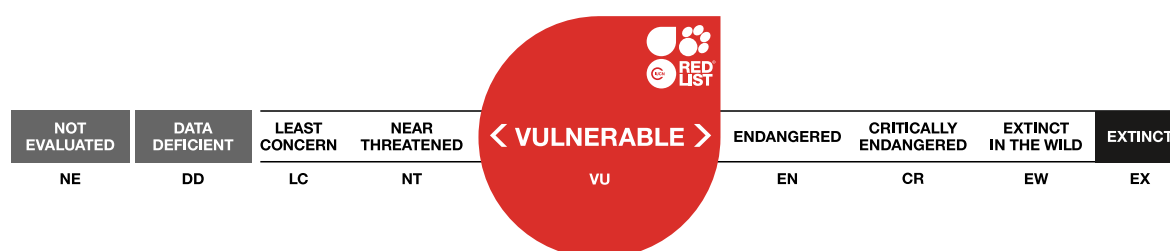


Champscephalus esox, Pike Icefish

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



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Taxonomy

| Kingdom | Phylum | Class | Order | Family |
|----------|----------|----------------|-------------|-----------------|
| Animalia | Chordata | Actinopterygii | Perciformes | Channichthyidae |

Scientific Name: *Champscephalus esox* (Günther, 1861)

Synonym(s):

- *Chaenichthys esox* Günther, 1861

Common Name(s):

- English: Pike Icefish
- Spanish; Castilian: Pez Hielo

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: Vulnerable A2bcde [ver 3.1](#)

Year Published: 2020

Date Assessed: December 6, 2019

Justification:

This demersal species is endemic to the southern Patagonia Sea region where it occurs in kelp forests and fjords. Its physiology restricts it to waters of high oxygen concentration and low temperature, and its survivability is reduced when these conditions fluctuate. Based on survey data and observations of fishers catch, this species has declined by 80% since the 1980s in at least half of its range (the Chilean coast). The status of its population in the other half of its range (Argentina) is poorly understood due to the lack of surveys. Considering the uncertainty regarding its status in the other half of its range, it is conservatively suspected to have declined overall by 30% over the past three generation lengths (12-18 years). Threats include climate change (warming water temperatures), mortality as bycatch in artisanal fisheries and invasive salmon. It is listed as Vulnerable A2bcde. Additional survey work is needed to monitor and understand its population throughout its range. Research is needed on its life history and response to heat shock.

Geographic Range

Range Description:

This species is endemic to the Patagonia Sea region. It occurs from 50°S on the eastern Pacific coast of Chile to Cape Horn and on the Atlantic coast of Argentina from Cabo Virgenes to the Beagle Channel, including Isla de los Estados and the Malvinas Islands (M. Hüne pers. comm. 2019). Records further south off Antarctica represent waifs and records from the South Georgia Islands should be attributed to

Champscephalus gunnari (M. Landaeta pers. comm. 2019). The depth range is 0-250 metres (Eastman 2017).

The estimated area of occupancy (AOO) is 140,000 km² and the estimated extent of occurrence (EOO) is 400,000 km².

Country Occurrence:

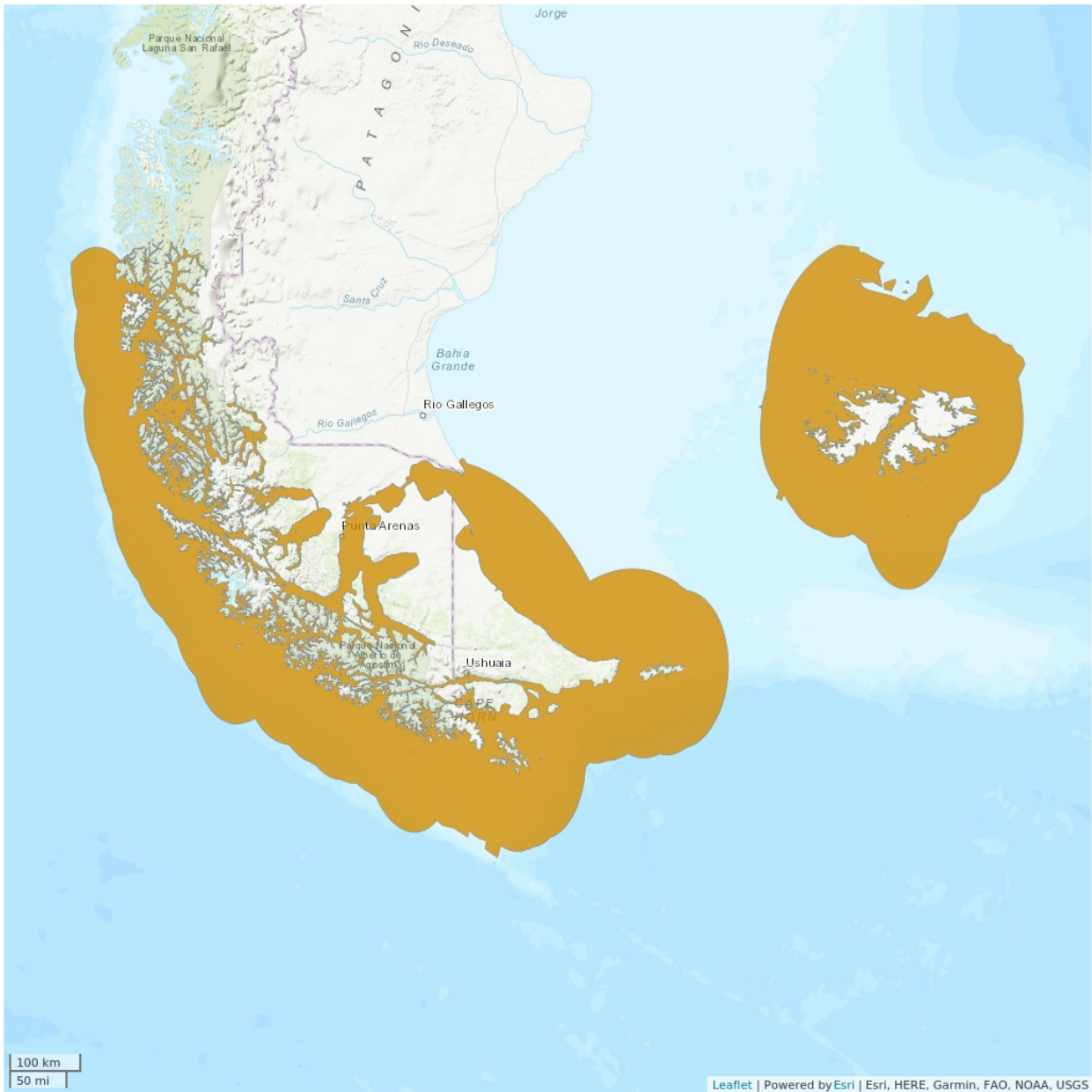
Native, Extant (resident): Argentina; Chile; Falkland Islands (Malvinas)

FAO Marine Fishing Areas:

Native: Atlantic - southwest

Native: Pacific - southeast

Distribution Map

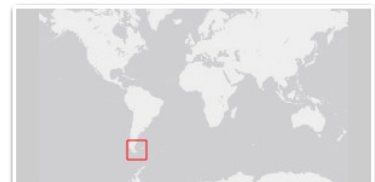


Legend

■ 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 not common. It has not been well-studied on the Atlantic coast of Argentina or in the Malvinas, but is present there, though it is uncommon. It has not been commonly observed during surveys in the Magellan Strait area, but this may be due to its nocturnal behaviour. It was occasionally caught during sampling by setting traps and nets at night in the early 1990s in the Beagle Channel. In 2014 and 2015, no larvae of this species were found in the Beagle Channel (Bruno *et al.* 2018). It may have been more abundant in the past. According to survey data and observations of fisher catches in Puerto Natales, in the 1980s, it declined from 49 individuals observed to 8 individuals and it declined from 10 individuals observed to 2 individuals in 1999-2000, which represents an 80% decline over the past 30 years (M. Hüne pers. comm. 2019).

Current Population Trend: Decreasing

Habitat and Ecology (see Appendix for additional information)

This benthic and benthopelagic species inhabits kelp forests and parts of fjords where salinity is low. It primarily consumes other fish (Hüne *et al.* 2018). The absence of haemoglobin in its blood restricts the species to waters with high oxygen concentrations and cold temperatures, and it does not easily tolerate changes in environmental conditions (Egginton *et al.* 2002, Grove *et al.* 2004, Eastman 2013). The maximum length is 35 cm and the length at first maturity is 20 cm. It has a low fecundity and late maturity (Calvo *et al.* 1999). Age at first maturity and longevity are not known. *Champscephalus gunnari* is not an appropriate direct proxy for estimating generation length because it grows to twice the size (60 cm) of *C. esox*. The longevity of *C. gunnari* is 15 years and age at first maturity is 3 years (Radtke 1990, Kock and Everson 1997) and one generation length is 9 years based on the following equation recommended by the IUCN Red List methods: $\text{Age at first reproduction} + (\text{Age at last reproduction} - \text{age at first reproduction})/2$. By inferring that the generation length for *C. esox* is less than *C. gunnari*, it is suspected one generation length for *C. esox* is between 4 to 6 years.

Systems: Marine

Use and Trade (see Appendix for additional information)

This species is not utilized, but is taken as bycatch in small, artisanal coastal fisheries that target *Eleginops maclouinus* over the past decade.

Threats (see Appendix for additional information)

In Puerto Natales, the variation in temperature and oxygen between summer and winter is already considerable, and considering this species is especially sensitive to such environmental changes, climate change is expected to have a major impact on its survival. The threat from competition and overlap with the invasive Chinook Salmon (*Oncorhynchus tshawytscha*) for food as well as the transfer of disease from consumption of salmon food pellets is not fully understood but is feasible (Hüne *et al.* 2018). Its occurrence as bycatch in artisanal fisheries may also impact its population.

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).

al. 2018). Research priorities include conducting additional surveys, life history and impacts from heat shock response. Studies on feeding ecology and genetics are underway.

Credits

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

Reviewer(s): Linardich, C. & Roa-Varón, A.

Contributor(s): Campagna, C.

Facilitator(s) and Compiler(s): Falabella, V., Linardich, C. & 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 -> 9.7. Marine Neritic - Macroalgal/Kelp | Resident | Suitable | 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 -> 5.4.3. Unintentional effects: (subsistence/small scale) [harvest] | Ongoing | Unknown | 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 | Unknown | Unknown | Unknown |
| | Stresses: | 2. Species Stresses -> 2.1. Species mortality | | |
| 8. Invasive and other problematic species, genes & diseases -> 8.1. Invasive non-native/alien species/diseases -> 8.1.1. Unspecified species | Ongoing | Unknown | Unknown | Unknown |
| | Stresses: | 2. Species Stresses -> 2.1. Species mortality 2. Species Stresses -> 2.2. Species disturbance 2. Species Stresses -> 2.3. Indirect species effects | | |
| 11. Climate change & severe weather -> 11.1. Habitat shifting & alteration | Ongoing | Whole (>90%) | Causing/could cause fluctuations | Medium impact: 7 |
| | Stresses: | 1. Ecosystem stresses -> 1.2. Ecosystem degradation 2. Species Stresses -> 2.1. Species mortality | | |
| 11. Climate change & severe weather -> 11.3. Temperature extremes | Ongoing | Whole (>90%) | Causing/could cause fluctuations | Medium impact: 7 |
| | Stresses: | 1. Ecosystem stresses -> 1.2. Ecosystem degradation 2. Species Stresses -> 2.1. Species mortality 2. Species Stresses -> 2.2. Species disturbance | | |

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 |
| 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 |
| 1. Research -> 1.3. Life history & ecology |
| 3. Monitoring -> 3.1. Population trends |
| 3. Monitoring -> 3.4. Habitat trends |

Additional Data Fields

| |
|---|
| Distribution |
| Lower depth limit (m): 250 |
| Upper depth limit (m): 0 |
| Habitats and Ecology |
| Continuing decline in area, extent and/or quality of habitat: Yes |
| Generation Length (years): 4-6 |

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