

*Presence of the introduced Eurasian Ruffe (*Gymnocephalus cernuus*) in Mandra water reservoir (Burgas, Southeastern Bulgaria)*

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Abstract. In the present study, we report on the Eurasian Ruffe (*Gymnocephalus cernuus*) in the Mandra Lake at City of Burgas. This is the only water basin in southeastern Bulgaria that is known to be inhabited by the species. The Eurasian Ruffe was detected in Mandra Lake for the first time in 1998; since then, there has been no information concerning the local population. We captured two adult *G. cernuus* in the winter of 2020 and propose these specimens represent a permanent viable population. In this study, we report the first specimens registered by professional biologists, thus confirming the data acquired by sports fishermen over the years.

Key words: hydrobiology, ichthyofauna, invasive species.

Introduction

In Bulgaria, the Eurasian Ruffe [*Gymnocephalus cernuus* (Linnaeus, 1758)] is originally distributed in the Danube River, its adjacent marshlands, and mouths of some of its tributaries (Drensky, 1951; Sivkov, 1988). According to Chichkoff (1934), the presence of the Ruffe in the Kamchia River is the southernmost border of its natural distribution. However, it has been accidentally introduced in some reservoirs of Bulgaria, including Stamboliiski, Montana, Yastrebino, and Sopot. These belong to the Danube River catchment area (Vassilev & Pehliyanov, 2005).

Two specimens were registered in the southwestern parts of Bulgaria – in the Studena reservoir, supplied by the Struma, Matnitsa,

Kladnica, and the carst spring Vreloto, (Stefanov & Vassilev, 2006). Later research by Petriki et al. (2015) confirmed the presence of *G. cernuus* southward of the Studena reservoir in the waters of Struma River, reaching the Kerkini Dam Lake in Greece. The authors argue this is the southernmost point in which that fish was recorded.

To date, the Eurasian Ruffe was recorded only once in southeast Bulgaria. The presence of *Gymnocephalus cernuus* in Mandra Lake was detected in 2002 by Stoyan Mihov (see Stefanov & Vassilev, 2006). However, the specimens described by these authors were captured by local fishermen and not by the scientists. In the present publication, we confirm the presence of the species in this water basin.

Materials and Methods

On the 11-th of February, 2020, in the shallows of Mandra Lake, we captured two specimens of the Eurasian Ruffe (Figure 1). Both specimens were registered near the exhaustion pipes of a pumping station (N42.4436; E27.4235, datum WGS 84), which ejected warm waters and attracted an enormous amount of local fish (predominantly Cyprinids). Our specimens were

the first caught directly by our research team, thus confirming the information provided by Stoyan Mihov. The specimens were almost equal in size with the following standard length measurements: total length of 132.1 and 131.4 mm, fork length 128.2 and 125.8 mm, standard length of 129.9 and 118 mm, head length of 40.1 and 37.9 mm, snout length of 13.6 and 19.5 mm, body depth of 31.6 and 30.2 mm.



Figure 1. Two specimens of the Eurasian Ruffe (*Gymnocephalus cernuus*) were captured on February 20th, 2020, in Mandra Lake (Burgas, southeastern Bulgaria)

Results and Discussion

The origin and establishment of *G. cernuus* population in Mandra Lake is a result of the mass fish stocking practiced in Bulgaria during the last decades of the 20th century (Mihov S, personal observations). These activities were performed without proper planning and deep analysis of the possible impact on the ecology. The Eurasian Ruffe possesses a high potential for biological invasions (see Newman et al., 2020). Once estab-

lished, the invasive Ruffe disrupts interactions among native organisms and may outcompete the native fish for resources due to niche overlap and diet plasticity. It also consumes fish eggs (especially those of *Coregonus* spp.) and preys on young-of-the-year fish (for an overview, see Gutsch & Hoffman, 2016). In the case of our study, the population of *G. cernuus* in Mandra Lake thrived for more than 20 years, which indicates the plasticity of this species to adapt to

the new environment. In this relation, rather puzzling is the species' tendency to become endangered in some of its native regions (Jůza et al., 2017).

Conclusions

The present note aims to inform the academia, the regional authorities in Burgas, and the local fishermen about the potential impact that *G. cernuus* may have on the ecology of the Mandra water reservoir. Under some environmental circumstances, the Eurasian Ruffe's presence may lead to the decline of native freshwater fish fauna. Further work must be carried out to collect more information concerning the population dynamic of the invasive species in Mandra Lake and the other Burgas lakes. These aquatic systems are crucially important for biodiversity both on regional, as well as on European level, however they are constantly under severe ecological pressure.

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