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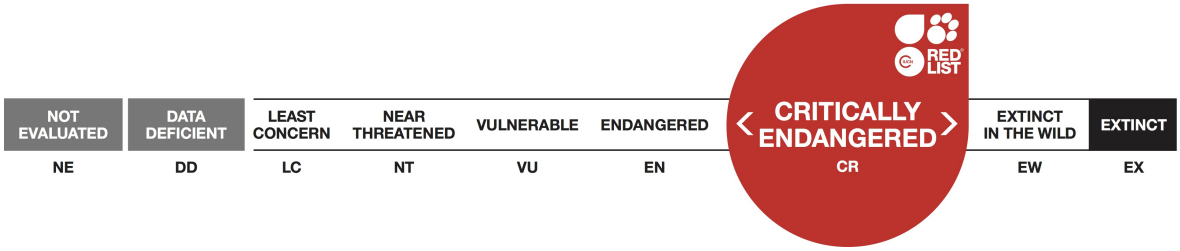
Scope: Global
Language: English

Gymnocharacinus bergii, Naked Characin

Assessment by: Cussac, V., Quiroga, S., Kacoliris, F., Povedano, H., Crichigno, S., Becker, L. & Baigún, C.



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Taxonomy

Kingdom	Phylum	Class	Order	Family
Animalia	Chordata	Actinopterygii	Characiformes	Characidae

Taxon Name: *Gymnocharacinus bergii* Steindachner, 1903

Synonym(s):

- *Gymnocharacinus bergi* Steindachner, 1903 [orth. error]

Common Name(s):

- English: Naked Characin

Assessment Information

Red List Category & Criteria: Critically Endangered B1ab(i,ii,iii,iv)+2ab(i,ii,iii,iv) ver 3.1

Year Published: 2019

Date Assessed: August 29, 2017

Justification:

The Naked Characin is assessed as Critically Endangered because its extent of occurrence (EOO) is estimated to be less than 40 km², its area of occupancy (AOO) is less than 10 km²; it is known from one threat-defined location and its population is considered to be severely fragmented; there is continuing decline in its EOO and AOO, in the extent and quality of its aquatic habitat in the headwaters of the Valcheta Stream, Argentina, and there is also a decline in the number of subpopulations.

Previously Published Red List Assessments

1996 – Endangered (EN)
http://dx.doi.org/10.2305/IUCN.UK.1996.RLTS.T40695A10337994.en

1996 – Endangered (EN)

1994 – Vulnerable (V)

1990 – Vulnerable (V)

1988 – Vulnerable (V)

1986 – Vulnerable (V)

Geographic Range

Range Description:

This species is known only from the headwaters of Arroyo Valcheta in the Somuncurá Plateau, an isolated basaltic plateau in the Río Negro Province, Argentinean Patagonia. Given exhaustive and extensive surveys conducted between 1993-1997 (Ortubay 1998) and between 2013-2017 (Kacoliris *et*

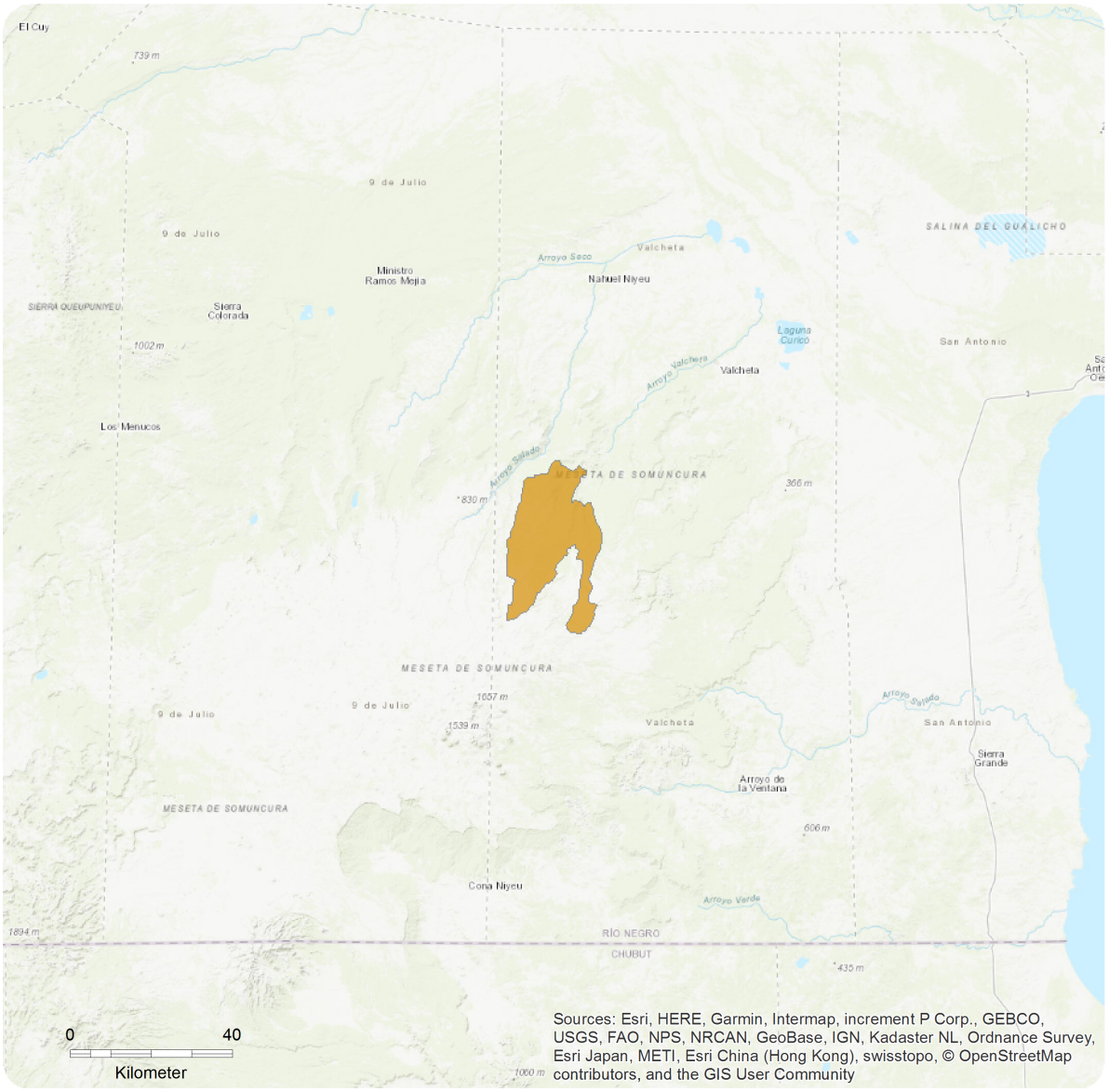
al. 2015, Quiroga, M.Sc. in prep), its distribution is considered as genuinely micro-endemic. This restricted range is in agreement with habitat preferences of this species. Since the headwaters of the Valcheta Stream originate from thermal springs, the water of the first 10 km approximately has high temperatures ranging, through the year, between 18 and 26°C. The Naked Characin is adapted to live in this type of environment, which is uncommon in Patagonian streams. Past and current observed occurrence for this species shows a decline in its range to less than a half of its historical known distribution, with an estimated extent of occurrence (EOO) of less than 40 km² and an area of occupancy (AOO) of less than 10 km². This decline is in coincidence with the increasing expansion in range of the exotic salmonid, the Rainbow Trout (*Oncorhynchus mykiss*), towards the headwaters of the stream since its introduction at the beginning of the 20th century (Macchi and Vigliano 2014). Such behaviour could be related to a rapid local adaptation and heritability for higher temperatures in juveniles of this population of Rainbow Trout (Crichigno *et al*. 2015, Quiroga *et al*. 2017). The Naked Characin is considered to occur in one threat-defined location, based on the ubiquitous presence of introduced salmonids in the basin that predate on this endemic fish (Quiroga *et al*. 2017), and a recently introduced species of characid (*Cheirodon interruptus*) that is thriving in the stream and is assumed to be a strong competitor for food and space with the Naked Characin (Perez *et al*. 2015).

Country Occurrence:

Native: Argentina (Rio Negro)

Distribution Map

Gymnocharacinus bergii



Range

Extant (resident)

Compiled by:

IUCN (International Union for Conservation of Nature)

NE DD LC NT VU EN CR CRITICALLY ENDANGERED EW EX

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

http://dx.doi.org/10.2305/IUCN.UK.2019-2.RLTS.T40695A119048712.en

Population

Although some sites still exist at the Valcheta Stream, where it is possible to find shoals of up to 300 individuals, they are isolated from other shoals distributed along the restricted range of this species. The lack of accurate density estimations precludes an estimate of the current population size. However, a decline in the distributional range of the species can be inferred when comparing previous and current surveys, suggesting a population decline. Moreover, observations made by Quiroga and Povedano (pers. obs.) confirm a change in the proportion of individuals of Naked Characin and *Cheirodon interruptus*, indicating that the Naked Characin is declining while *Cheirodon interruptus* is thriving. Given that the species has a very low dispersal ability, and the fact that it is restricted to only certain parts of the stream, its population is considered to be severely fragmented following IUCN definitions. The species is currently restricted to seven known subpopulations (five of them are very small, occupying an area of less than 0.5 km²). The flow of individuals between these subpopulations is very low or even absent, since the branches of the stream that could connect them are occupied by high densities of trout.

Current Population Trend: Decreasing

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

This species is adapted to live at warmer waters (21.5 to 26°C), preferring sites with flowing, clear waters in the headwaters of the stream (Ortubay *et al*. 1997). It has a gregarious behaviour. Larvae feed on ostracods, chironomid larvae and acari. Juveniles and adults with a grinding feeding apparatus, feed on perophitic algae (Escalante and Menni 1999). Ortubay (1998) observed a narrow range of feeding temperatures, concluding that individuals cannot feed at waters of less than 17°C. Maturity is reached at 37 mm TL in males and 38 mm TL in females. The breeding season occurs during late winter and early spring (August-October). Females present up to 200 oocytes (1.4 mm) rich in yolk (Ortubay and Cussac 2000).

Systems: Freshwater

Use and Trade

Records exist of individuals caught for illegal trade of this species for collectors (Ortubay and Cussac 2000).

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

The greatest known threats come from the presence of introduced salmonids (i.e., *Oncorhynchus mykiss*) that directly predate on Naked Characin (Ortubay and Cussac 2000, Quiroga *et al*. 2017) and an introduced characid (i.e., *Cheirodon interruptus*) that is assumed as a strong competitor for food and

space (Pérez *et al*. 2015), showing similar diet patterns (Escalante and Menni 1999). Other threats are the impact of cows, horses, sheep and goat livestock, that promote changes in environmental conditions given by water quality changes, change in meso-habitat structures, modification of riparian condition including bank erosion and vegetation removal and water pollution. In addition, sites where the fish was not recorded or it was recorded in low densities, were found to have exotic trees, whose roots reach the springs and stream shores, causing a change in the original habitat (Velasco *et al*. 2016). Other threats are related to water pumps, channelizations and dam development for water storage that could modify the geomorphic and hydrological conditions of the stream. Also, increasing temperature and decreasing snow in Patagonia as predicted by climate change for the current century (Core Writing Team *et al*. 2014) could promote a reduction in flow.

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

Conservation Actions in Place

The range of the species distribution is within the Somuncurá Provincial Reserve. Prior to 2012, there was limited management of this Reserve (Kacoliris *et al*. 2015). However, since 2013 the Wild Plateau Initiative has been working on in-situ efforts aimed at protecting this species and it has an agreement in place with the local protected area authorities (F. Kacoliris, S. Quiroga, pers. comm). A management plan for exotic fishes from the headwaters of the Valcheta Stream is currently being discussed and preliminary actions are planned to start at the end of 2017. In addition, a change in the legal framework is required to avoid new exotic species introductions and to support the removal of all exotic species.

Conservation Actions Needed

Additional recommendations include adopting urgent and concrete conservation measures that encompass the regulated use of streams, removal of exotic fishes, and protection of headwaters in the plateau. It is suggested that the existing management plan for the area be implemented, as well as the continuation of the activities of the Wild Plateau Initiative, inclusive of the development and implementation of a Species Action Plan.

Research Needed

More information is needed on this species' response to specific threats and a Population Viability Analysis (PVA) would be helpful for management purposes.

Credits

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Reviewer(s): Harrison, I.J.

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External Resources

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?
5. Wetlands (inland) -> 5.1. Wetlands (inland) - Permanent Rivers/Streams/Creeks (includes waterfalls)	Resident	Suitable	Yes
5. Wetlands (inland) -> 5.12. Wetlands (inland) - Geothermal Wetlands	Resident	Suitable	Yes

Threats

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

Threat	Timing	Scope	Severity	Impact Score
2. Agriculture & aquaculture -> 2.3. Livestock farming & ranching -> 2.3.2. Small-holder grazing, ranching or farming	Ongoing	Whole (>90%)	Rapid declines	High impact: 8
	Stresses:	1. Ecosystem stresses -> 1.1. Ecosystem conversion 1. Ecosystem stresses -> 1.2. Ecosystem degradation 1. Ecosystem stresses -> 1.3. Indirect ecosystem effects 2. Species Stresses -> 2.1. Species mortality 2. Species Stresses -> 2.2. Species disturbance 2. Species Stresses -> 2.3. Indirect species effects -> 2.3.5. Inbreeding 2. Species Stresses -> 2.3. Indirect species effects -> 2.3.7. Reduced reproductive success		
7. Natural system modifications -> 7.2. Dams & water management/use -> 7.2.3. Abstraction of surface water (agricultural use)	Ongoing	Minority (50%)	Rapid declines	Medium impact: 6
	Stresses:	1. Ecosystem stresses -> 1.1. Ecosystem conversion 1. Ecosystem stresses -> 1.2. Ecosystem degradation 1. Ecosystem stresses -> 1.3. Indirect ecosystem effects 2. Species Stresses -> 2.2. Species disturbance 2. Species Stresses -> 2.3. Indirect species effects -> 2.3.5. Inbreeding 2. Species Stresses -> 2.3. Indirect species effects -> 2.3.7. Reduced reproductive success		
8. Invasive and other problematic species, genes & diseases -> 8.1. Invasive non-native/alien species/diseases -> 8.1.2. Named species (Oncorhynchus mykiss)	Ongoing	Majority (50-90%)	Rapid declines	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 2. Species Stresses -> 2.3. Indirect species effects -> 2.3.2. Competition 2. Species Stresses -> 2.3. Indirect species effects -> 2.3.5. Inbreeding 2. Species Stresses -> 2.3. Indirect species effects -> 2.3.7. Reduced reproductive success		

8. Invasive and other problematic species, genes & diseases -> 8.1. Invasive non-native/alien species/diseases -> 8.1.2. Named species (Cheirodon interruptus)	Ongoing	Whole (>90%)	Unknown	Unknown
	Stresses:	2. Species Stresses -> 2.2. Species disturbance 2. Species Stresses -> 2.3. Indirect species effects -> 2.3.2. Competition 2. Species Stresses -> 2.3. Indirect species effects -> 2.3.7. Reduced reproductive success		
8. Invasive and other problematic species, genes & diseases -> 8.1. Invasive non-native/alien species/diseases -> 8.1.2. Named species (Jenynsia lineata)	Ongoing	Minority (50%)	Unknown	Unknown
	Stresses:	2. Species Stresses -> 2.2. Species disturbance 2. Species Stresses -> 2.3. Indirect species effects -> 2.3.2. Competition 2. Species Stresses -> 2.3. Indirect species effects -> 2.3.7. Reduced reproductive success		
8. Invasive and other problematic species, genes & diseases -> 8.1. Invasive non-native/alien species/diseases -> 8.1.2. Named species (Cnesterodon decemmaculatus)	Ongoing	Minority (50%)	Unknown	Unknown
	Stresses:	2. Species Stresses -> 2.2. Species disturbance 2. Species Stresses -> 2.3. Indirect species effects -> 2.3.2. Competition 2. Species Stresses -> 2.3. Indirect species effects -> 2.3.7. Reduced reproductive success		

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: Yes
In-Place Land/Water Protection and Management
Conservation sites identified: Yes, over entire range
Occur in at least one PA: Yes
Percentage of population protected by PAs (0-100): 91-100
Area based regional management plan: Yes
Invasive species control or prevention: No
In-Place Species Management
Harvest management plan: No
Successfully reintroduced or introduced beningly: No

Conservation Actions in Place
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: No

Conservation Actions Needed

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

Conservation Actions Needed
1. Land/water protection -> 1.1. Site/area protection
1. Land/water protection -> 1.2. Resource & habitat protection
2. Land/water management -> 2.1. Site/area management
2. Land/water management -> 2.2. Invasive/problematic species control
4. Education & awareness -> 4.2. Training
4. Education & awareness -> 4.3. Awareness & communications
5. Law & policy -> 5.1. Legislation -> 5.1.3. Sub-national level

Research Needed

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

Research Needed
2. Conservation Planning -> 2.1. Species Action/Recovery Plan

Additional Data Fields

Distribution
Estimated area of occupancy (AOO) (km^2): 10
Continuing decline in area of occupancy (AOO): Yes
Extreme fluctuations in area of occupancy (AOO): No
Estimated extent of occurrence (EOO) (km^2): 40
Continuing decline in extent of occurrence (EOO): Yes
Extreme fluctuations in extent of occurrence (EOO): No
Number of Locations: 1

Distribution
Continuing decline in number of locations: No
Extreme fluctuations in the number of locations: No
Lower elevation limit (m): 500
Upper elevation limit (m): 800
Population
Continuing decline of mature individuals: Unknown
Extreme fluctuations: No
Population severely fragmented: Yes
No. of subpopulations: 7
Continuing decline in subpopulations: Yes
Extreme fluctuations in subpopulations: No
All individuals in one subpopulation: No
Habitats and Ecology
Continuing decline in area, extent and/or quality of habitat: Yes
Generation Length (years): 1
Movement patterns: Not a Migrant
Congregatory: Congregatory (year-round)

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.