

Contributions to the knowledge of Bucharest city ichthyofauna

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Abstract. In this paper we discuss about the ichthyofauna of seven lakes from Bucharest city. During the research conducted between 2000 and 2006 18 species were found. They belong to 16 genre, seven families and five orders. From the total number of species, 12 are foreign and six native. In case of remarkable foreign species, some comments are made.

Key Words: ichthyofauna, lake, Bucharest.

Résumé. Dans ce travail, il est traite la ichtiofaune de 7 lacs de Bucharest. A cette occasion des enquete developpee entre 2000-2006, il etais repere 18 des especes du 16 gens, 7 famille et 5 ordines. De tout ces especes, 12 sont etrangeres et 6 sont autochtone. Quelque commentaires sont presente pour les especes particuliere, comme sont lesquelles etrangeres.

Mots clés: ichtiofaune, lac, Bucharest.

Rezumat. În acest material se discută despre ihtiofauna din șapte lacuri din municipiul București. Cu ocazia cercetărilor desfășurate în perioada 2000-2006 au fost semnalate 18 de specii aparținând la 16 genuri, șapte familii și cinci ordine. Din totalul de specii, 12 sunt străine, iar șase sunt autohtone. Se fac unele comentarii în cazul speciilor mai deosebite, cum sunt o parte din cele străine.

Cuvinte cheie: ihtiofaună, lac, București.

Introduction. From a hydrological point of view, Bucharest city is located at the confluence of Dâmbovița and Colentina rivers. Thus it belongs to Argeș hydrographic basin. These two rivers cross the city and along their range, inside the city, there are several anthropic lakes: in case of the river Dâmbovița there is Ciurel Lake, and concerning the Colentina river several lakes have been arranged since 1930 (Caranfil 1936). Beside these there are several other lakes, in Bucharest, arranged by human. Their ichthyofauna we will be discussed in this paper. These lakes are as following (Figure 1): three lakes in Botanical Garden, the lake from Cișmigiu Garden, the lake from Libertății Park, the lake from Tineretului Park - all these lakes are remnants from the old meadow of Dâmbovița river; the lake from State Circus Park and the lake from Alexandru Ioan Cuza Park (Titan quarter) in Colentina Plain; the lake from Moghioroș Park in Cotroceni Plain. The last three lakes are arranged in anthropic excavations.

In time, the ichthyofauna of Bucharest was very slightly studied. In 1956, Nalbant conducted a research dealing with the lower Dâmbovița fish fauna. The study comprised the part of river along Bucharest and 8 km upstream the city. Eighteen fish species were found.

Fuhn & Mărgărit (1965) found several specimens of gold carp (*Carassius auratus auratus* (Linnaeus, 1758)) in the concrete basin in front of the Botanical Institute, situated in Botanical Garden.

Bănărescu (1964), in his monumental work dealing with the Romania's ichthyofauna, pointed out several fish species in lakes around the Bucharest city and also in Colentina and Dâmbovița rivers.

These are the only references from specialty literature in terms of the Bucharest ichthyofauna. In the paper we provided new data and focused especially on those lakes being little or not studied at all.

Materials and methods. In the period 2000-2006, the author realized some observations upon the behavior of several fish species from the lakes mentioned above. The species pointed out in this article were either directly observed in water or captured with line by local anglers. We did not take into account the species about the anglers say they could exist in certain areas and the author had not directly observed them. We have obtained individuals from most of the species pointed out. A part of them can be found in the personal collection, preserved in formalin solution 4%, and other one was maintained alive in water tanks. In this article the fish species scientific names were used as suggested by Nalbant (2003).

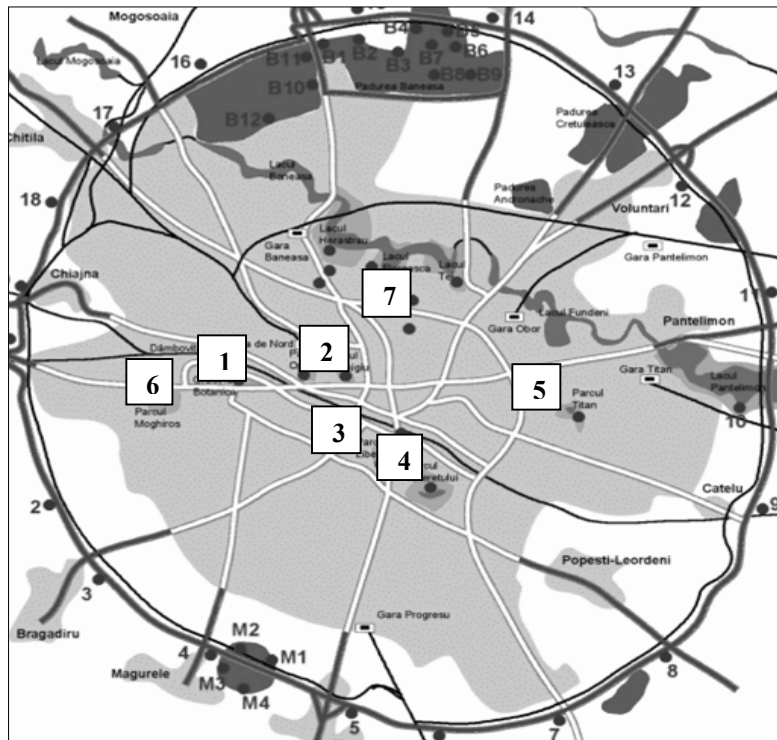


Figure 1. The studied areas: 1 - Botanical Garden, 2 - Cișmigiu Garden, 3 - Libertății Park, 4 - Tineretului Park, 5 - Alexandru Ioan Cuza Park, 6 - Moghioros Park, 7 - State Circus Park

Results and discussions. *The lakes from Botanical Garden.* - Botanical Garden from Bucharest was founded as an institution in 1860, within the Faculty of Medicine and Pharmacy, by doctor Carol Davila. Later it was displaced in Cotroceni quarter, where it can be found even today. Since 1954 it has belonged to the University of Bucharest. There are three puddles within it. The large lake is a remnant from Dâmbovița meadow and, of course, its present form was arranged by human. Then there is a small lake in the southern part of the Garden, populated with water lilies, whereas in front of the Botanical Institute there is a concrete basin. The fish species observed here can be seen in the following tables (Table 1, 2, and 3).

Table 1

Fish species from large lake of the Botanical Garden

Order	Family	Species	Date
Cypriniformes	Cyprinidae	<i>Carassius gibelio</i> (Bloch, 1783)	April-October, 2000-2006
		<i>Aristichthys nobilis</i> (Richardson, 1844)	October, 2000

Table 2

Fish species from water lily lake of the Botanical Garden

Order	Family	Species	Date
Cypriniformes	Cyprinidae	<i>Carassius gibelio</i> (Bloch, 1783)	April-October, 2000-2006
		<i>Rutilus carpathorossicus</i> Vladykov, 1930	April-October, 2000-2006
Cyprinodontiformes	Poeciliidae	<i>Xiphophorus maculatus</i> (Günther, 1866)	May-September, 2000

Table 3

Fish species from a concrete basin in front of the Botanical Institute

Order	Family	Species	Date
Cypriniformes	Cyprinidae	<i>Carassius auratus auratus</i> (Linnaeus, 1758)	April-October, 2001
		<i>Puntius conchoni</i> (Hamilton, 1822)	April-October, 2001; April-October, 2001
Cyprinodontiformes	Poeciliidae	<i>Puntius ticto</i> (Hamilton, 1822)	April-October, 2001
		<i>Xiphophorus helleri</i> Heckel, 1848	April-October, 2000; April-October, 2001
		<i>Poecilia reticulata</i> Peters, 1859	April-October, 2000; April-October, 2001

Poeciliid species, *P. ticto*, *P. conchoni* and *C. auratus auratus* were introduced by private persons, more exactly aquarium hobbyists. Fishes from large lake are probably introduced in spring and are pulled out in the autumn.

The lake from Cişmigiu Garden. - Cişmigiu Garden is one of the oldest public gardens from Romania's capital. A clogged pool with underground springs which never drop out was also here. In the mid of the 19th century, the pool was turned into a 3 hectare surface lake, which exists even today. Only numerous individuals of *Carassius gibelio* have been observed in this lake.

The lake from Libertăţii Park. - Libertăţii Park was arranged in the first years of the last century, on Filaret Hill. The park also includes a small lake, with its surface of 2 hectares, where we can find several fish species, as shown in Table 4.

Table 4

Fish species from a lake of the Libertăţii Park

Order	Family	Species	Date
Cypriniformes	Cyprinidae	<i>Carassius gibelio</i> (Bloch, 1783)	April-August, 2005-2006
		<i>Alburnus alburnus</i> (Linnaeus, 1758)	April-August, 2005-2006
Cyprinodontiformes	Poeciliidae	<i>Gambusia holbrooki</i> (Agassiz, 1854)	April-September, 2005-2006
Perciformes	Centrarchidae	<i>Lepomis gibbosus</i> (Linnaeus, 1758)	April-August, 2005-2006
	Percidae	<i>Perca fluviatilis</i> Linnaeus, 1758	April-September, 2004-2006

The most interesting species from here is *G. holbrooki* noticed in this lake by Bănărescu in 1964. Unlike the specialty literature indicating a maximum length for mosquito females up to 4 cm, we have noticed here several females with total length up to 6 cm. After Cornelson (1940), in Romania mosquito fishes were brought between 1927 and 1930.

The fishes were introduced in the Pantelimon and other lakes in Bucharest, in various lakes and moors in Transylvania and in some lakes on the Black Sea littoral. We found it only in this lake, from Libertății Park. Unfortunately, there are no additional references how the local populations have evolved from the moment of their introduction up to present days. At the same time, there are no data relative to either the possible adaptative morpho-physiological variations or to the possible modifications of the feeding ways or in the breeding biology.

The lake from Tineretului Park. - Tineretului Park has a surface larger than 80 hectares. Within it there is a 13 hectares surface lake, where we can find several fish species (Table 5).

Table 5

Fish species from a lake of the Tineretului Park

Order	Family	Species	Date
Esociformes	Esocidae	<i>Esox lucius</i> Linnaeus, 1758	April-July 2005
Cypriniformes	Cyprinidae	<i>Cyprinus carpio</i> Linnaeus, 1758	April-July 2005
		<i>Carassius gibelio</i> (Bloch, 1783)	April-July 2005
		<i>Pseudorasbora parva</i> (Temminck & Schlegel, 1846)	April-July 2005
		<i>Rutilus carpathorossicus</i> Vladykov, 1930	April-July 2005
		<i>Alburnus alburnus</i> (Linnaeus, 1758)	April-July 2005
Perciformes	Centrarchidae	<i>Lepomis gibbosus</i> (Linnaeus, 1758)	April-July 2005
	Percidae	<i>Perca fluviatilis</i> Linnaeus, 1758	April-July 2005

The species *C. carpio* was introduced here for sport angling. Together with it, another species entered the lake: *P. parva*, which has become relative abundant.

The lake from Alexandru Ioan Cuza Park (Titan quarter). - Titan quarter is known for the large Park: Alexandru Ioan Cuza. A 26 hectare lake, which allows paddling a boat or angling, has been arranged within it. The ichthyofauna is well represented in Table 6.

Table 6

Fish species from lake of the Alexandru Ioan Cuza Park

Order	Family	Species	Date
Esociformes	Esocidae	<i>Esox lucius</i> Linnaeus, 1758	April 2002
Cypriniformes	Cyprinidae	<i>Cyprinus carpio</i> Linnaeus, 1758	May-October, 2004-2006
		<i>Carassius gibelio</i> (Bloch, 1783)	May-October, 2004-2006
		<i>Rutilus carpathorossicus</i> Vladykov, 1930	May-October, 2004-2006
		<i>Scardinius erythrophthalmus</i> (Linnaeus, 1758)	May-October, 2004-2006
		<i>Alburnus alburnus</i> (Linnaeus, 1758)	May-October, 2004-2006
		<i>Aristychnthis nobilis</i> (Richardson, 1844)	May-October, 2004-2006
Perciformes	Centrarchidae	<i>Lepomis gibbosus</i> (Linnaeus, 1758)	May-August, 2004-2006
Siluriformes	Clariidae	<i>Clarias ngamensis</i> Castelnaud, 1861	November 2004

This lake contains the richest ichthyofauna, being the largest lake from those having been studied. Several species: pike (*Esox lucius*), carp (*Cyprinus carpio*) and *Aristychnthis nobilis* were introduced here for sport angling. In November 2004 a dead specimen of *Clarias ngamensis* was collected from here by Gavriiloaie & Chișamera (2005). At this moment it is not clear how the species got in the Romanian waters. It could be an isolated case, namely the specimen might have been released in the wild (being alive) from the aquarium of some amateur, but it is more likely that this species was the subject-matter of a deliberate introduction action, in larger amounts, in several autochthonous aquatic ecosystems. Therefore, it is absolutely necessary to continue the research in the field in order to find out if this species of African catfish is also present in other areas or is an isolated case.

The lake from State Circus Park. – The Circus Park is one of the most beautiful parks from Bucharest, placed in Colentinei Plain. It was arranged in 1960. There is a small lake, with one hectare surface within it. The lake is quite deep, it is supplied by its own springs and contains a relative diverse ichthyofauna (Table 7).

Table 7

Fish species from the lake of State Circus Park

Order	Family	Species	Date
Cypriniformes	Cyprinidae	<i>Carassius gibelio</i> (Bloch, 1783)	May-September, 2005-2006
		<i>Pseudorasbora parva</i> (Temminck & Schlegel, 1846)	May-September, 2005-2006
		<i>Alburnus alburnus</i> Linnaeus, 1758	May-September, 2006
Siluriformes	Ictaluridae	<i>Ictalurus nebulosus</i> (Le Sueur, 1814)	April, 2006
Perciformes	Percidae	<i>Perca fluviatilis</i> Linnaeus, 1758	May-September, 2005-2006

As far as we know, fish species for sport fishing have not been officially introduced in this lake. Probably native ichthyofauna was represented by silver carp (*C. gibelio*), bleak (*Alburnus alburnus*) and perch (*Perca fluviatilis*), while topmouth gudgeon (*P. parva*) and brown bullhead (*I. nebulosus*) were introduced by private persons. In the case of topmouth gudgeon, we suppose it was used as bait for perch fishing, and at the end of angling session the live individuals were thrown in the lake, as it happened in several areas in the country.

The lake from Moghioroş Park. - This park is known for its one hectare surface lake in Cotroceni Plain. The only species observed here during May-July 2005 and 2006 was *Carassius gibelio*.

The species *Carassius gibelio* is the only one present in all studied lakes, except the concrete basin from Botanical Garden, which shows its significant ecological adaptability. Another frequent species is *Alburnus alburnus*, which has enlarged its occurrence in whole the country in the last years. Species *Pseudorasbora parva* becomes abundant in lakes in which other fish species, intended for sport fishing, are introduced. Such is the case of lake from Tineretului Park. There are exceptions, too, as in the case of the lake from Titan quarter where periodically fish species are introduced for sport fishing, as we have mentioned before. However, *P. parva* remains absent there.

It is possible the existence of other fish species, too, species which are more difficult to be observed in water or caught with line, as are cobitid or gobiid species.

Conclusions. Bucharest has got a relative rich ichthyofauna. We have pointed out 18 species belonging to 16 genre, seven families and five orders. From all these species, six are naturalized (*Carassius gibelio*, *Pseudorasbora parva*, *Aristichthys nobilis*, *Lepomis gibbosus*, *Ictalurus nebulosus*, *Gambusia holbrooki*), five are maintained in aquariums and are local and temporary established (*Puntius conchonius*, *Puntius ticto*, *Xiphophorus helleri*, *Xiphophorus maculatus*, *Poecilia reticulata*). As far as the species of African catfish (*Clarias ngamensis*) is concerned we could assume that it entered the Romanian waters owing to humans. Six species are native: *Cyprinus carpio*, *Rutilus carpathorossicus*, *Scardinius erythrophthalmus*, *Alburnus alburnus*, *Esox lucius* and *Perca fluviatilis*.

The largest lakes contain the richest ichthyofauna: eight species in a lake from the Tineretului Park and nine species in a lake from the Alexandru Ioan Cuza Park.

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