

SPECIES COMPOSITION OF THE ICHTHYOFAUNA OF THE OGOSTA RIVER MIDDLE ZONE

Vasil Kolev* and Gradimir Gruychev

Department of Wildlife Management, University of Forestry, 10 St. Kl. Ohridski Blvd., 1797
Sofia, Bulgaria. E-mails: vassilie@abv.bg*; gradi.val@gmail.com

Received: 20 April 2022

Accepted: 17 June 2022

Abstract

Fish diversity is an important indicator of a healthy river ecosystem. The article presents a study examining the current state of fish composition of the Ogosta River, western Bulgaria. Data was obtained by electrofishing along the river's middle zone above the Ogosta Dam. The analysis recorded 12 fish species from 4 families. Most fishes are rheophilic. Four of it are specific for the North Bulgaria rivers and lower Danube basin. The fish fauna is strongly predominated by the *Squalius cephalus*.

Key words: fish fauna composition, Northwester Bulgaria, chub, Romanian barbel.

Introduction

The Ogosta River is the largest water-course in the western part of Bulgaria. Its length is 144.1 km. The river springs below the Vrazha Glava peak (1935 m) in the Balkan Mountains and flows into the Danube River no far from the town of Oryahovo (Hristova 2012). Built in 1986, the Ogosta Dam divides the river into two parts.

Researchers studying the taxonomic composition and distribution of fish fauna in Bulgaria provide data about the fishes of the Ogosta River (Kovatcheff 1921, Morov 1931, Drensky 1951, Marinov 1986, Zhivkov and Karapetkova 1995, Peshev et al. 2003).

Maitland (1987) conducted an extensive study of freshwater fish of Europe

and Britain, which was published in 1987 and which included data on fish from the Danube Basin. Data on the fishes in Ogosta River can also be found in Muus and Daheström (1991).

The study of the ichthyofauna of the Western Stara Planina Mountains Mihaylova (1970) includes the Ogosta River and its tributaries, above the town of Montana. The author gives the most complete description of the fish fauna in the middle zone of the river so far. In this study, 13 fish species from 3 families were identified.

Karapetkova and Dikov (1986) examined the composition, distribution and abundance of ichthyofauna of the Vit River, Danube River drainage. The authors have studied the entire length of the river. This allowed them to give an overall as-

assessment of the fish fauna in this water course and to cite 43 fishes found.

The revision of the data on the ichthyofauna of Europe of Kottelat and Freyhof (2007) allows specifying the systemic affiliation of the fishes in the Ogosta River.

Materials and Methods

This study was conducted along a stretch of the middle river zone, located above the Ogosta Dam. The studied part of the river course lies between 190 and 380 m a.s.l. (Fig. 1). Fieldwork was took place in

the autumn of 2020 and 2021. For sampling via electrofishing a SAMUS 725G device with a 12 V accumulator and 5–65 Amps with an output of 640 W was used. Study sites were located along the middle zone of the Ogosta River, from the town of Chiprovtsi to the confluence of the Ogosta River with the Ogosta Dam (Table 1). The shallow depth of the river, less than 1.5 m, allowed the catch to be without a boat. Upstream, backpack electrofishing was carried out. Catch was performed according to the EN 14011:2004 instruction (Water quality Sampling of fish with electricity). Since the study focused on collecting material from *Squalius cephalus* and

Barbus petenyi, we used the method of partial, point, study (Belliard et al. 2008). This method is also suitable for studying the species composition of fish fauna. All available habitats of the river were examined in each transect.

Species' identification was carried out according to the methodological guidance of Berg (1948, 1949), Drensky (1951), Kottelat and Freyhof (2007).

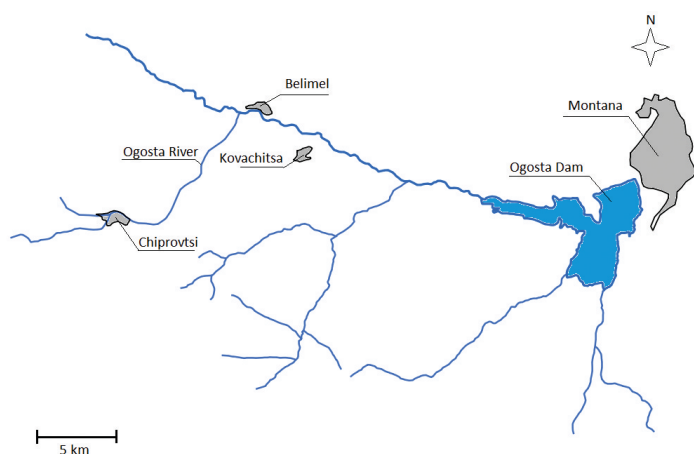


Fig. 1. Schematic map of Ogosta River middle zone, where the Romanian barbell was found.

Table 1. Sampling areas in the Ogosta River.

No	Location	Geographic coordinates		Altitude, m a.s.l.	Date of sampling
		N	E		
1	Near the confluence of the Ogosta River and the Ogosta Dam	43°23'49"	23°03'58"	195	19.11.2020 18.11.2021
2	Near the strawberry farm	43°24'20"	23°03'16"	221	22.10.2020
3	Near the village of Kovachitsa	43°25'20"	23°00'40"	250	19.11.2020
4	Near the village of Belimel	43°25'33"	22°57'30"	305	22.10.2020 18.11.2021
5	Near the town of Chiprovtsi	43°23'42"	22°55'26"	380	22.10.2020 18.11.2021

Results and Discussion

Twelve fishes, representative of 4 families were recorded (Table 2). This study did not aim to determine the abundance and the biomass of fish fauna, so only the

specimens of the Chubs and the Romanian barbels were detained. However, by collecting material from these two species, using partial, points study, we also caught and identified other fish species present in the transects. The results clear-

Table 2. Fish fauna of the Ogosta River middle zone.

No	Family and species	Common name	Mihaylova (1970)	Our study (2022)	IUCN (2022)	Local fish fauna
Family Salmonidae						
1	<i>Salmo trutta</i> (Linnaeus, 1758)	Brown trout	-	+	LC	IS
Family Cyprinidae						
2	<i>Squalius cephalus</i> (Linnaeus, 1758)	Chub	+	+	LC	IS
3	<i>Barbus barbus</i> (Linnaeus, 1758)	Barbel	+	-	LC	IS
4	<i>Barbus petenyi</i> (Heckel, 1852)	Romanian barbel	+	+	LC	IS
5	<i>Gobio gobio</i> (Linnaeus, 1758)	Gudgeon	+	+	LC	IS
6	<i>Romanogomio kessleri</i> (Dybovski, 1862)	Kesler's gudgeon	+	-	LC	IS
7	<i>Alburnoides bipunctatus</i> (Bloch, 1782)	Schneider	+	+	-	IS
8	<i>Phoxinus phoxinus</i> (Linnaeus, 1758)	Eurasian minnow	+	+	LC	IS
9	<i>Alburnus alburnus</i> (Linnaeus, 1758)	Bleak	+	+	LC	IS
10	<i>Rutilus rutilus</i> (Linnaeus, 1758)	Roach	-	+	LC	IS
11	<i>Rhodeus amarus</i> (Bloch, 1782)	European bitterling	+	+	LC	IS
12	<i>Leuciscus aspius</i> (Linnaeus, 1758)	Asp	+	-	LC	IS
13	<i>Chonrostoma nasus</i> (Linnaeus, 1758)	European nase	+	-	LC	IS
Family Nemachelidae						
14	<i>Barbatula barbatula</i> (Linnaeus, 1758)	Stone loach	-	+	LC	IS
Family Cobitidae						
15	<i>Cobitis elongatoides</i> (Băcescu & Mayer, 1969)	Spined loach	+	+	LC	IS
16	<i>Sabanejewia balcanica</i> (Karaman, 1922)	Balkan spined loach	+	+	LC	IS

Note: LC – category Least Concern by IUCN (2022), IS – indigenous species (Berg 1948, 1949; Drensky 1951; Kottelat and Freyhof 2007).

ly showed that in almost all transects, the Chub strongly outnumbered all other fishes. In the transect 1 (Table 1) we caught only the Chub.

Although the explored river section falls within the middle river zone, or the so-called 'barbel zone', the number of Romanian barbel specimen was relatively small. Unlike the Ogosta River, this species is most abundant in the middle zone of the rivers of the Danube basin, such as: Vit (Karapetkova and Dikov 1986, Dikov et al. 1994), Palakaria, and Zlatna Panega (Dikov et al. 1994), Vâlsan (Truță and Stancu 2016), Hășdate (Năstase and Tošić 2016). However, in a way similar to its abundance in the Ogosta River, a numerical dominance of the Chub in Valea Rocilor River has been reported (Năstase and Tošić 2016).

Lake Chub and Romanian barbel, Gudgeon is also numerous in the studied section of the river. This fish ranked third in species abundance amongst the fish fauna. Brown trout and Eurasian minnow were caught only in the upper part of the middle zone of the river, in vicinity of the town of Chiprovtsi.

The Sculpin (*Cottus gobio*), a species typical of the upper river zone of North-western Bulgaria have been recorded by Mihaylova (1970). The species also was found during the monitoring of the protected areas under NATURA 2000 (Ministry of environment and water of Bulgaria 2002, unpublished data). Kolev (2000, unpublished data) also observed the Sculpin in the upper part of the river, above the town of Chiprovtsi. However, this species was not found in the current study of the river.

Mihaylova (1970) studied the ichthyofauna of the river's middle zone, prior to the construction of the Ogosta Dam. Data, collected by this study, now enable a comparative analysis. The present study found

that the fish community is now characterised by fishes, typical of the river's lower zone, such as Roach. Probably this species came here, escaping from the Ogosta Dam. The study also recorded the existence of Stone loach in the middle zone of the Ogosta River. This species is widely spread in Europe, but it was not reported by Mihaylova (1970). Apparently, after the construction of the Ogosta Dam, Common nase can no longer reach spawning areas, located in the upper zone of the river, above the dam. The studied stretch of the river is also not accessible nowadays for fishes, such as Asp and Barbel.

Conclusions

The results of the study indicate that the typical of this habitat ichthyofauna has been preserved. Nonetheless, the dam construction has interrupted fish migration from areas located below the dam to former spawning areas above it. Therefore, the dam has changed to a certain extent the ichthyofauna's composition in this part of the river.

Acknowledgments

This study is financially supported by UOGS 'Petrohan' at LTU – Sofia (project number: 8/2020).

Authors' statement

The present study was conducted in accordance with the national legislation. Electrofishing was conducted with a permit 31/26.08.2020, issued by the Minister of the Ministry of Agriculture, Food and Forestry of Bulgaria. Most caught fish

were released back into the water. Only the quantity indicated in the electrofishing permit was detained.

Conflict of interest

The author declares no conflict of interest.

Data availability statement

The data that support the findings of this study are available on request from the corresponding author.

References

- BELLIARD J., DITCHE JM., ROSET N. 2008. Guide pratique de mise en œuvre des opérations de pêche à l'électricité. Office national de l'eau et des milieux aquatiques (ONEMA). 24 p.
- BERG L. 1948. Freshwater fishes of the U. S. S. R. and adjacent countries. Moscow; Academy of the Sciences of the USSR, I. 469 p. (in Russian).
- BERG L. 1949. Freshwater fishes of the U. S. S. R. and adjacent countries. Moscow; Academy of the Sciences of the USSR, II. 463 p. (in Russian).
- DRENSKY P. 1951. The fishes in Bulgaria. Sofia, Acad. Publ. House. 286 p. (in Bulgarian).
- DIKOV TS., JANKOV J., JOČEV ST. 1994. Fish stocks in river of Bulgaria. *Polske Archiwum Hydrobiologii* 41(3): 377–391.
- HRISTOVA N. 2012. River waters of Bulgaria. Top Press Publishing House. 538 p. (in Bulgarian).
- IUCN 2022. The IUCN Red List of Threatened Species. Ver. 2021-3. Available at: <https://www.iucnredlist.org> (Accessed on 08 June 2022).
- KOTTELAT M., FREYHOF J. 2007. Handbook of European freshwater fishes. Edition Kottelat. 646 p.
- KARAPETKOVA M., DIKOV TS. 1986. On the composition, distribution, number and biomass of the ichthyofauna of the River Vit. Bulgarian Academy of Sciences. *Hydrobiology* 28: 3–14 (in Bulgarian).
- KOVATCHEFF V. 1921. Attempt to study the ichthyofauna of the Maritza and its tributaries. *Proceedings of the Bulgarian Naturalist Society* 9: 90–94 (in Bulgarian).
- MARINOV B. 1986. Taxonomy, binomial and faunistic of some species of the family Cyprinidae and Cottidae (Pisces) from Bulgaria. PhD thesis, Sofia University 'St. Kliment Ohridski': 134–167 (in Bulgarian).
- MAITLAND P. 1987. Guide to freshwater fish of Britain and Europe. London, Hamlyn Ed. 256 p.
- MIHAYLOVA L. 1970. Fish of Western Stara Planina Mountains. *Nature* 31: 19–43 (in Bulgarian).
- MOROV T. 1931. Freshwater fishes in Bulgaria. Bulgarian Fishermen's Union, Artist: 39–40 (in Bulgarian).
- MUUS B., DAHESTRÖM P. 1991. Guide des poissons d'eau douce et pêche. Delachaux et Niestlé S. A. Neuchâtel. Suisse. 223 p.
- NĂSTASE A., TOŠIĆ K. 2016. Fish communities in the small rivers of Turda and Tureni Gorges. *Studia Universitatis Babeş-Bolyai biologia* 61(2): 69–80.
- PESHEV TS., NANKINOV D., PESHEV D. 2003. The vertebrates of Bulgaria. Bulvest 2000 publishing house. 414 p. (in Bulgarian).
- TRUȚĂ A., STANCU D. 2016. Research on the current structure of the ichthyofauna of the River Vâlsan. *Studies and Research. Biology. 'Vasile Alecsandri' University of Bacau* 25(2): 16–22.
- ZHIVKOV M., KARAPETKOVA M. 1995. Fishes in Bulgaria. Gea Libris Publishing House. Sofia. 247 p. (in Bulgarian).