

Papiliolebias bitteri

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Taxonomy

Kingdom	Phylum	Class	Order	Family
Animalia	Chordata	Actinopterygii	Cyprinodontiformes	Rivulidae

Scientific Name: *Papiliolebias bitteri* (Costa, 1989)

Synonym(s):

- *Papiliolebias hatinne* Azpelicueta, Butí & García, 2009
- *Plesiolebias bitteri* Costa, 1989

Taxonomic Source(s):

Fricke, R., Eschmeyer, W.N. and Van der Laan, R. (eds). 2020. Eschmeyer's Catalog of Fishes: genera, species, references. Updated 04 May 2020. Available at: <http://researcharchive.calacademy.org/research/ichthyology/catalog/fishcatmain.asp>.

Assessment Information

Red List Category & Criteria: Vulnerable D2 [ver 3.1](#)

Year Published: 2022

Date Assessed: December 17, 2020

Justification:

Papiliolebias bitteri is considered Vulnerable. The number of subpopulations of this species are rapidly diminishing due to agricultural expansion and the quality of habitats is decreasing due to habitat modifications and pollutants from agriculture, also generating severe habitat fragmentation compromising the connectivity of subpopulations and its long term survival. It is thought that this could push the species to becoming Critically Endangered or Extinct in a very short time period.

Geographic Range

Range Description:

This species is endemic to the western Chacoan region (or semiarid chaco) in the Paraguay River basin, in Argentina and Paraguay. It is likely present in the Bolivian chaco although no official records exist yet for this species for that country.

Country Occurrence:

Native, Extant (resident): Argentina (Salta); Paraguay

Native, Possibly Extant (resident): Argentina (Formosa); Bolivia, Plurinational States of

Population

No data on the population trend of this species are available. However, given that most known subpopulations of this species are within areas with intensive agriculture and deforestation that particularly affect seasonal killifish and their habitat a decline in the population is expected. This species habitat is severely fragmented due to deforestation followed by intense agriculture and habitat modification, compromising the connectivity between subpopulations and their long-term survival.

Current Population Trend: Decreasing

Habitat and Ecology (see Appendix for additional information)

This species inhabits seasonal ponds that fill with rains during the summer (around December) and dry up in autumn (around March or April). It is found syntopically with other seasonal killifish species such as *Austrolebias monstrosus*, *A. wichi*, *A. vanderbergi*, *Trigonectes aplocheiloides* and *Neofundulus paraguayensis*. Many of those ponds where this species inhabits have disappeared due to habitat modification for intensive agriculture, such as soybean plantations. Also this agricultural expansion generates habitat fragmentation compromising subpopulations connectivity and long term survival of these subpopulations.

Systems: Freshwater (=Inland waters)

Use and Trade

This species is an object of the aquarium trade and is extracted from natural subpopulations.

Threats (see Appendix for additional information)

Many of the seasonal ponds that this species inhabits have disappeared or are suspected to have disappeared given that most of its distribution is within areas with extensive agriculture that severely affect seasonal killifish species, and many of those records are before the intense agricultural expansion that affected the Chacoan region, one of the most deforested regions in the world in the last decades. Seasonal killifish are very vulnerable to agricultural expansion and many subpopulations disappear as those seasonal ponds are commonly dried or filled for agriculture. Also, herbicides and pesticides and other chemicals from near crops end up in those ponds that are in the lower portions of the terrain resulting in severe negative impacts of these activities in this group of fish.

Conservation Actions (see Appendix for additional information)

No conservation actions are directed towards this species.

Credits

Assessor(s): Alonso, F.

Reviewer(s): Serra, W.S.

Bibliography

Alonso, F., Calviño, P.A., Terán, G.E. and García, I. 2016. Geographical distribution of *Austrolebias monstrosus* (Huber, 1995), *A. elongatus* (Steindachner, 1881) and *A. vandenbergi* (Huber, 1995)(Teleostei: Cyprinodontiformes), with comments on the biogeography and ecology of Rivulidae in Pamasic and Chaco floodplains. *Check List* 12(4): 1945.

Costa, W.J.E.M. 1989. Descrição de um gênero e duas espécies novas de peixes anuais do centro da América do sul (Cyprinodontiformes, Rivulinae). *Comunicações do Museu de Ciências da PUCRS, Série Zoologia* 2(10): 191-202.

Huber, J.H. 1995. Nouvelles collections de cyprinodontes paraguayens, avec description de 4 espèce rivulines inédites et redécouverte d'une espèce à la localité typique jusqu'alors indéterminée. *Association Killiphile Francophone de Belgique. Killi-Contact - Périodique bimestriel Spec. publ.*: 1-25.

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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?
5. Wetlands (inland) -> 5.8. Wetlands (inland) - Seasonal/Intermittent Freshwater Marshes/Pools (under 8ha)	-	Suitable	-

Use and Trade

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

End Use	Local	National	International
13. Pets/display animals, horticulture	No	Yes	Yes

Threats

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

Threat	Timing	Scope	Severity	Impact Score
2. Agriculture & aquaculture -> 2.1. Annual & perennial non-timber crops -> 2.1.2. Small-holder farming	Ongoing	Majority (50-90%)	Rapid declines	Medium impact: 7
2. Agriculture & aquaculture -> 2.1. Annual & perennial non-timber crops -> 2.1.3. Agro-industry farming	Ongoing	Whole (>90%)	Very rapid declines	High impact: 9
2. Agriculture & aquaculture -> 2.3. Livestock farming & ranching -> 2.3.2. Small-holder grazing, ranching or farming	Ongoing	Minority (<50%)	Slow, significant declines	Low impact: 5
2. Agriculture & aquaculture -> 2.3. Livestock farming & ranching -> 2.3.3. Agro-industry grazing, ranching or farming	Ongoing	Majority (50-90%)	Rapid declines	Medium impact: 7
4. Transportation & service corridors -> 4.1. Roads & railroads	Ongoing	-	-	Low impact: 3
4. Transportation & service corridors -> 4.2. Utility & service lines	Ongoing	-	-	Low impact: 3
5. Biological resource use -> 5.4. Fishing & harvesting aquatic resources -> 5.4.1. Intentional use: (subsistence/small scale) [harvest]	Ongoing	Minority (<50%)	Slow, significant declines	Low impact: 5
7. Natural system modifications -> 7.1. Fire & fire suppression -> 7.1.1. Increase in fire frequency/intensity	Ongoing	-	-	Low impact: 3

7. Natural system modifications -> 7.2. Dams & water management/use -> 7.2.3. Abstraction of surface water (agricultural use)	Ongoing	-	-	Low impact: 3
7. Natural system modifications -> 7.2. Dams & water management/use -> 7.2.7. Abstraction of ground water (agricultural use)	Ongoing	-	-	Low impact: 3
11. Climate change & severe weather -> 11.1. Habitat shifting & alteration	Ongoing	-	-	Low impact: 3
11. Climate change & severe weather -> 11.2. Droughts	Ongoing	-	-	Low impact: 3
11. Climate change & severe weather -> 11.3. Temperature extremes	Ongoing	-	-	Low impact: 3

Conservation Actions in Place

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

Conservation Action in Place
In-place research and monitoring
Action Recovery Plan: No
Systematic monitoring scheme: No
In-place land/water protection
Conservation sites identified: No
Percentage of population protected by PAs: 0
Area based regional management plan: No
Occurs in at least one protected area: No
Invasive species control or prevention: Not Applicable
In-place species management
Harvest management plan: No
Successfully reintroduced or introduced benignly: No
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 Action 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 -> 2.3. Habitat & natural process restoration
3. Species management -> 3.1. Species management -> 3.1.1. Harvest management
3. Species management -> 3.1. Species management -> 3.1.2. Trade management
4. Education & awareness -> 4.1. Formal education
4. Education & awareness -> 4.2. Training
4. Education & awareness -> 4.3. Awareness & communications
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 -> 5.3. Private sector standards & codes

Research Needed

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

Research Needed
1. Research -> 1.1. Taxonomy
1. Research -> 1.2. Population size, distribution & trends
1. Research -> 1.3. Life history & ecology
1. Research -> 1.4. Harvest, use & livelihoods
1. Research -> 1.5. Threats
1. Research -> 1.6. Actions
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
3. Monitoring -> 3.4. Habitat trends

Additional Data Fields

Distribution
Estimated area of occupancy (AOO) (km ²): 2512
Estimated extent of occurrence (EOO) (km ²): 67079
Number of Locations: 5
Continuing decline in number of locations: Unknown
Lower elevation limit (m): 129
Upper elevation limit (m): 283
Population
Population severely fragmented: Yes
Continuing decline in subpopulations: Yes
All individuals in one subpopulation: No
Habitats and Ecology
Continuing decline in area, extent and/or quality of habitat: Yes
Movement patterns: Not a Migrant

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