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NEW DATA ABOUT THE DISTRIBUTION OF *PHOXINELLUS ALEPIDOTUS* (HECKEL, 1843) AND *AULOPYGE HUEGELII* (HECKEL, 1841)

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This paper presents recent found localities for species *Phoxinellus alepidotus* (Heckel, 1843) and *Aulopyge huegelii* (Heckel, 1841) in Bosnia and Herzegovina. Found localities are at the highest altitude ever detected and the locality for the species *A. huegelii* Hec. is the first ever for the Black Sea basin. The species *P. alepidotus* Hec. and *A. huegelii* Hec. were probably unintentionally introduced to the Šatorsko Lake during the 1970s and 1980s while other species of trout were being introduced.

Key words: *Phoxinellus alepidotus* Hec., *Aulopyge huegelii* Hec., distribution area, Šatorsko Lake, Bosnia and Herzegovina

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U radu se navode nedavno otkriveni lokaliteti za vrste *Phoxinellus alepidotus* (Heckel, 1843) and *Aulopyge huegelii* (Heckel, 1841) u Bosni i Hercegovini. Ti lokaliteti nalaze se na najvećoj nadmorskoj visini dosada, a lokalitet za *A. huegelii* je prvi za crnomorsko slivno područje. Vrste *P. alepidotus* Hec. i *A. huegelii* Hec. Vjerojatno su slučajno unesene u Šatorsko jezero tijekom sedamdesetih i osamdesetih godina 20. st., za vrijeme unošenja drugih vrsta pastrva.

Ključne riječi: *Phoxinellus alepidotus* Hec., *Aulopyge huegelii* Hec., rasprostranjenosti, Šatorsko jezero, Bosna i Hercegovina

INTRODUCTION

The distribution of the species *P. alepidotus* and *A. huegelii* is still insufficiently explored, especially in the area of Bosnia and Herzegovina. Both species are endemic to the Croatian fauna as well as to the fauna of Bosnia and Herzegovina. The distribution area of *P. alepidotus* and *A. huegelii* extends across the karst area of the Dinarides in Croatia and Bosnia and Herzegovina. *P. alepidotus* is dominantly distributed in the area of the Adriatic basin (HECKEL & KNER, 1858; TALER, 1953; VUKOVIĆ, 1963, 1977a, 1977b; VUKOVIĆ & IVANOVIĆ, 1971; POVŽ *et al.*, 1990; ŠKRIJELJ & SOFRADŽIJA, 1990; ŠKRIJELJ, 2002, ZUPANČIČ & BOGUTSKAYA, 2000). The first evidence of the presence of the species *P. alepidotus* in the Black Sea basin (the Danube basin) was detected by MARIĆ (1980) for the Struga River near Bosansko Grahovo in Resenovačko polje. ZUPANČIČ & BOGUTSKAYA, 2000, provided complete information on the distribution of the mentioned species. Morphological characteristics of species are presented by various authors (HECKEL & KNER, 1858; VUKOVIĆ *et al.*, 1970; VUKOVIĆ & IVANOVIĆ, 1971; VUKOVIĆ, 1977b, 1982; MARIĆ, 1980; 1983).

According to ŠORIĆ & BANARESCU (1999) the endemic *A. huegelii* occurs in Bosnia and Herzegovina in rivers in the area of Glamočko polje, Livanjsko polje and Duvanjsko polje as well as in lakes of Buško blato and Blidinjsko Lake. In Croatia, the species is present in parts of the Cetina and Krka river basins. All these data indicate that *A. huegelii* has never been detected for the Black Sea basin.

Fig. 1. The locality of Šatorsko Lake in Bosnia and Herzegovina.

Fig. 2. The Šatorsko Lake.

STUDY AREA

Šatorsko Lake near Bosansko Grahovo was chosen as the study area. Šatorsko Lake is of glacial origin, and is situated in the Šator Mountain at 1450 a.s.l. in Bosnia and Herzegovina (Fig. 1, Fig. 2). The lake is 337 meters long with a maximum width of 127 meters. Šatorsko Lake is 8 meters deep and its bottom is covered with *Potamogeton alpinum.* According to hydrological features, Šatorsko Lake originated from precipitation waters and a number of springs. The lake flows into the Unac River, which is a tributary of the Una River, and accordingly this lake belongs to the Black Sea basin.

MATERIAL AND METHODS

Material was collected in the area of Šatorsko Lake near Bosansko Grahovo in August 2003 and 2004 using small aquarium fish nets. The collected specimens were preserved in 96%-ethanol and deposited in the zoological collection in the Teacher Training Academy of the University of Zagreb. Material was determined according to VUKOVIĆ (1963), VUKOVIĆ & IVANOVIĆ (1971) and ŠORIĆ & BANARESCU (1999).

RESULTS AND DISCUSSION

During two field trips to Šatorsko Lake in August 2003 and 2004 over 40 specimens of *P. alepidotus* and 2 specimens of *A. huegelii* were collected. These two spe-

cies were the only species observed in Šatorsko Lake. The finding sites are at higher altitude ever detected for these species and the locality for the *A. huegelii* Hec. is the first record for the Black Sea basin.

Previously the species *P. alepidotus* was found at several localities. According to MARIĆ (1986) *P. alepidotus* was collected in Ždralovac Lake at the foot of the Šator Mountain. In 1981 MARIĆ also collected 10 specimens in ponds in Luka village on Šator Mountain, as well as in the pond (stocked with heterochthonous fish species) near Marinkovci village and two ponds near Bosansko Grahovo in the direction of Livno (also stocked with heterochthonous fish species).

For *A. huegelii*, according to MARIĆ (1986) there is only one known locality: Ždralovac Lake at the foot of Šator Mountain.

The species *P. alepidotus* and *A. huegelii* were probably unintentionally introduced to the Šatorsko Lake during the 1970s and 1980s trout species (exp. *Oncorhynchus mykiss* Walbaum 1798) were introduced. It is hardly possible that Šatorsko Lake could be their natural habitat. ČURČIĆ (1916) and ŠORIĆ & BANARESCU (1999) reported the similar introduction of the species *A. huegelii* in Blidinjsko Lake. Unlike introduced trout species, which because of extreme climate conditions could not survive in Šatorsko Lake in winter, *P. alepidotus* and *A. huegelii* managed to survive due to their biological and ecological characteristics. We assume that *P. alepidotus* and *A. huegelii* in the 30 years since introduction have adapted very well to this new type of habitat and the current ecological conditions. Also, they probably partially changed their ecological characteristics and behaviour, so they spend their entire life cycle in the lake, without entering underground waters.

We have discussed the habitat type of *P. alepidotus* in the Unac River (also belonging to the Black Sea basin) with Dr. V. ŠORIĆ. Information concerning the presence of the species in the Korana River as the part of the Black Sea basin inaccurate (ZUPANČIČ & BOGUTSKAYA, 2002), because the Korana River belongs to the Adriatic basin (MARIĆ, 1980)

CONCLUSIONS

Future investigations of these two endemic species in Croatia and Bosnia and Herzegovina should be focused on the morphological and biological characteristics of their populations from Šatorsko Lake as well as defining the complete area of distribution. We can assume that the above-mentioned populations have some partially modified characteristics (meristic, breeding period) which should be determined in future research.

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