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Assessing the status of a recently discovered endemism from the floodplains of the lower Tagus River (western Iberian Peninsula)

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The freshwaters of the western Iberian Peninsula are home to a considerable diversity of native fishes dominated by small to medium sized cyprinids (c. 17 species out of 66). In-depth studies of such diversity are still revealing many new species to science, although some are in fact very old residents in Iberian freshwaters. One such species is the Lisbon arched-mouth nase, *Iberochondrostoma olisiponensis* (Figure 1). First discovered in 2006 from tributaries of the lower Tagus River basin, the species was formally described in 2007 as *Chondrostoma olisiponensis* (Gante *et al.*, 2007) but was later proposed to be included in the genus *Iberochondrostoma* (Sousa-Santos *et al.*, 2014). Despite its recent discovery, phylogenetic studies established it as an old species, having diverged from its closest relatives around 10 million years ago (Gante *et al.*, 2010). Another remarkable feature of this small cyprinid, uncommon among its European relatives, is its sexual dimorphism with males having longer pelvic fins than females (Gante *et al.*, 2007). The function of the extended pelvic fins in males is still unknown but it may be associated with courtship and spawning.



Figure 1 - *Iberochondrostoma olisiponensis* (voucher MB05-2198, MUHNAC – Lisbon, Portugal), paratype, female, 98.6 mm standard length, lateral view. Photo by H.F. Gante.

This remarkable species has a very restricted distribution range. Despite many surveys conducted in the lower Tagus tributaries, the presence of the Lisbon arched-mouth nase has been detected only in three small river basins (Gante *et al.*, 2007). Indeed, the extent of occurrence of this species is estimated to be less than 10 km² with an area of occupancy of about 3 km² in the rivers where its presence has been confirmed. The current distribution of *I. olisiponensis* is also highly fragmented, likely with little or no contact between populations. This situation is of conservation concern since replenishment from neighboring populations in the event of localized depletion is limited or even impossible. Localized depletion may already be occurring in one of the populations of *I. olisiponensis* (i.e. Rio Trancão) where the species' abundance is known to be declining since the late 1990s (Gante & Santos, unpublished data). There are also two other rivers where the species has not been recently detected but where historical records indicate its former occurrence. For all the above reasons, the Lisbon arched-mouth nase was classified as critically endangered by the IUCN in 2012, and requires urgent conservation efforts (Gante *et al.*, 2012).

Threats to the short-term survival of the Lisbon arched-mouth nase likely come from human-induced pressure. The species seems to be associated with floodplain areas that are presently under intensive agricultural practices and continued human development (e.g. industrial, domestic and agricultural pollution, introduction of exotic species, and land reclamation). These threats are especially problematic during extreme drought events, which lead to an overall degradation of habitat quantity and quality. An additional threat to the integrity of this species is its hybridization with another critically endangered sympatric relative, the Portuguese arched-mouth nase *Iberochondrostoma lusitanicus* (Crivelli, 2006; Gante *et al.* 2010; Sousa-Santos *et al.* 2014). Continued introgression of *I. olisiponensis* into this comparatively more abundant relative, *I. lusitanicum*, could lead to its genetic dilution.

An *ex-situ* conservation program was initiated in 2008, and successful reproduction in captivity has since been achieved for *I. olisiponensis*. The *ex-situ* stock of individuals has been maintained and grown to the present day. Also, monitoring efforts have been developed in one of the populations (i.e. River Trancão) and have confirmed its pronounced declining trend. Recently, a research project was initiated to evaluate extensively the current status of the three known populations of *I. olisiponensis*, and to conduct exhaustive field surveys aiming at establishing the full distribution range of the species and detecting possible additional populations. Also, the project aims to raise awareness of the public at large for the existence of this remarkable species, and to develop adequate conservation efforts ensuring its long-term survival. All the data collected will constitute the basis to propose the first dedicated conservation areas (i.e. sanctuaries) for the Lisbon arched-mouth nase, as well as to inform future actions aiming at reverting the current decline of their abundance and potential loss of genetic diversity. For further information, check the project website at <https://iberochondrostomaolisiponensis.wordpress.com/> and follow us on Twitter (@olisiponensis) for live updates.

References

- Crivelli, A.J. (2006). *Iberochondrostoma lusitanicus*. The IUCN Red List of Threatened Species 2006: e.T60791A12398911. <http://dx.doi.org/10.2305/IUCN.UK.2006.RLTS.T60791A12398911.en>. Downloaded on 27 April 2016.
- Gante, H.F., Santos, C.D. and Alves, M.J. (2007). A new species of *Chondrostoma* Agassiz, 1832 (Cypriniformes: Cyprinidae) with sexual dimorphism from the lower Rio Tejo Basin, Portugal. *Zootaxa* **1616**, 23-35.
- Gante, H. F., Santos, C. D. and Alves, M. J. (2010). Phylogenetic relationships of the newly described species *Chondrostoma olisiponensis* (Teleostei: Cyprinidae). *Journal of Fish Biology* **76**, 965-974.
- Gante, H., Santos, C.D., Alves, M.J. & Rodrigues, J. 2012. *Iberochondrostoma olisiponensis*. The IUCN Red List of Threatened Species 2012: e.T13160676A13160751. <http://dx.doi.org/10.2305/IUCN.UK.2012-1.RLTS.T13160676A13160751.en>. Downloaded on 27 April 2016.
- Sousa-Santos, C., Gante, H., Robalo, J., Cunha, P.P., Martins, A., Arruda, M., Alves, M. J. and Almada, V. C. 2014. Evolutionary history and population genetics of a cyprinid fish (*Iberochondrostoma olisiponensis*) endangered by introgression from a more abundant relative. *Conservation Genetics* **15**, 665–677.