



## ***Ameiurus melas* - an invasive species in Țaga Mare Lake, Cluj County, Romania**

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**Abstract.** This paper aims to record the presence of the black bullhead (*Ameiurus melas*) in Țaga Mare Lake, Cluj County, Romania. In the research, 63 specimens were captured in April-May 2020, by angling techniques. The fish were identified based on the shape of the pectoral spine. The fish has been captured by many sport fishermen in 2020, with some unrecorded reports, in smaller numbers, in 2019. Specimens between 3 and 320 g were captured. Some bigger specimens were dissected and ovaries were visible, suggesting that the species spawns in the lake. Further studies regarding the species in Țaga Mare Lake will be conducted.

**Key Words:** black bullhead, spawning, weight.

**Introduction.** The black bullhead, *Ameiurus melas* (Rafinesque, 1820) is a representative of the Ictaluridae family. It is considered an invasive species in Europe (Zogaris 2017). In Romania, it can be found in many waters, both lakes and rivers (Păpuc et al 2018). The impact on local fauna is not extensively studied, however, the fish presents a more aggressive behavior than many indigenous fish species and could influence local populations. This presents a problem for natural environments, but also for fish farms (Garcia-de-Lomas et al 2009).

In Romania, the status of the fish is unknown, mainly because the 2 invasive species of the Ictaluridae family, *A. melas* and *Ameiurus nebulosus*, are often mistaken, an issue also existing at an European level (Păpuc et al 2018). Moreover, there is the common belief that the 2 species are actually a single species in the non-scientific community, making the identification based on simple sightings near impossible. One distinct character are the serrations on the pectoral spine, being more dull in *A. melas*.

Țaga Mare lake (Figure 1) has 111 ha, with the maximum depth of approximately 4 m. It is part of Fizeș River catchment, being a protected site (Government Decision no. 1284/2007) due to the avifauna present in the area. The lake was a fish farm, employing a policulture system for most cyprinids (*Cyprinus carpio*, *Carrassius gibelio*, *Ctenopharyngodon idella*, *Hypophthalmichthys molitrix*, *Abramis brama*) and some predator species (*Esox lucius*, *Sander lucioperca*). In recent years, the main activity was angling.

The aim of this paper is to record the presence of *A. melas* in Țaga Mare lake, the fish being first observed here in 2020.

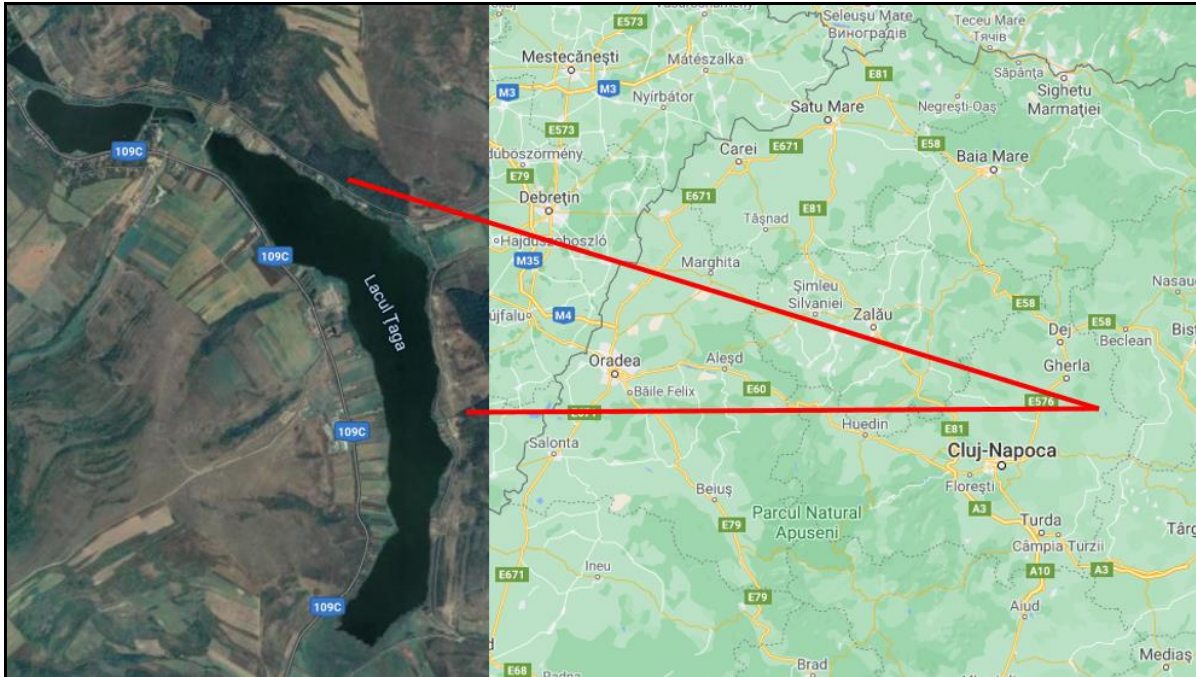


Figure 1. Țaga Mare lake, Cluj County, Romania. Source: <https://www.google.ro/maps>.

**Material and Method.** In April-May 2020 more and more fishermen started to capture what they called “catfish”, in Țaga Mare lake. As wels catfish (*Silurus glanis*) lives in the lake, but is not a common occurrence, more investigations were needed. Moreover, the size of the specimens were all small for wels catfish. Thus, some fishermen were asked when they started to catch the fish, if they caught it in previous years, and the size of the captured specimens.

The method used to capture fish was angling, being the only acceptable method of sampling in this private lake. Feeder fishing, float fishing and fishing with lead sinkers were employed. A large array of baits, from sweetcorn to deadbait, live fish, earthworms, fly larvae, pop-ups, wafers, dumbbells, and others were used.

The identity of the Ictaluridae fish was determined based on the shape of the pectoral spine. Some specimens were also weighted and dissected.

**Results and Discussion.** A number of 63 specimens of *A. melas* were captured (Figure 2). They were captured from depths ranging from 0.3 to 1.6 m, near the shore but also further to the central section of the lake. As the lake was not sampled exhaustively, it is very probable that the fish is present in all sections of the lake. The preferred bait was any type of bait with a high content of protein, especially deadbait, confirming its scavenging potential (Preisznér et al 2020), but the fish were also captured with sweetcorn or baits usually used for carp fishing, with fruity aroma. This shows the opportunistic character of the fish, preying on any edibles found.

The weight ranged from 2.98 g to 321.35 g. According to other fishermen and some personal observations, the species was not present before 2019, with few and small specimens, under 60-70 g, being captured in 2019. However, in 2020, many specimens were captured. The dissected specimens presented ovaries, suggesting that the fish is spawning in the lake. Moreover, large shoals of fry were observed slowly swimming at the surface of the water, confirming the behavior seen by other authors (Figure 3). The dissections confirming the spawning period from May to July, as presented by Dennison & Bulkley (1972).



Figure 2. *Ameiurus melas* captured with deadbait from Țaga Mare lake, Romania.



Figure 3. Shoal of *Ameiurus melas* fry. Source: Remi Mason, <https://www.naturepl.com/stock-photo-shoal-of-black-bullhead-ictalurus-melas-in-a-lake-alps-france-image01587204.html>.

There is not much surprise in finding the species in Țaga Mare lake. Unpublished reports and personal observations of Ictaluridae in the area are common. Upstream, in lake Geaca, the fish was observed from 2015-2016, while higher upstream, in lake Cătina, the fish is frequent occurrence since before 2010. However, the Ictaluridae in the mentioned lakes were not identified based on the pectoral fin, so some reservation is maintained.

Some accounts and investigations of *A. nebulosus* exist in the area (Popescu et al 2015; Cocan et al 2018; Cocan et al 2020), but new investigations should be conducted, especially to establish the correct distribution of both species. This effort is also observed at European level. Fizeș River connects these and more lakes in the area, so the fish can easily invade new territories. There are 2 theories on how the fish first arrived in the area. The first theory proposes an upstream migration from Someș River, to Someșul Mic River, to Fizeș river and in the lakes. This could be possible, because the fish was previously reported in Someș River (Păpuc et al 2018). The second theory is that it could have arrived from other ponds, when Țaga Mare lake was stocked with carp and other fish. This is also possible, as a perfect selection is not always made when catching fish for restocking.

**Conclusions.** The black bullhead *A. melas* is extending its territory in Romanian waters. Many specimens were found in Țaga Mare lake in 2020, from fry to sexually mature adults. It is presumed that the fish has been present in the lake since 2018 or 2019. Further studies are needed to investigate the status of the fish in its new habitat and ecological impacts.

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