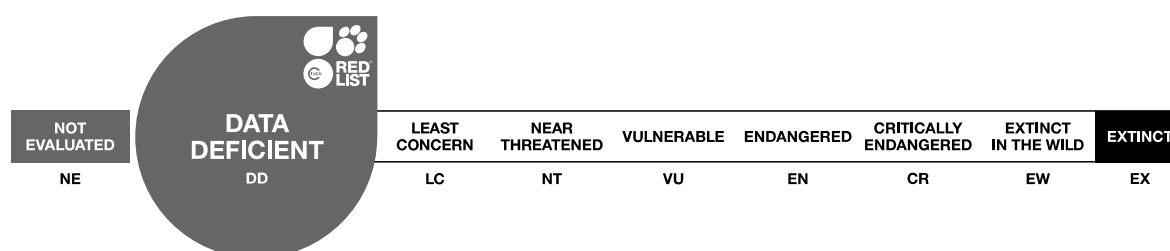


Patagonotothen tessellata, Black Southern Cod

Assessment by: Hüne, M., Díaz de Astarloa, J., Landaeta, M., Buratti, C., Irigoyen, A., Riestra, C. & Vieira, J.P.



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Taxonomy

Kingdom	Phylum	Class	Order	Family
Animalia	Chordata	Actinopterygii	Perciformes	Nototheniidae

Scientific Name: *Patagonotothen tessellata* (Richardson, 1845)

Synonym(s):

- *Notothenia tessellata* Richardson, 1845

Common Name(s):

- English: Black Southern Cod
- Spanish; Castilian: Pescado de Piedra

Taxonomic Source(s):

Fricke, R., Eschmeyer, W.N. and Van der Laan, R. (eds). 2019. Eschmeyer's Catalog of Fishes: genera, species, references. Updated 03 September 2019. Available at: <http://researcharchive.calacademy.org/research/ichthyology/catalog/fishcatmain.asp>.

Assessment Information

Red List Category & Criteria: Data Deficient [ver 3.1](#)

Year Published: 2020

Date Assessed: December 5, 2019

Justification:

This demersal species inhabits nearshore rocky reefs and kelp forests in southern Chile and Argentina and has an estimated generation length of 5 years. The global-level center of its abundance is in the straits of southern Chile. Invasive Chinook salmon now occur throughout the straits of Chile, and this represents a potential major threat, including impacts from competition, predation and disease introduction. The invasion is expected to expand into other parts of its range (i.e. Argentina). The Chilean salmon aquaculture industry, which is the source of escaped individuals, is expected to expand in the near future. The centre, or the major proportion of its global population is concentrated in the area where this threat is greatest. This threat has been increasing over time, but probably began about 30 years ago. There are no data to quantify population trends at this time; and considering this major threat and the lack of understanding for the likely direct impact, it is listed as Data Deficient. It is highly recommended to conduct studies on population trends as well as the impacts from the invasive salmon. Recommended conservation actions include the continued protection of kelp forests from harvest and to improve management of invasive salmon and prevention of escapes.

Geographic Range

Range Description:

This species is distributed in the southeastern Pacific from Isla Grande de Chiloé, Chile south through Cape Horn into the southwestern Atlantic to the northern San Jorge Gulf, Argentina, including the

Malvinas Islands and South Georgia Islands. The depth range is 0-150 metres, but it mostly occurs between 0-30 m (M. Hüne pers. comm. 2019).

Country Occurrence:

Native, Extant (resident): Argentina; Chile; Falkland Islands (Malvinas); South Georgia and the South Sandwich Islands

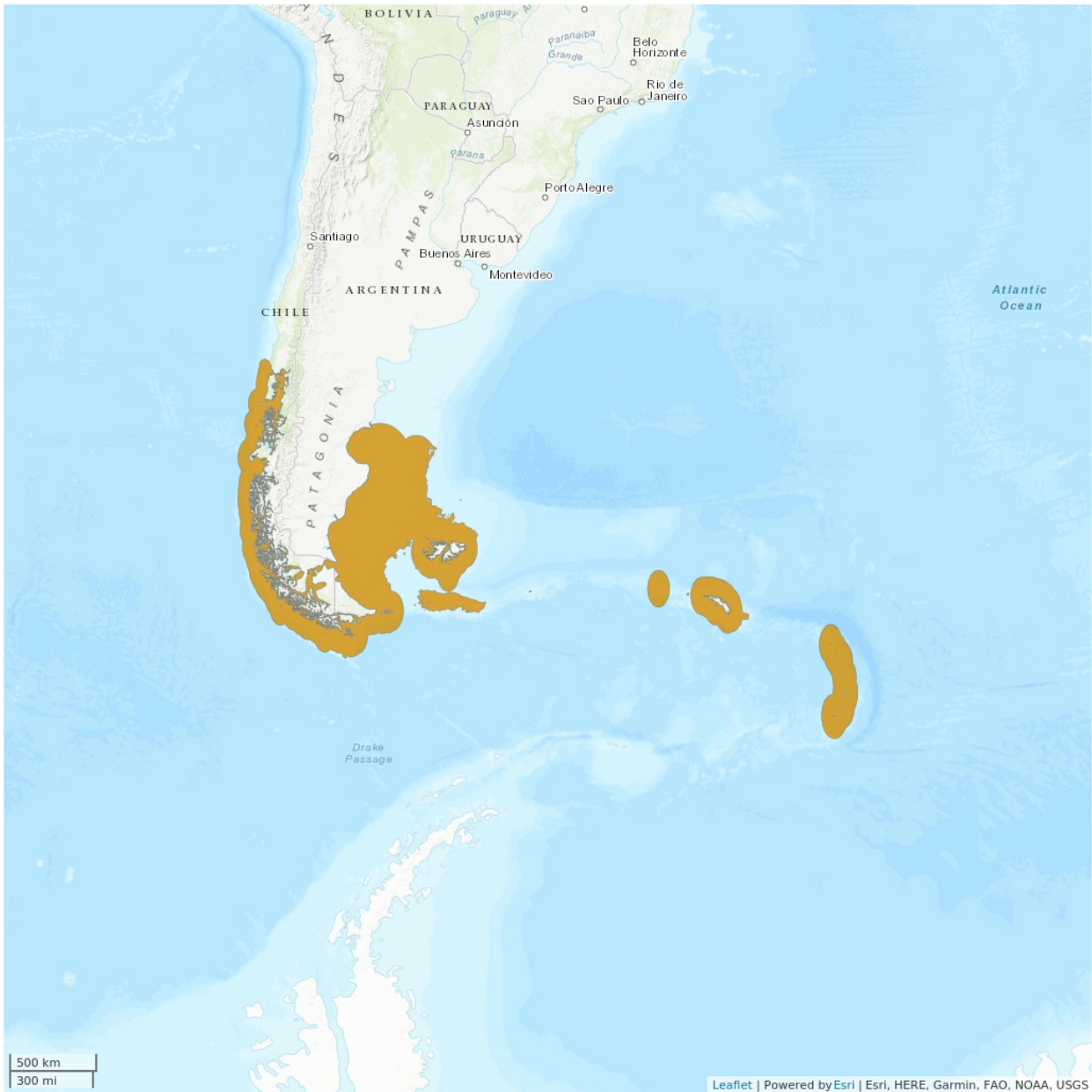
FAO Marine Fishing Areas:

Native: Atlantic - southwest

Native: Atlantic - Antarctic

Native: Pacific - southeast

Distribution Map

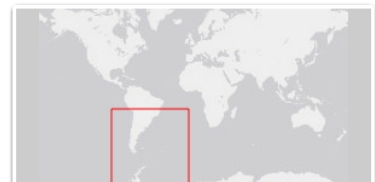
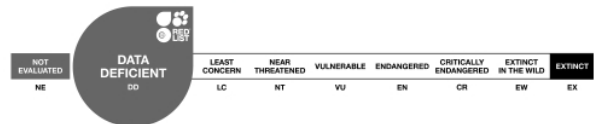


Legend

■ EXTANT (RESIDENT)

Compiled by:

IUCN Marine Biodiversity Unit/GMSA 2020



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

Population

This species is easily misidentified and confused with juveniles of *Patagonotothen ramsayi*. It is common and abundant in the Pacific part of its range, especially in the southern latitudes (M. Hüne pers. comm. 2019). It is naturally less common in the Atlantic part of its range (J.M. Díaz de Astarloa pers. comm. 2019).

Current Population Trend: Unknown

Habitat and Ecology (see Appendix for additional information)

This benthopelagic species forms schools on nearshore rocky reefs and kelp forests comprised of *Macrocystis* in channel and fjord ecosystems. It is not dependent on kelp, but kelp is a significant component of its habitat preferences. The diet is composed of a variety of benthic invertebrates. The maximum total length is 28 cm, but it mostly occurs at less than 20 cm (Hüne and Vega 2015). Females spawn twice per year and males provide nesting and parental care. Longevity is 8 years and length and age at first maturity is 15 cm and 1-2 years (Rae and Calvo 1995). When applying an age at first reproduction of 1-2 years and longevity of 8 years, its estimated generation length is 5 years based on the following equation recommended by the IUCN Red List methods: $\text{Age at first reproduction} + (\text{Age at last reproduction} - \text{age at first reproduction})/2$.

Systems: Marine

Use and Trade (see Appendix for additional information)

This species is not utilized, and has no commercial value. It is discarded as bycatch in grenadier trawl fisheries in the Atlantic part of its range (J.M. Díaz de Astarloa pers. comm. 2019).

Threats (see Appendix for additional information)

Individuals of the non-native Chinook Salmon (*Oncorhynchus tshawytscha*) escaped from the aquaculture industry into waters of the straits of southern Chile in the mid-1980s and had become invasive throughout the area by 2005. Juveniles and adults of *Patagonotothen tessellata* are frequently consumed by the invasive Chinook. Additional impacts include competition and overlap with the invasive Chinook for food as well as the transfer of disease from consumption of salmon food pellets (Hüne *et al.* 2018). Given its relatively small range, and that the salmon industry is expected to remain the same or increase into the future, this represents a potential major threat to this species.

Conservation Actions (see Appendix for additional information)

There are no species-specific conservation measures. Part of its distribution overlaps with the Cape Horn Biosphere Reserve, and it occurs in the Francisco Coloane Coastal Marine Protected Area (Hüne *et al.* 2018). The *Macrocystis* kelp forests that this species inhabits are currently well-protected and no declines in habitat quality have been observed at this time. If commercial harvest of *Macrocystis* is allowed to occur, then this may represent a significant threat to this species (M. Hüne pers. comm. 2019).

Credits

Assessor(s): Hüne, M., Díaz de Astarloa, J., Landaeta, M., Buratti, C., Irigoyen, A., Riestra, C. & Vieira, J.P.

Reviewer(s): Linardich, C.

Contributor(s): Campagna, C.

Facilitator(s) and Compiler(s): Linardich, C., Falabella, V. & Wildlife Conservation Society

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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 -> 9.2. Marine Neritic - Subtidal Rock and Rocky Reefs	Resident	Suitable	Yes
9. Marine Neritic -> 9.7. Marine Neritic - Macroalgal/Kelp	Resident	Suitable	Yes

Threats

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

Threat	Timing	Scope	Severity	Impact Score
8. Invasive and other problematic species, genes & diseases -> 8.1. Invasive non-native/alien species/diseases -> 8.1.1. Unspecified species	Ongoing	Majority (50-90%)	Causing/could cause fluctuations	Medium impact: 6
	Stresses:	1. Ecosystem stresses -> 1.2. Ecosystem degradation 2. Species Stresses -> 2.1. Species mortality 2. Species Stresses -> 2.2. Species disturbance 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 land/water protection
Occurs in at least one protected area: Yes

Conservation Actions Needed

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

Conservation Action Needed
1. Land/water protection -> 1.2. Resource & habitat protection
2. Land/water management -> 2.2. Invasive/problematic species control

Research Needed

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

Research Needed
1. Research -> 1.2. Population size, distribution & trends

Research Needed

1. Research -> 1.5. Threats

Additional Data Fields

Distribution

Lower depth limit (m): 150

Upper depth limit (m): 0

Habitats and Ecology

Generation Length (years): 5

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