

Native and non-native fish species in the tributaries and outflow of ancient Lake Ohrid

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The ancient Lake Ohrid, located in Macedonia and Albania, represents one of the most significant hotspots of endemic biodiversity on the Balkan Peninsula. It is known that the aquatic and isolated ecosystems with globally significant biodiversity are most vulnerable to different impacts, such as climate change, habitat change, introduction of invasive alien species and pollution. While the ichthyofauna in the lake has been extensively studied, little is known about the current state of the ichthyofauna in the tributaries and its outflow, the Crn Drim River. In order to study the fish species diversity in the Lake Ohrid catchment in relation to occurrence of non-native species and the influence of some environmental factors, in May 2013, we sampled different sections of 6 tributaries as well as the Crn Drim River.

A total of 15 fish species were recorded. Of them, 12 species are endemic to the Lake Ohrid and Crn Drim River catchments. Two of the species, *Pseudorasbora parva* and *Carassius gibelio*, are alien to the ichthyofauna of Macedonia. Most frequently found were *Pachychilon pictum* and *Squalius squalus*, which also had the highest relative abundance in the lower and middle sections of the rivers. They were followed by *Alburnus scoranza*, which was abundant in the lower sections of the rivers, and by *Barbus rebeli* and *Phoxinus phoxinus*. The alien *P. parva* was found in two tributaries and the Crn Drim River, while *C. gibelio* in 2 tributaries, both in comparatively low abundance. The relation of the fish species distribution

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and abundance to the physicochemical and substrate characteristics was analyzed. The identified threats, such as the occurrence of non-native species, although in low number and abundance, water pollution and some hydromorphological changes in the river courses indicate the need of urgent measures for the protection of the endemic ichthyofauna in the Lake Ohrid catchment.

Keywords: Endemic fish species, non-native species, threats, Lake Ohrid catchment.