

Inclusion of Titicaca Water Frog *Telmatobius culeus* in Appendix I

Proponents: Plurinational State of Bolivia and Peru

Summary: The Titicaca Water Frog *Telmatobius culeus* is a totally aquatic frog occurring in Plurinational State of Bolivia (Bolivia) and Peru where its range is limited to Lake Titicaca (ca. 8500km² divided into the Minor Lake (2100km²) and the Major Lake (6450km²)), which straddles the Bolivian/Peruvian border, and a few nearby water bodies in Peru within an overall area of ca. 17,500km². It is sometimes referred to as the Titicaca Scrotum Water Frog on account of its loose skin. It is most frequently recorded in shallow water but has been observed at 100m depth¹. Generation time is taken as five years.

Estimating population size is difficult because of the size of Lake Titicaca and the difficulty of making observations in deeper parts of the lake. Two estimates from 2002 differed very significantly: one gave the population as ranging from 17 million (+/- 14 million) in the dry season to 51 million (+/-34 million) in the wet season; another estimated the population at 2.5 million, assuming presence to depth of 40m. Local estimates of population density have also varied greatly. One estimate in a sampled area in one part of Lake Titicaca calculated 0.57 adults and 1.63 frogs per m²². Most frogs were encountered at two to three metres depth, but the study did not assess occurrence below five metres. Another study³ found densities on the Bolivian side of the lake of 1.14 individuals per 100 m² in the Minor Lake and 2.05 in 100 m² in the Major Lake. Given these were made on the basis of short transects close to the shore and observations to two metre depth it does not seem reasonable to extrapolate numbers to the whole lake.

One 2008 report estimated a decline of ca. 40% in the population between 1999 and 2008 in the Bolivian part of the Minor Lake⁴. In areas monitored by the Bolivian Amphibian Initiative/Alcide d'Orbigny Natural History Museum project, the observed population has decreased by 70% from previous years in some locations.

Mass mortality events associated with algal blooms as a result of organic pollution occurred in the Minor Lake area in 2009, 2011 and 2015. It was concluded that *T. culeus* was no longer present over an area of 500km² following one such event in April and May 2015⁵. "Chytrid fungus" and ranavirus have been detected in the population, but there is no information on their impact. Virtually all information on potential impacts on the species comes from the Minor Lake. The largest city in the lake's catchment (El Alto, Bolivia) is in this part of the Lake, which is believed to be most affected by anthropogenic influences. The majority of the lake's water, notably in the Major Lake, is still clean.⁶

Despite harvest being prohibited, the species is known to be used nationally in both Bolivia and Peru; it is often made into a soup or blended into a juice believed to have medicinal and aphrodisiac properties. Frogs legs are served as an exotic dish, mainly for tourists. It appears that the bulk of harvest (estimated at around 55,000 a year) is for local consumption although there have been reports that harvest on the Bolivian side of the lake is occurring for use in the markets in Lima, Peru^{4, 7}.

Evidence for international trade other than the possible transboundary trade mentioned above is extremely limited. There have reportedly been two instances, in 2009 and 2016, of very small numbers of live individuals intercepted in Ecuador, reportedly en route to Europe. In Germany, one of the major countries in Europe where amphibians are kept, it is not known to be held in any private collections, nor is it held in any European zoo^{8, 9}. Evidence for export of the species for food is inconclusive. Data from the UN Comtrade Database reported one record of an import of 33,700kg of frogs' legs (HS code 020802) from Peru into France in 2002 but it is not possible to determine the species involved; and there is no indication that it was *T. culeus*.

This species is classified in the IUCN Red List as Critically Endangered (2004; needs updating).

Analysis: *Telmatobius culeus* does not have a restricted range. Estimates of its overall population vary widely, but the species clearly does not have a small population. There are indications of declines, some marked, in parts of Lake Titicaca, the lake which comprises the great majority of its range. All such information relates to the Minor Lake, which comprises around one quarter of the area of Lake Titicaca. There is no information on population trends in the Major Lake or the other water bodies where the species occurs, although anthropogenic impacts are lower in the Major Lake than in the Minor Lake. There are indications of some transboundary trade between Bolivia and Peru, but indication of any other international trade is extremely limited. There is, overall, insufficient information to determine whether the species meets the criteria for inclusion in Appendix I.

Reviewed: R. Melisch.

References:

Information not referenced in the Summary section is from the Supporting Statement.

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- ¹ Carnivora (2016) Titicaca Water Frog - *Telmatobius coleus*. <http://carnivoraforum.com/topic/10464453/1/>. Viewed on 1st July 2016.
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- ³ Flores López, V. (2013) *Preferencia de hábitat y densidad de Telmatobius culeus (Familia: Ceratophryidae) en el Lago Titicaca*. Tesis De Licenciatura, Universidad Mayor De San Andrés Facultad De Ciencias Puras Y Naturales Carrera De Biología.
- ⁴ Perez Bejar, M.E. (2009) *Telmatobius culeus*. In Ministerio de Medio Ambiente y Agua (2009). Libro rojo de la fauna silvestre de vertebrados de Bolivia. Ministerio de Medio Ambiente y Agua, La Paz, Bolivia.
- ⁵ Saravia, A.M. (2016) SOS Final Technical Report- *Telmatobius coleus*.
- ⁶ Shahriari, S. Urban population boom threatens Lake Titicaca. Available at: <https://www.theguardian.com/environment/2012/jan/12/urban-population-boom-lake-titicaca>. Viewed on 6th July 2016.
- ⁷ Munoz Saravia, A. (2016) *In litt.* to IUCN/ TRAFFIC Analyses Team, Cambridge, UK.
- ⁸ Lutzmann, N. (2016) *In litt.* to R. Melisch, TRAFFIC, Germany.
- ⁹ Wirth, R., Schratte, D. Dollinger, P., Janzen, P., Klös, H., Ziegler, T., Schmidt, F. (2016) All *In litt.* to R. Melisch, TRAFFIC, Germany.