

Distribution and status of the genus *Gobio* in Croatia

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Abstract. This study describes the of distribution and level of endangerment of the genus *Gobio* in Croatia. Four species of the genus *Gobio* live in the Croatian Danube River basin: *Gobio gobio* – common gudgeon, *G. albipinnatus* – whitefin gudgeon, *G. kesslerii* – sand gudgeon and *G. uranoscopus* – stone gudgeon, while in the Croatian Adriatic Sea basin lives only *G. gobio*. According to IUCN methodology and the level of endangerment, in the Red List of Threatened Plants and Animals of Croatia *G. gobio* is considered to be of the least concern (LC). *G. uranoscopus* and *G. kesslerii* are in the category of near threatened (NT) while *G. albipinnatus* is considered as data deficient (DD).

Key words: gudgeon, distribution, endangerment, Croatia

Introduction

The gudgeon species of Croatia have been poorly studied, both in terms of their biology and their taxonomy. Due to the small number of ichthyologists in Croatia and because the species are morphologically very similar misidentifications of gudgeons are present in old literature. The present study describes the distribution and level of endangerment of the genus *Gobio* in Croatia.

Materials and Methods

The present data are the results of a survey made by electrofishing on all major rivers. Also, available literature was screened for the occurrence or former distribution of genus *Gobio*. Some results from regular sampling and sporadic investigations since 1980 were also included.

Zoogeographically, Croatia is divided into two well-separated entities, the Danube River basin and the Adriatic Sea basin. The Danube River basin in Croatia takes up an approximate surface area of 32,000 km². The largest rivers of the Danube River basin in Croatia are the Sava (562 km), Drava (305 km) and Danube (188 km). The Adriatic Sea basin belongs to the smallest western Balkan ichthyofaunistic province and has an area of about 23,800 km². The rivers in this system differ in length and whether they flow into a lake, into the sea or disappear into karst cavities. The Adriatic Sea basin can be divided into two regions: the Istrian Peninsula and Croatian Maritimes with Dalmatia. Sampling was done regularly at least four times a year on the rivers Drava, Sava, Dunav, Lonja, Krapina and Kupa at the Danube River basin and on the Mirna River at the Adriatic Sea basin. At all other rivers electrofishing was taken sporadically each time for about half an hour at each location with a 2.5 kW electrofisher.

Results and Discussion

Four species of the genus *Gobio* live in the Croatian Danube River basin: *G. gobio*, *G. alpinatus*, *G. kesslerii* and *G. uranoscopus*, while in the Croatian Adriatic Sea basin lives only *G. gobio*.

Gobio gobio (Linnaeus, 1758)

The common gudgeon inhabits various kinds of lotic water courses, including mountain brooks where it is found together with the *G. uranoscopus*, as well as slow-flowing, muddy lowland streams and rivers. It is usually absent from isolated lakes and ponds, but may become abundant in the sections of rivers upstream from dams (B Ā n Ā r e s c u et al. 1999b) such as upstream from three large dams on the Drava River near Varaždin.

In the Croatian Danube River basin (Fig. 1) the common gudgeon was caught at 70% of the sampling sites. It is in lowland floodplains of the Sava River and its tributary rivers Kupa, Lonja, Trebež, Pakra etc. It is often caught in the Drava River. The common gudgeon was caught at two sampling sites on the Danube River. It also inhabits mountain brooks such as the Križ in Gorski Kotar.

In the Croatian Adriatic Sea basin the common gudgeon is the only species of genus *Gobio*. It is recorded in the Mirna River in the Istrian Peninsula and in the Lika River, where it was introduced. B i a n c o & T a r a b o r e l l i (1984) in Italy, and P o v ž (personal communication) in Slovenia found another *Gobio* species – *G. benacensis* or Italian gudgeon in the rivers that empty into the North Adriatic Sea but there are no records of that species in Croatia.

Gobio uranoscopus (Agassiz, 1828)

The stone gudgeon is a rheophilic and oxyphilic inhabitant of stony stretches of rivers in submontane zone. It is found in places where water flows rapidly, and where the bottom is covered by medium-sized stone or rarely gravel. They remain solitary and do not form schools like other gudgeons. The stone gudgeon is sensitive to water pollution and to the damming of rivers (B Ā n Ā r e s c u et al. 1999).

In Croatia the stone gudgeon lives in the Kupa River, in the Sava River near Zagreb, in the Danube River and in the Mura River where it is common. M a j e r & B i r o (2001) reported the its presence in the Drava River, Hungary, downstream from the mouth of the Mura River.

Gobio kesslerii Dybowski, 1862

The sand gudgeon inhabits only rapidly flowing water in the lowlands. In the middle and lower Danube River basin, it is in shallow rivers with bottoms consisting of sand and some gravel, usually at sites no deeper than 1 m during low water periods. It lives in large schools of dozens or even hundreds of individuals, which swim rapidly. The sand gudgeon is sensitive to deterioration of water quality and often disappears from moderately polluted stretches of rivers in which other rheophilic species, such as *Sabanejewia balcanica* survive. It also disappears from dammed stretches (B Ā n Ā r e s c u 1999).

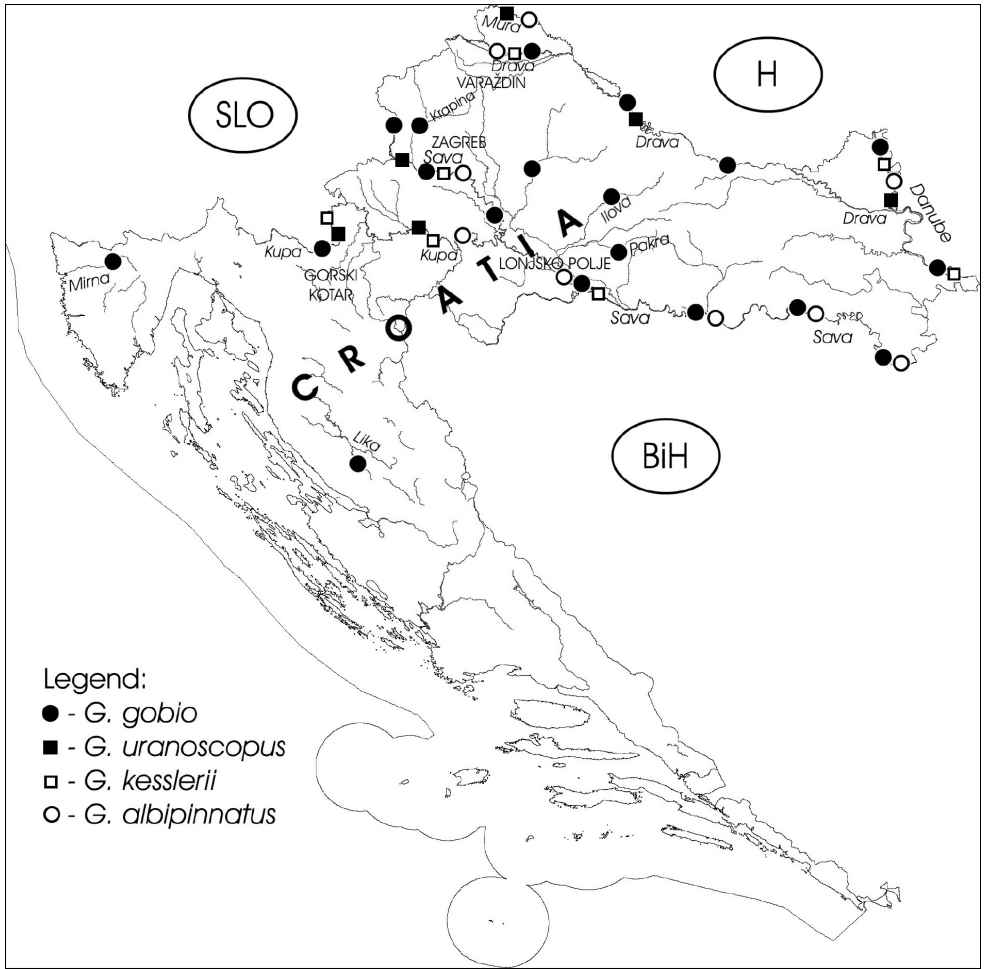


Fig. 1. Distribution of *Gobio* species in Croatia.

In Croatia the sand gudgeon lives in rapidly flowing stretches of the Drava River near Varaždin. It could also be found in the Sava River near Zagreb and Lonjsko polje Nature Park as well as in the Kupa and Danube River. Usually we find it in the mouths of creeks and where smaller rivers join a main river.

Gobio albipinnatus Lukasch, 1933

The whitefin gudgeon is a typical inhabitant of moderately – flowing lowland rivers where sediment consists of fine sand, sometimes mixed with mud or clay. It has also been reported from standing water. The whitefin gudgeon is better able to survive in its normal riverine habitat than the common gudgeon. It is somewhat resistant to water pollution and to warming of the water (N a s e k a et al. 1999). During the last decade it has become apparent that the whitefin gudgeon is the most abundant gudgeon in the Danubean waters (F r e y h o f et al. 2000).

In Croatia the whitefin gudgeon lives in the Mura and Drava River near Varaždin, in the lower part of the Kupa River and in the Sava and Danube rivers. In the upper part of the Danube River in Croatia all four gudgeon species that live in Croatia could be found in just a few kilometres long stretch of a river. In our investigations of the Sava River near Zagreb we also found all four *Gobio* species that live in Croatia. In the lower part of the Sava River and in the upper part of the Drava River we usually find the whitefin gudgeon together with the common gudgeon.

The level of endangerment was hard to define. According to IUCN methodology and the level of endangerment, in the Red List of Threatened Plants and Animals of Croatia (Marković 2004) the *G. gobio* is considered to be of the least concern (LC). The *G. uranoscopus* and *G. kesslerii* are in the category of near threatened (NT) and *G. albipinnatus* is considered as data deficient (DD).

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