

The first record of the Monkey goby *Neogobius fluviatilis* (Pallas, 1814) (Pisces: Gobiidae) in Slovenia

Prva opisana najdba rečnega glavoča *Neogobius fluviatilis* (Pallas, 1814) (Pisces: Gobiidae) v Sloveniji

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The first confirmed presence of the Monkey goby fish species, *Neogobius fluviatilis* (Pallas, 1814) in Slovenia has been recorded in August 2021. During regular Fisheries Research Institute of Slovenia surveys, nine individuals were caught in Ledava River within Murska šuma near the town Pince (Lat: 46.500556, Lon: 16.531944). Ledava River is lowland watercourse with minimal discharge of 0,145 m³/s recorded at Čentiba station in 2003 (ARSO 2022).

The Monkey goby species can be distinguished from related species by the length of the first branched ray in the secondary dorsal fin (Kotelat & Freyhoff 2007). The first branched ray is twice as long as the penultimate ray. In 2022, specimens from Ledava River were also genetically confirmed at the Chair of Genetics, Animal Biotechnology and Immunology at

Biotechnical Faculty, University of Ljubljana (Sušnik S., pers. comm.). In a 100 m long river transect with an average water depth of 0.7 m and wetted width of 5 m, the specimens were caught using the electrofishing backpack sampling method. Specimens measured from 39 to 65 mm in total length, while it is reported that Monkey goby can reach from 100 mm to 200 mm in length (Kotelat & Freyhoff 2007; Placha et al. 2010; Grabowska 2011; Staszny et al. 2022). In the Ledava River, Monkey gobies were found in runs, hidden under stones and rocks, which represented the dominant substrate fraction (60%) of the riverbed. This is rather surprising, as the species is considered to spend most of its time on sandy substrates (Kotelat & Freyhoff 2007). However, the recent book on invasive animal species in Hungary suggest that monkey gobies actually prefer stony bottoms, and their presence on sandy bottoms is a consequence of competition with sister species (Staszny et al. 2022). Monkey goby lives up to 5 years and it spawns for the first time in the second year (Smirnov 1986; Kotelat & Freyhoff 2007). Females can spawn a few times per season. Adhesive eggs are deposited on stones, shells and/or aquatic plants. During the spawning season, from April to July, locally until September, males have a completely black body with yellow fin-margins (Kotelat & Freyhoff 2007). The male guards the nest aggressively and takes care of the offspring until it hatches (Pinchuk et al. 2003). Gobies are generalists, as well as omnivores and mostly feed on benthic invertebrates (Kotelat & Freyhoff 2007). Larger specimens can become piscivorous and feed on smaller fish or fish fry.



Figure 1. Monkey goby (*Neogobius fluviatilis*) from Ledava River (photo: L. Mrzelj).

Slika 1. Rečni glavoč (*Neogobius fluviatilis*) iz reke Ledave (foto: L. Mrzelj).

The Monkey goby belongs to the Ponto-Caspian goby group. The initial distribution area of the species is Eastern Europe (Povž 2016); the Black, Azov, Marmara Sea Basins and the Caspian Lake. These goby species have already been recorded in the 90s of the 20th Century spreading across Northern and Western Europe (Povž 2016). The increased expansion range of the species is strongly attributed to a large human contribution. The Ponto-Caspian gobies expansions are accelerated due to watercourse transportation industry and habitat degradation. Gobies can spread over long distances in waterbodies via ship transportation (Anheit et al. 1998). Consequently, some authors describe their range expansion as invasive (Kotelat & Freyhoff 2007). In 1970, the Monkey goby was introduced into the Lake Balaton in Hungary (Kotelat & Freyhoff 2007). In 2006, Veenvliet and Veenvliet described that the species has dispersed along the Danube River, reaching Croatia. In 2022, the species was recorded in Drava and Mura River systems (Rauch 2022) from where it could successfully reach lower stretches of the Ledava River. Until today, the presence of two Ponto-Caspian goby species was confirmed in Slovenia; the Monkey goby in Ledava River in 2021 and the Bighead goby in Sava River near Obrežje in 2016 (Povž 2016). »Monkey goby« occurrence for Sava River including tributaries Sora, Ljubljanka, Mirna, Krka, Kolpa and Savinja (Simonović et al. 2015) cannot be considered as reliable, since there is no reference or field data, which could confirm the recorded find. Therefore, Ledava River can be considered as the first recorded find of Monkey gobies in Slovenia. Considering Ponto-Caspian gobies expansion trends, we can expect an increase of species finds and records of more specimens in Slovenia in the near future.

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