effort has declined. A 2005 report indicated severe overexploitation in Brazil based on different indices (Haimovici and Araújo 2005). Data were not collected over the most recent 15 years, but fishing effort has continued, so declines are inferred to have continued. In Brazil, fishing effort actually occurred on the Uruguay population, so some of the catch is reflected in those statistics.

Argentina and Uruguay: *Paralichthys patagonicus* is the most frequently landed species of flatfish in Argentina fisheries, with *P. orbignyanus* and *P. isosceles* also taken, but in smaller amounts (Rico 2010, Díaz de Astarloa *et al.* 2018). The common demersal fishing area, which is where the fishery that targets flatfishes and other demersal fishes operates, includes Uruguay and northern Argentina, with the highest catch occurring off Buenos Aires and declining to the south. Flatfish species represent only 6% of this catch and some vessels changed the target species towards the south to target prawn, so effort declined in recent years. Catch per unit effort (CPUE) from 1999 to 2018 was very variable. Biomass estimates from 1934 to 2018 show somewhat of a decline, but this is highly uncertain as the indices of abundance trend upward since about 2014 or over the past 4-5 years. Data from recent research cruises are expected to improve these model indices. According to the most recent stock assessment of the demersal fishery, it is not overfished and overfishing is not occurring. A Total Allowable Catch (TAC) limit was implemented for this fishery in recent years, and actual total catch has not reached this limit (Rodriguez and Riestra 2019).

Overall summary: There is some uncertainty as far as estimating population decline on the global-level, but based on landings and catch per unit effort trends, it is clear a decline of about 50-60% has occurred over the past three generation lengths in Brazil. The status of its population in Uruguay and Argentina is

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somewhat uncertain, but is not expected to have declined as significantly, and is currently understood to be stable. For the purposes of this Red List assessment, Brazil is considered to represent half of its global population; therefore, it is suspected that a global decline of least 30% has occurred over the past three generations, or about 30 years.

Current Population Trend: Decreasing

Habitat and Ecology (see Appendix for additional information)

This marine, demersal species can be mainly found on sandy substrates on the continental shelf, and can occur in the lower parts of estuaries as well (Díaz de Astarloa and Munroe 1998). Juveniles feed on crustaceans and fish, while adults feed primarily on fish (Araújo and Haimovici 2000b, Troccoli 2011). It spawns in spring and summer (September – February) with a peak in November. It is a multiple spawner with low fecundity and variable reproductive frequency (Díaz de Astarloa and Munroe 1998, Araújo and Haimovici 2000a, Militelli 2011). Both males and females grow rapidly in the first year of life and females continue growing faster afterwards as well. Females first attain sexual maturity at 33 cm total length and males at 31 cm. The maximum total length for males is 48 cm and females 65 cm. The oldest individual was a 13 year-old female (Araújo and Haimovici 2000a, Díaz de Astarloa and Fabre 2003). In Argentine waters, the maximum total lengths and ages are 60 cm and 18 years for males and 67 cm and 19 years for females (Riestra 2010). Natural mortality was estimated to be 0.3 for females, 0.42 for males and 0.4 for both genders combined (Araújo and Haimovici 2000b). When applying an age at first reproduction of 2-3 years and longevity of 19 years, its estimated generation length is 10-11 years based on the following equation recommended by the IUCN Red List methods: Age at first reproduction + (Age at last reproduction – age at first reproduction)/2.

Systems: Marine

Use and Trade

This is the most commercially important paralichthyid flounder species in the southwestern Atlantic (Walsh *et al.* 2015). It is the main species landed in commercial bottom trawlers operating in southern Brazil to Argentina. It is also taken in artisanal fisheries in the shallow parts of the Uruguayan Rio de la Plata estuary and on the Atlantic coasts of Argentina and Uruguay (Díaz de Astarloa 2002, Díaz de Astarloa *et al.* 2018).

Threats (see Appendix for additional information)

Overfishing is a major threat to this species. Pollution in the Rio de la Plata estuary has caused some individuals to exhibit deformities (Díaz de Astarloa 1998).

Conservation Actions (see Appendix for additional information)

In Uruguay and Argentina, fishing effort is regulated through total allowable catch limits, a closed-area off Ël Rincon during the spawning season (October to March) and regular stock assessments monitor its status there. Conservation measures are insufficient in Brazil. This species was assessed as Near Threatened for the Brazil national Red List initiative in 2013.

Credits

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Reviewer(s):	Linardich, C.
Facilitator(s) and Compiler(s):	Linardich, C.

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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 -> 9.4. Marine Neritic - Subtidal Sandy	Resident	Suitable	Yes
9. Marine Neritic -> 9.5. Marine Neritic - Subtidal Sandy-Mud	Resident	Suitable	Yes
9. Marine Neritic -> 9.6. Marine Neritic - Subtidal Muddy	Resident	Suitable	Yes
9. Marine Neritic -> 9.10. Marine Neritic - Estuaries	Resident	Suitable	Yes

Use and Trade

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

End Use	Local	National	International
Food - human	Yes	No	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		
9. Pollution -> 9.1. Domestic & urban waste water -> 9.1.2. Run-off	Ongoing	Unknown	Unknown	Unknown
	Stresses:	1. Ecosystem stresses -> 1.2. Ecosystem degradation 2. Species Stresses -> 2.3. Indirect species effects		

Conservation Actions in Place

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

Conservation Action in Place
In-place research and monitoring
Systematic monitoring scheme: Yes
In-place species management
Harvest management plan: Yes

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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

Research Needed

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

Research Needed
2. Conservation Planning -> 2.3. Harvest & Trade Management Plan
3. Monitoring -> 3.1. Population trends
3. Monitoring -> 3.2. Harvest level trends

Additional Data Fields

Distribution
Lower depth limit (m): 120
Upper depth limit (m): 6
Habitats and Ecology
Continuing decline in area, extent and/or quality of habitat: Yes
Generation Length (years): 10-11

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