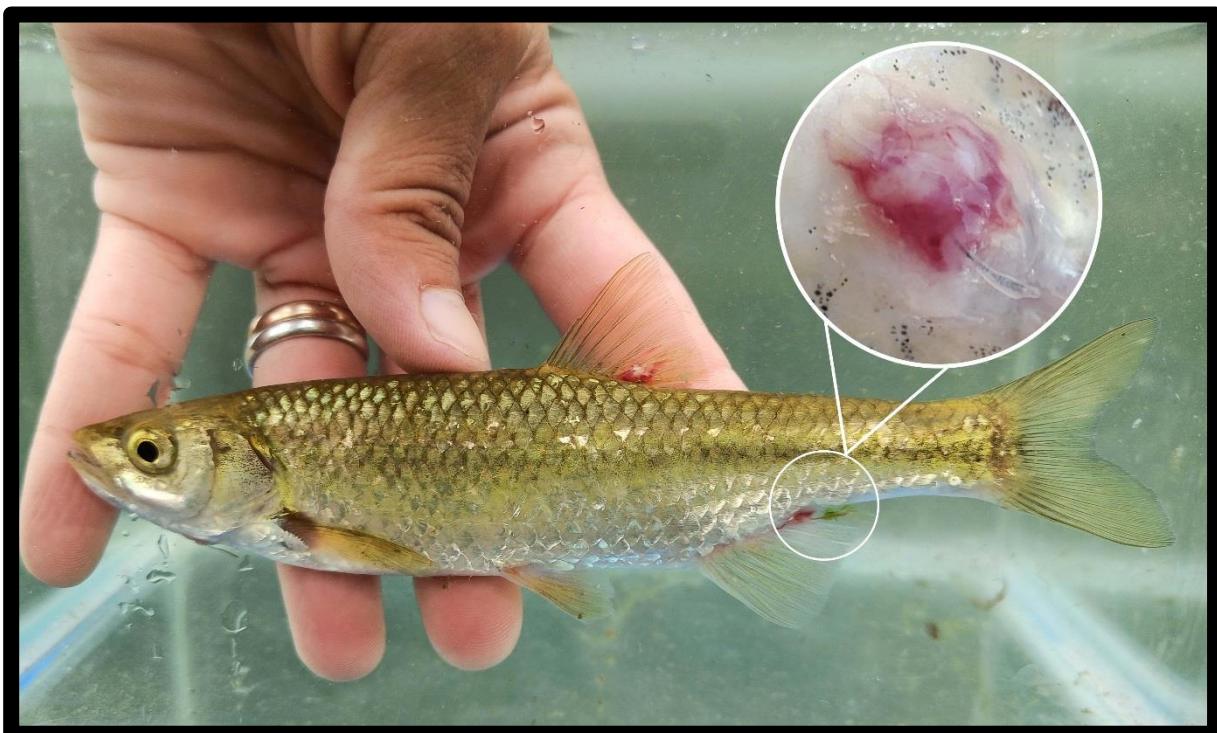


FISHPIC

External parasites: how anchor worms affect Iberian endemic fish

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Lernaea cyprinacea, commonly known as anchor worm, is a cosmopolitan invasive copepod that parasitizes a wide variety of freshwater fish, including several native and endemic species of the Iberian Peninsula (Sánchez-Hernández 2017), like the *Squalius alburnoides* from the Guadiana River basin depicted in the photograph, with 3 different individuals attached.

Anchor worm was introduced to Iberia from Asia in the 1970s (Simon Vicente et al. 1973). While males are free-living, adult females attach their anchors – a modification of the head – to the fish host, usually in the fins, gills or mouth. Infestation by this external parasite is easily recognised by the wounds, ulcers and inflammatory processes that it induces in the fish skin and muscle (Hossain et al. 2018, see photograph). It may also induce anaemia, malformations, reduced growth and increased susceptibility to secondary infections (Sánchez-Hernández 2017). Small fish are specially affected in their swimming ability, respiration and health condition due to infections and mechanical compression of internal organs, both resulting from the ulcerous skin lesions developed at anchoring sites (Guagliardo & Tanzola 2016).

Since infestation prevalence are hypothesised to be positively correlated with higher water temperatures (Marcogliese 2001), outbreaks are expected to increase in intermittent southern Iberian rivers under a global climate change scenario (Macedo-Veiga et al. 2019), which will likely contribute to the aggravation of the conservation status of the already imperilled native fish species. Although broader studies are needed, reported prevalences are higher in native Iberian fish than in sympatric alien species (Macedo-Veiga et al. 2019).

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