

## A REVIEW OF EXTANT CROATIAN FRESHWATER FISH AND LAMPREYS Annotated list and distribution

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### ABSTRACT

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A checklist of the freshwater fish fauna of Croatia is presented for the first time. It is based on 1360 publications of historical and recent data in the literature. According to the literature review, there were 137 fish species in 30 families and 75 genera recorded in Croatia. The checklist is systematically arranged and provides distributional data of the freshwater fish fauna as well as whether the species is endemic, introduced or translocated.

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### INTRODUCTION

The Republic of Croatia is a small country with a land area of 56,594 km<sup>2</sup> at the crossroads of several European biogeographical regions: Continental, Alpine, Mediterranean and, on its north-east, fragments of the Pannonic biogeographical region are present (EEA, 2002). Croatia's geographical position includes two river basins (Adriatic Sea and Black Sea basins) with an interesting geological history that has resulted in one of the most diverse freshwater ichthyofaunas in Europe. With 137 species that are strictly freshwater or occasionally use freshwater, Croatia has among the highest species richness in Europe (Mrakovčić et al., 2006). In particular,

the Dinaric karst region of Croatia (Banarescu, 2004; Smith and Darwall, 2006; Oikonomou et al., 2014) harbours numerous endemic species that are found only in Croatia, while some are also found in neighbouring Bosnia and Herzegovina (Ćaleta et al., 2015). Despite the long tradition of ichthyology in these parts through the 19<sup>th</sup> and 20<sup>th</sup> century (most important researchers were Johann Jakob Heckel, Rudolf Kner, Franz Steindachner, Luka Trgovčević, Mijo Kišpatić, Josipa Plančić, Tihomir Vuković, Dobrila Habeković, Milorad Mrakovčić i Tomislav Treer), in the 21<sup>st</sup> century, new species are still being discovered and described (Kovačić, 2005; Freyhof and Stelbrink, 2007; Mustafić et al., 2008; Miller, 2009; Bogutskaya and Zupančič, 2010; Buj et al., 2010; Marčić et

al., 2011; Bogutskaya et al., 2012; Tutman et al., 2017). To date, the only comprehensive list of the freshwater fishes of Croatia was compiled within the freshwater fish fauna of Yugoslavia (Taler, 1953; Vuković and Ivanović, 1971), which ceased to exist as a state in 1991, breaking up into several sovereign states lying in different biogeographical regions. Despite more than a century of ichthyological research, no checklist has ever been compiled of the Croatian freshwater ichthyofauna. Previous publications about the freshwater fishes of Croatia were aimed at threatened (Mrakovčić et al., 2006) or endemic (Ćaleta et al., 2015) fishes. Furthermore, to date, the literature data on the freshwater fish of Croatia have not been comprehensively collected, analysed and published.

The objective of this review article was to collect and analyse all the available literature data on the freshwater fish of Croatia, and to draft an annotated checklist of the species currently found in Croatia.

## MATERIAL AND METHODS

This is the first annotated checklist of the freshwater fish species of Croatia, which includes a compilation of the available literature for Croatia. The bibliography includes scientific papers, professional papers, doctoral dissertations, master theses, books, monographs, chapters in books and technical reports. Grey literature like unpublished reports, professional papers, diploma theses and government documents were not analyzed

for the purposes of this checklist. In addition to the exclusively freshwater species, data are also provided on euryhaline species that inhabit brackish and transitional waters (*Aphanius fasciatus*, *Alosa fallax*, *Platichthys flesus*, *Dicentrarchus labrax*, *Sparus aurata*, Gobiids and Mugilids) and migratory fish species (*Anguilla anguilla*, *Petromyzon marinus* and Acipenserids). In the text of article were used scientific species names while in the species list were listed valid English names (Froese and Pauly, 2019), authority and Croatian names. The list was compiled on the basis of the latest taxonomic classifications of orders, families, genera and species (Stout et al., 2016; Eschmeyer et al., 2018a; Eschmeyer et al., 2018b; Schonhuth et al., 2018; Tan and Armbruster, 2018). Within each family, the genera are listed in alphabetical order. The checklist includes a distribution range for each species, and data as to whether it is an endemic, introduced or translocated species. The list also includes species that are considered regionally extinct (EX in the list) and unsuccessfully introduced species (UI in the list).

The border between the Danube drainage and the Adriatic Sea basin passes through the Lika area, which is located in the Alpine biogeographic region (Fig 1). Except the rivers, some karst fields also belong to different river drainages/basins. Thus, the Danube drainage includes the following fields: Lug, Jasenčko, Drežničko, Stajničko (Mrežnica River drainage) and Krbavsko (Una River Drainage); which are inhabited by the endemic species of the genus *Telestes* and *Delminichthys*.



**Fig 1.** Map of Croatia with two drainages (basins) and major river courses (dashed line represents the basin boundary)

## RESULTS AND DISCUSSION

### Croatian ichthyofauna bibliography

For the purposes of checklist, available literature data on the freshwater fishes of Croatia were collected. This included 1360 publications in the period since 1771, and represents the most comprehensive Croatian ichthyofauna bibliography.

The number of literature reports varies largely depending on the historical period. There are only 5 publications from the 18<sup>th</sup> century, and 153 in the 19<sup>th</sup> century. A total of 775 publications date back to the 20<sup>th</sup> century, while in the first 19 years of the 21<sup>st</sup> century, there have been 424 publications. A review of the number of literature reports by species shows that the most frequently mentioned are those common and recognisable species used in human nutrition, such as *Salmo trutta*, *Cyprinus carpio*, *Anguilla anguilla*, *Esox lucius* and *Silurus glanis*. A total of 25 fish species are mentioned in more than 100 literature reports (in checklist (Appendix 1) species no. 5, 6, 22, 25, 26, 27, 28, 34, 36, 57, 61, 64, 66, 82, 86, 89, 93, 94, 98, 99, 101, 126, 124, 131, 132). However, there are species for which there are very few literature reports, with six species mentioned in fewer than 10 publications (in checklist (Appendix 1) species no. 17, 30, 39, 58, 103, 106). These are mostly species that have been recently described, discovered or whose taxonomic status has only recently been resolved, and therefore have not been discussed in the literature.

### Diversity of the Croatian ichthyofauna

Based on the collected data, the freshwater ichthyofauna of Croatia currently totals 137 species (Table 1; Appendix 1), for which literature records are provided. These are species that are native, endemic and successfully introduced. The freshwater ichthyofauna of Croatia can be classified into two classes, 16 orders, 30 families and 75 genera. The greatest diversity is found within the order Cypriniformes (78 species, 56.9%), followed by the orders Perciformes (13 species, 9.5%), Gobiiformes and Salmoniformes (11 species, 8.0%) (Table 1). At the family level, the highest species richness is found amongst the Leuciscidae (48 species, 35.0%), Gobiidae and Salmonidae (11 species, 8.0%), Cobitidae (10 species, 7.3%) and Percidae and Cyprinidae (8 species, 5.8%). All other families are represented by six or fewer species (Table 1).

Several explanations have been posed for the exceptionally high ichthyodiversity in this relatively small area. First, Croatian freshwaters are divided into two major drainage basins and their rivers and lakes have different geographical, hydrological and ecological features. Most of the rivers belonging to Black Sea Basin (also called the Danube drainage system, therefore hereinafter:

Danube drainage) are long, with many tributaries and many are interconnected. On the other hand, the rivers of the Adriatic Sea Basin (hereinafter: Adriatic Basin) are much shorter and isolated from each other, with few or no tributaries, thus spurring allopatric speciation and resulting in very high species richness and high degree of endemism (Marčić et al., 2011; Buj et al., 2014; Buj et al., 2015; Ćaleta et al., 2015; Buj et al., 2017; Buj et al., 2019 *in press*). Moreover, 50 % of the Croatian territory is covered by karst, which is a geologic and geographic feature that favoured development of diverse, often isolated water habitats. As a specific feature of this area, presence of the karst fields (known as 'polje') can be mentioned. Those are karst relief forms where surface flows sink underground in contact with limestone. Isolated, unique habitats with specific hydrological conditions are often inhabited by numerous endemic and endangered species. The second important reason causing the origin of a rich and diverse fish community lies in the complex geological history of the region, which included various vicariant events and periods of favourable conditions, promoting diversification and unconstrained evolutionary history of species and genera. This situation is evident in the recently described evolutionary history of the genus *Telestes* (Buj et al., 2017), and spined loaches of the genus *Cobitis* (Buj et al., 2015), though it is likely also true for other freshwater fishes whose evolutionary history is yet to be revealed. Moreover, the Dinaric karst region in Croatia seems to harbour ancient populations of certain freshwater species (*Gasterosteus*) and genera (e.g. *Telestes*, *Delminichthys*, *Phoxinellus*), and represents the site from where colonization of a wider area began, whilst still maintaining reservoirs of ancient genetic diversity (Buj et al., 2017; Buj et al., 2019 *in press*).

In addition to the extraordinary high species diversity, there are natural hybrid biotypes that originated through the hybridization of two species in geological periods when temporary connections were formed between rivers. Such past geologic hybridizations left traces in the recent genetic composition of several populations, whose genomes are comprised of alleles belonging to two or more species. Hybrid biotypes of *C. elongatoides* (all female triploids) have been reported from the Danube River drainage in Croatia (Buj et al., 2008), as well as introgressions in some populations of *S. obtusirostris* (Sušnik et al., 2007; Razpet et al., 2007). Furthermore, recent investigations (unpublished data) have revealed natural interspecific and even intergeneric hybrids in certain *Squalius* populations (Buj et al. 2019 *in press*).

A total of 49 species of freshwater fish in Croatia are endemic species. However, the Danube drainage is inhabited by 9 endemic species (*Eudontomyzon vladaykovi*, *Cobitis elongata*, *Gobio obtusirostris*, *R. uranoscopus*, *Romanogobio vladaykovi*, *Alburnus sava*, *Rutilus virgo*, *Hucho hucho*, *Gymnocephalus schraetser*) which have wider distribution (endemic to the Danube basin).

**Table 1.** Taxonomic distribution, species number, number of alien and number of endemic species of freshwater fishes of Croatia (\*without Danube drainage endemics)

ORDER	FAMILY	GENERA	SPECIES	% species	ALIEN	TRUE ENDEMIC*
PETROMYZONTIFORMES	PETROMYZONTIDAE	3	3	2,19%	-	1
ACIPENSERIFORMES	ACIPENSERIDAE	1	2	1,46%	-	-
ANGUILLIFORMES	ANGUILLIDAE	1	1	0,73%	-	-
CLUPEIFORMES	CLUPEIDAE	1	1	0,73%	-	-
	COBITIDAE	3	10	7,30%	-	4
	NEMACHEILIDAE	1	1	0,73%	-	-
	ACHEILOGNATHIDAE	1	1	0,73%	-	-
CYPRINIFORMES	CYPRINIDAE	4	8	5,84%	2	2
	GOBIONIDAE	3	6	4,38%	1	1
	LEUCISCIDAE	17	48	35,04%	-	21
	TINCIDAE	1	1	0,73%	-	-
	XENOCYPRIDIDAE	2	3	2,19%	3	-
SILURIFORMES	SILURIDAE	1	1	0,73%	-	-
	ICTALURIDAE	1	2	1,46%	2	-
ESOCIFORMES	ESOCIDAE	1	1	0,73%	-	-
	UMBRIDAE	1	1	0,73%	-	-
SALMONIFORMES	SALMONIDAE	6	11	8,03%	4	1
GADIFORMES	LOTIDAE	1	1	0,73%	-	-
GOBIIFORMES	GOBIIDAE	8	11	8,03%	4	6
PLEURONECTIFORMES	PLEURONECTIDAE	1	1	0,73%	-	-
CYPRINODONTIFORMES	CYPRINODONTIDAE	1	1	0,73%	-	-
	POECILIIDAE	1	1	0,73%	1	-
MUGILIFORMES	MUGILIDAE	4	6	4,38%	-	-
BLENNIIFORMES	BLENNIIDAE	1	1	0,73%	-	-
SCORPAENIFORMES	COTTIDAE	1	1	0,73%	-	-
	MORONIDAE	1	1	0,73%	-	-
	CENTRARCHIDAE	2	2	1,46%	2	-
PERCIFORMES	PERCIDAE	4	8	5,84%	-	-
	SPARIDAE	1	1	0,73%	-	-
	GASTEROSTEIDAE	1	1	0,73%	-	-
		16	30	75	137	100%
					19	36

The remaining 40 species (29.2% of the total ichthyofauna) are true endemic species (narrower distribution) to Croatia and/or to Adriatic basin (Table 1). *Gobio obtusirostris* inhabits both drainages/basins because it has been translocated to the Adriatic basin. The true endemic species belong to seven families, with 21 endemic species included in the family Leuciscidae, or 15.3% of all recorded species (Ćaleta et al., 2015). Among the true endemics there are also 15 species (10.9% of the total ichthyofauna) exclusively inhabiting the waters of Croatia (*Cobitis dalmatina*, *C. jadovaensis*, *Delminichthys jadovensis*, *D. krvavensis*, *Phoxinellus dalmaticus*, *Squalius illyricus*, *S. zrmanjae*, *Telestes croaticus*, *T. fontinalis*, *T. karsticus*, *T. miloradi*, *T. polylepis*, *T. turksyi*, *T. ukliva* and *Knipowitschia mrajkovcici*) (stenoendemic species). Considering that the historical literature data were consulted, the checklist also includes (though not enumerated) those species that formerly inhabited the freshwaters of Croatia, and which are today considered regionally extinct (genus *Acipenser* and *Huso* and *Alosa immaculata*) (Table 2).

To date, according to literature data, a total of 32 freshwater fish species have been introduced to Croatia (Piria et al., 2018; Pofuk et al., 2017.; personal data). The freshwaters of Croatia have 19 alien species (naturalised and acclimatized), introduced from other geographic areas and continents (Table 1). Four of them have been introduced into the Danube drainage, and two into the Adriatic Basin. The remaining 13 species have been introduced into both basins (Piria et al., 2018). The checklist of Croatian freshwater fish species lists (though not enumerated) exotic (alien) (unsuccessfully introduced) species (total of

13) which were introduced historically or escaped (from aquaculture or aquaria) and were reported in the waters of Croatia but failed to create self-sustaining populations (Table 2). In addition to the introduced species, there are also species that are native to the Republic of Croatia, but have been translocated between the basins. There are 17 species, native to the Danube drainage, known to have been introduced (naturalised and acclimatized) into the Adriatic Basin (Pofuk et al., 2017.; personal data). The only recorded species translocated from Adriatic Basin to the Danube drainage is *Gasterosteus aculeatus*.

### *Geographical distribution of the freshwater fish diversity (hot spots)*

In the Danube drainage in Croatia (total area 35 132 km<sup>2</sup>) 81 freshwater fish species are present, of which 64 species are native and the remaining 17 are alien. In the Adriatic Basin (total area 21 405 km<sup>2</sup>) were recorded 90 fish species of which 60 species are native while 30 species are introduced from Danube drainage (17 species) or alien (15 species). Denotation of the waters of the Adriatic Basin in Croatia as the ichthyodiversity 'hot spot' is clearly argumented by the exceptionally high number of fish species distributed there, and particularly high number of endemic fishes (36 species) (Table 3). On the other hand, rivers of the Danube drainage harbour a greater number of species, which is expected, due to their greater length and interconnections. Rivers with the highest number of species in Croatia are Drava, Sava, Kupa, Mura, Una

**Table 2.** Taxonomic distribution, number of extinct (EX) and number of unsuccessfully introduced (UI) species in Croatia

ORDER	FAMILY	GENERA	SPECIES	EX	UI
ACIPENSERIFORMES	ACIPENSERIDAE	2	6	5	1
	POLYODONTIDAE	1	1	-	1
CHARACIFORMES	SERRASALMIDAE	1	1	-	1
CICHLIFORMES	CICHLIDAE	1	1	-	1
CLUPEIFORMES	CLUPEIDAE	1	1	1	-
GOBIIFORMES	ODONTOBUTIDAE	1	1	-	1
PERCIFORMES	MORONIDAE	1	1	-	1
SALMONIFORMES	SALMONIDAE	3	4	-	4
	MOCHOKIDAE	1	1	-	1
SILURIFORMES	ICTALURIDAE	1	1	-	1
	CLARIIDAE	1	1	-	1
		8	10	14	19
				6	13

**Table 3.** Distribution of fish taxa in Croatia by drainages (\*without Danube drainage endemics; in brackets total number with species of brackish and transitional waters; bold – Danube drainage, italic – Adriatic Basin)

Drainage	Orders	Families	Genera	Species	Introduced	True endemic*
<b>Mura</b>	<b>9</b>	<b>20</b>	<b>44</b>	<b>57</b>	<b>10</b>	
<b>Drava</b>	<b>11</b>	<b>22</b>	<b>51</b>	<b>70</b>	<b>15</b>	
<b>Bednja</b>	<b>8</b>	<b>16</b>	<b>34</b>	<b>40</b>	<b>6</b>	
<b>Danube</b>	<b>9</b>	<b>18</b>	<b>41</b>	<b>55</b>	<b>13</b>	
<b>Sava</b>	<b>10</b>	<b>20</b>	<b>49</b>	<b>68</b>	<b>13</b>	
<b>Orljava</b>	<b>7</b>	<b>15</b>	<b>32</b>	<b>38</b>	<b>6</b>	
<b>Una</b>	<b>10</b>	<b>18</b>	<b>43</b>	<b>57</b>	<b>8</b>	<b>2</b>
<b>Ilova</b>	<b>7</b>	<b>16</b>	<b>36</b>	<b>44</b>	<b>9</b>	
<b>Česma</b>	<b>7</b>	<b>16</b>	<b>35</b>	<b>43</b>	<b>9</b>	
<b>Lonja</b>	<b>7</b>	<b>15</b>	<b>30</b>	<b>36</b>	<b>5</b>	
<b>Krapina</b>	<b>8</b>	<b>16</b>	<b>33</b>	<b>39</b>	<b>5</b>	
<b>Sutla</b>	<b>8</b>	<b>16</b>	<b>30</b>	<b>38</b>	<b>4</b>	
<b>Kupa</b>	<b>10</b>	<b>19</b>	<b>45</b>	<b>59</b>	<b>12</b>	
<b>Dobra</b>	<b>7</b>	<b>15</b>	<b>32</b>	<b>38</b>	<b>5</b>	
<b>Mrežnica</b>	<b>7</b>	<b>15</b>	<b>31</b>	<b>37</b>	<b>5</b>	<b>2</b>
<b>Korana</b>	<b>8</b>	<b>17</b>	<b>34</b>	<b>41</b>	<b>8</b>	
<i>Dragonja</i>	5	7	10	5 (12)	1	1
<i>Mirna</i>	10	17	28	19 (31)	10	6
<i>Raša</i>	8	11	17	9 (19)	3	4
<i>Rječina</i>	5	6	8	3 (10)		
<i>Gacka</i>	4	7	9	9	8	
<i>Lika</i>	5	9	17	17	12	3
<i>Zrmanja</i>	10	15	23	15 (25)	5	4
<i>Krka</i>	11	18	30	22 (33)	11	9
<i>Cetina</i>	11	18	29	22 (33)	12	8
<i>Vrljika</i>	4	7	10	10	5	5
<i>Neretva</i>	13	20	36	31 (43)	12	14
<i>Ljuta</i>	2	2	5	5	1	2

and Danube, all of them contained inside the Danube drainage. Rivers with the highest number of species inside the Adriatic Basin are Neretva, Krka, Cetina and Mirna (Figure 1). Some of those species (particularly in

the Mirna River) are also brackish fish species (Mugilids) that regularly enter river mouths and the lower stretches of rivers.

## Implications for future study

The checklist presented here clearly displays the exceptional diversity of the Croatian ichthyofauna. Research conducted in recent decades has revealed the great diversity of Croatian freshwater fishes at several levels: species diversity, intraspecific genetic diversity, natural hybrid richness and functional diversity of freshwater ecosystems (Buj et al., 2008; Buj et al., 2014; Buj et al., 2018; Buj et al., 2019 in press). On the other hand, drawbacks have been recognised with regard to the current knowledge and areas where information is scarce. There are still many outstanding questions, which these can serve as guidelines for future study. The salmonids are an example of an important case where the taxonomy is yet to be resolved (Kottelat and Freyhof 2007). The unresolved taxonomy of the genus *Salmo* is a problem not only for Croatia but is characteristic for all of Europe (Kottelat and Freyhof 2007). A debate is still ongoing as to whether there is a single widespread trout species with pronounced intraspecific structuring (at least five lineages) that inhabits most European waters, or whether these are several different species, and no final answer has yet been reached (Bernatchez et al., 1992; Kottelat and Freyhof, 2007; Schenekar et al., 2014). Moreover, the taxonomic status and validity of several species described as endemic to Adriatic Basin (e.g. *Salmo visovacensis*, *S. dentex*) is questionable (see Kottelat and Freyhof, 2007). Due to their importance in freshwater ecosystems, but also in fisheries, determining the exact taxonomic status of trout populations in Croatia, as a prerequisite for their adequate conservation, should be the focus of further scientific study. The possibility of the existence of cryptic diversity has already been reported for genus *Phoxinus* (Palandačić et al., 2015). The possible discovery of an endemic species would be very important in the conservation sense. A specific taxonomic problem is also seen in the family Petromyzontidae (Tutman et al., 2017) since its taxonomy is unsettled. Comprehensive taxonomic study, including detailed analysis of the morphology, and also multilocus phylogenetic research is required to resolve this problem. Moreover, inclusion of both morphological characters and phylogenetic relationships in taxonomical studies is a necessary prerequisite to resolve taxonomic dilemmas, instead of the exclusive reliance on morphological characters which in the past has led to many incorrect taxonomic conclusions.

In addition to resolving taxonomic uncertainties, an important direction for future research would be to confirm the native distribution ranges for several species (e.g. Petromyzontidae species, *Alosa fallax*, *Chondrostoma phoxinus*, *Rutilus* spp., *Romanogobio* spp., *Misgurnus fossilis*). Due to contradictory reports by earlier authors (Langhoffer, 1904; Trgovčević, 1932; Rössler, 1931; Taler, 1953; Basioli, 1957a; Leiner & Popović, 1984; Leiner, 1985), it is often not clear whether a report of a certain

species at a locality outside its common distribution range is due to misidentification (*Barbatula barbatula* in the Lička River, *Barbus barbus* in the Neretva River, *Cobitis taenia* in the Cetina River, *Leuciscus souffia* in the Cetina River), or whether is it a case of a rare or locally extinct species, if there are no recent reports (*Rutilus aula* in the Rječina River and in the Vransko Lake, *Scardinius herzbergicus* in the Istria, *Salmo dentex* in the Cetina River). In some cases, it is easy to decide between the two hypotheses, while in others only extensive field studies can enable exclusion of one of the hypotheses.

Finally, future research should also focus on specific populations of well-known species, for which there is a lack of data on their status and they may be locally extinct or present only in very low population densities (e.g. *Salmo obtusirostris* in the Krka River, *Leucapius delineatus* in the Sava River system). Due to growing pressures on freshwater communities, such studies are urgent and should be followed by adequate conservation measures to ensure the future viability and unconstrained evolution of the observed exceptionally rich ichthyodiversity.

**Appendix 1.** Checklist of Croatian ichthyofauna (numbers before species indicate that species is native, endemic or successfully introduced; UI unsuccessfully introduced; EX=extinct species)

### 1. CLASS: PETROMYZONTI

#### 1.1. ORDER: PETROMYZONTIFORMES

##### 1.1.1. FAMILY: PETROMYZONTIDAE Bonaparte, 1831

###### EUDONTOMYZON Regan, 1911

###### 1. *Eudontomyzon vladkovi* Oliva & Zanandrea, 1959

###### Names under which the taxon was mentioned:

*Ammocoetes branchialis* Cuvier; *Eudontomyzon danfordi* Regan, 1911; *Eudontomyzon danfordi vladkovi* Oliva & Zanandrea, 1959; *Eudontomyzon mariae* Oliva & Zanandrea, 1959; *Lampetra fluviatilis* Berg, 1931; *Lampetra planeri* (Bloch, 1784); *Petromyzon fluviatilis* Linnaeus, 1758; *Petromyzon planeri* Bloch, 1784

**English name:** Vladkovic's lamprey

**Croatian name:** dunavska paklara

**Range in Croatia:** Danube Drainage

**Literature:** Taube (1777); Heckel and Kner (1858); Jurinac (1880); Jurinac (1881); Jurinac (1882); Mojsisovics (1883); Jurinac (1884); Mojsisovics (1884); Glowacki (1885); Anonymous (1886); Glowacki (1896); Hirc (1897); Ćurčić (1910); Hirc (1911); Langhoffer (1915); Vutskits (1918); Zanandrea (1958); Tadić (1959); Oliva and Zanandrea (1959); Zanandrea (1959); Vuković and Ivanović (1971); Klašterka (1979); Delić (1993); Habeković et al. (1997); Kottelat (1997); Lelek (1987); Mrakovčić et al. (1996b); Honsig-Erlenburg et al. (1997); Povž et al. (1998); Holčík and Delić (2000); Majer (2001); Mustafić (2001); Bath

(2003); Delić et al. (2003a); Mustafić (2005); Sallai and Kontos (2005); Kottelat and Freyhof (2007); Sallai and Mrakovčić (2007); Sallai and Kontos (2008); Zanella et al. (2008b); Delić et al. (2009); Dumbović et al. (2009); Jelić et al. (2009); Sofradžija (2009); Bučar et al. (2010); Buj (2010c); Perović and Tvrković (2010); Tvrković (2010); Jelić et al. (2012); Ćaleta et al. (2015); Piria et al. (2016b)

**Remarks:** endemic to the Danube drainage; literature reports of *Eudontomyzon mariae* are result of misidentification

#### LAMPETRA Gray, 1851

2. *Lampetra soljani* Tutman, Freyhof, Dulčić, Glamuzina & Geiger, 2017

**Names under which the taxon was mentioned:** *Eudontomyzon mariae* Oliva & Zanandrea, 1959; *Lampetra fluviatilis* Berg, 1931; *Lampetra planeri* (Bloch, 1784); *Lampetra zanandreai* Vladýkov, 1955; *Lethenteron zanandreai* (Vladýkov, 1955); *Petromyzon fluviatilis* Linnaeus, 1758

**English name:** Šoljan's brook lamprey

**Croatian name:** primorska paklara

**Range in Croatia:** Adriatic Basin - Neretva and Norin Rivers, Baćinska Lakes and Desne Lake

**Literature:** Maldini (1938a); Taler (1953a); Vuković and Ivanović (1971); Morović (1976); Sofradžija and Hadžiselimović (1981); Crivelli (1996); Mrakovčić et al. (1996a); Holčík and Mrakovčić (1997); Leiner (1998b); Tvrković (1998); Mrakovčić et al. (2000a); Tvrković and Franičević (2002); Zerunian (2004); Tvrković and Veen (2006); Kottelat and Freyhof (2007); Glamuzina et al. (2010b); Povž (2011); Renaud (2011); Glamuzina et al. (2013); Ćaleta et al. (2015); Tutman et al. (2017)

**Remarks:** endemic to the Neretva River drainage and the Adriatic Basin, reports for the Istria are not confirmed

#### PETROMYZON Linnaeus, 1758

3. *Petromyzon marinus* Linnaeus, 1758

**Names under which the taxon was mentioned:** *Petromyzon fluviatilis* Linnaeus, 1758

**English name:** Sea lamprey

**Croatian name:** morska paklara

**Range in Croatia:** Adriatic Basin - Neretva River

**Literature:** Carrara (1846); Nardo (1847); Heckel and Kner (1858); Kolombatović (1881); Kolombatović (1882); Faber (1883); Katurić (1883); Kolombatović (1886a); Kolombatović (1886b); Kolombatović (1888); Carus (1889-1893); Botteri (1891); Kišpatić (1893); Damin (1900); Kosić (1903); Langhoffer (1904); Katurić 1907); Maldini (1938c); Taler (1953a); Zanandrea (1958); Tadić (1959); Vuković (1963); Morović (1965); Vuković and Ivanović (1971);

Sofradžija and Hadžiselimović (1981); Hardisty (1986); Kottelat (1997); Leiner (1998b); Holčík et al. (2004); Kottelat and Freyhof (2007); Jardas et al. (2008); Kovačić (2008); Tvrković et al. (2009); Lipej and Dulčić (2010); Mrakovčić and Ćaleta (2011); Renaud (2011); Glamuzina et al. (2013)

**Remarks:** reports for the lower course and mouth of the Cetina River and Istria are not confirmed

## 2. CLASS: ACTINOPTERI

### 2.1. ORDER: ACIPENSERIFORMES

#### 2.1.1. FAMILY: ACIPENSERIDAE Bonaparte, 1831

##### ACIPENSER Linnaeus, 1758

UI1 *Acipenser baerii* Brandt, 1869

**English name:** Siberian sturgeon

**Croatian name:** sibirska jesetra

**Range in Croatia:** Danube drainage - introduced locally

**Remarks:** non-native species; introduced to the Draganići fish farm for aquaculture purposes without a self-sustaining population

EX1 *Acipenser gueldenstaedtii* Brandt & Ratzeburg, 1833

**Names under which the taxon was mentioned:** *Acipenser aculeatus* Lovetsky, 1834; *Acipenser guldenstädti colchicus* Marti, 1940

**English name:** Russian sturgeon

**Croatian name:** jesetra

**Range in Croatia:** Danube drainage - Danube, Drava and Sava Rivers

**Literature:** Fitzinger and Heckel (1836); Bonaparte (1846); Heckel and Kner (1858); Mojsisovics (1883); Mojsisovics (1884); Glowacki (1885); Anonymous (1886); Anonymous (1886); Seeley (1886); Dudan (1893); Kišpatić (1893); Glowacki (1896); Hirc (1897); Mojsisovics (1897); Brusina (1902); Čurčić (1910); Vutskits (1918); Maldini (1935a); Pešić (1955); Sabioncello (1967); Vuković and Ivanović (1971); Klašterka (1979); Mikuska (1979); Sofradžija and Hadžiselimović (1981); Mikuska (1983b); Lelek (1987); Vlasenko et al. (1989); Hensel and Holčík (1997); Jirásek and Fašaić (2000); Bloesch et al. (2006a); Bloesch et al. (2006b); Mrakovčić et al. (2006); Sofradžija (2009); Schmall and Friedrich (2014b); Schmall and Friedrich (2014d)

**Remarks:** regionally extinct species

EX2 *Acipenser naccarii* Bonaparte, 1836

**Names under which the taxon was mentioned:** *Acipenser aculeatus* Lovetsky, 1834; *Acipenser heckelii* Brandt & Ratzeburg, 1833; *Acipenser nardoii* Heckel, 1851; *Acipenser nasus* Heckel, 1847

**English name:** Adriatic sturgeon  
**Croatian name:** jadranska jesetra  
**Range in Croatia:** Adriatic Basin - Neretva and Cetina Rivers  
**Literature:** Bonaparte (1846); Heckel and Kner (1858); Perugia (1881); Seeley (1886); Kolombatović (1894); Brusina (1902); Kosić (1903); Katurić (1903); Langhoffer (1904); Maldini (1936c); Taler (1951b); Taler (1951f); Sabioncello (1967); Vuković and Ivanović (1971); Sofradžija and Hadžiselimović (1981); Bojčić et al. (1982); Tvrtković (1985); Lelek (1987); Tortonese (1989); Crivelli (1996); Jardas (1996); Jardas et al. (2008); Leiner (1998b); Jirásek and Fašaić (2000); Zerunian (2004); Bloesch et al. (2006a); Bloesch et al. (2006b); Mrakovčić et al. (2006); Kottelat and Freyhof (2007); Valić et al. (2008); Tvrtković et al. (2009); Sofradžija (2009); Glamuzina et al. (2010b); Glamuzina et al. (2013); Schmall and Friedrich (2014d); Ćaleta et al. (2015); Piria et al. (2016b)  
**Remarks:** regionally extinct species in freshwater habitats

4. *Acipenser nudiventris* Lovetsky, 1828

**Names under which the taxon was mentioned:** *Acipenser glaber* Fitzinger, 1836; *Acipenser glaber* Fitzinger, 1836; *Acipenser schypa* Güldenstädt, 1772

**English name:** Ship sturgeon  
**Croatian name:** sim  
**Range in Croatia:** Danube drainage - Danube, Drava, Mura, Sava, Una, Kupa and Lonja Rivers  
**Literature:** Marsigli (1726); Fitzinger and Heckel (1836); Bonaparte (1846); Heckel and Kner (1858); Sebišanović (1880); Mojsisovics (1883); Frick (1883); Mojsisovics (1884); Glowacki (1885); Anonymous (1886); Seeley (1886); Brusina (1892); Dudan (1893); Kišpatić (1893); Glowacki (1896); Brusina (1902); Langhoffer (1904); RHZZM (1908); Čurčić (1910); Vutskits (1918); Plančić (1920); Plančić (1923a); Anonymous (1929b); Böhm (1929); Anonymous (1931c); Thaller (1932); Trojanović (1934); Anonymous (1935d); Jedlička (1935); Maldini (1935a); Maldini (1937); Hafner-Lahorski (1948b); Taler (1948b); Hafner-Lahorski (1950c); Plančić (1952d); Plančić (1952e); Pešić (1955); Jagodić (1957); Ristić (1963); Vuković (1963); Hadžić (1964c); Stepanek (1966); Sabioncello (1967); Tóth and Mikuska (1971); Vuković and Ivanović (1971); Munjko (1972); Vrebac (1972); Herga (1968); Klašterka (1979); Mikuska (1979); Sofradžija and Hadžiselimović (1981); Bojčić et al. (1982); Veljović (1982); Mikuska (1983a); Mikuska (1983b); Delić (1984); Mikuska (1984); Vrenk (1984); Tvrtković (1985); Veljović (1985); Lelek (1987); Sokolov and Vasil'ev (1989a); Homen et al. (1991); Harka (1992); Kolar-Dimitrijević (1994); Mrakovčić et al. (1996b); Biber (1997); Hensel and Holčík (1997); Kottelat (1997); Majer (1998); Jirásek and Fašaić (2000); Mustafić (2001); Jakirčević (2005); Mustafić (2005); Sallai and Kontos (2005); Bloesch et al. (2006a); Bloesch et al. (2006b); Lenhardt et al. (2006); Mrakovčić et al. (2006); Sallai and Mrakovčić (2007); Sallai and Kontos (2008); Suić et al. (2008); Guti and Gaebele (2009); Sofradžija (2009); Ozimec et al. (2010); Labak (2011); Freyhof (2012); Jelić et al. (2012); Tomljanović et al. (2013b); Schmall and Friedrich (2014c); Schmall and Friedrich (2014d)

**Remarks:** over the past 20 years, only a few individuals have been reported, and likely originated from breeding programmes

5. *Acipenser ruthenus* Linnaeus, 1758

**Names under which the taxon was mentioned:** *Acipenser gmelini* Fitzinger, 1836; *Acipenser pygmaeus* Pallas, 1814; *Acipenser ruthenus* var. *albinea* Brusina, 1902; *Acipenser ruthenus* var. *birostrata* Brusina, 1902; *Acipenser ruthenus* var. *obtusirostris* Brusina, 1902

**English name:** Sterlet  
**Croatian name:** kečiga  
**Range in Croatia:** Danube drainage - lower rivers course  
**Literature:** Taube (1777); Fitzinger and Heckel (1836); Heckel and Kner (1858); Brusina (1878); Jurinac (1880); Sebišanović (1880); Frick (1883); Mojsisovics (1883); Jurinac (1884); Mojsisovics (1884); Glowacki (1885); Anonymous (1886); Kesterčanek (1886); Seeley (1886); Mojsisovics (1887); Hefele (1889); Mojsisovics (1889); Brusina (1892); Franke (1892); Brusina (1893); Dudan (1893); Kišpatić (1893); Flögel (1894); Glowacki (1896); Hirc (1897); Mojsisovics (1897); Anonymous (1898b); Hawlitschek (1898); Medić (1901b); Ribić (1901); Brusina (1902); Langhoffer (1904); RHZZM (1908); Čurčić (1910); Vutskits (1918); Plančić (1920); Plančić (1923a); Anonymous (1929b); Böhm (1929); Anonymous (1931c); Thaller (1932); Trojanović (1934); Anonymous (1935d); Jedlička (1935); Maldini (1935a); Maldini (1937); Hafner-Lahorski (1948b); Taler (1948b); Hafner-Lahorski (1950c); Plančić (1952d); Plančić (1952e); Pešić (1955); Jagodić (1957); Ristić (1963); Vuković (1963); Hadžić (1964c); Stepanek (1966); Sabioncello (1967); Tóth and Mikuska (1971); Vuković and Ivanović (1971); Munjko (1972); Vrebac (1972); Herga (1968); Klašterka (1979); Mikuska (1979); Sofradžija and Hadžiselimović (1981); Bojčić et al. (1982); Veljović (1982); Mikuska (1983a); Mikuska (1983b); Delić (1984); Mikuska (1984); Vrenk (1984); Tvrtković (1985); Veljović (1985); Lelek (1987); Sokolov and Vasil'ev (1989a); Homen et al. (1991); Harka (1992); Kolar-Dimitrijević (1994); Mrakovčić et al. (1996b); Biber (1997); Hensel and Holčík (1997); Kottelat (1997); Majer (1998); Jirásek and Fašaić (2000); Mustafić (2001); Jakirčević (2005); Mustafić (2005); Sallai and Kontos (2005); Bloesch et al. (2006a); Bloesch et al. (2006b); Lenhardt et al. (2006); Mrakovčić et al. (2006); Sallai and Mrakovčić (2007); Sallai and Kontos (2008); Suić et al. (2008); Guti and Gaebele (2009); Sofradžija (2009); Ozimec et al. (2010); Labak (2011); Freyhof (2012); Jelić et al. (2012); Tomljanović et al. (2013b); Schmall and Friedrich (2014c); Schmall and Friedrich (2014d)

EX3      *Acipenser stellatus* Pallas, 1771

**Names under which the taxon was mentioned:** *Acipenser stellatus danubialis* Brusina, 1902; *Acipenser stellatus illyricus* Brusina, 1902

**English name:** Stellate sturgeon  
**Croatian name:** pastruga  
**Range in Croatia:** Danube drainage - Danube, Drava and

## Sava Rivers

**Literature:** Heckel and Kner (1858); Perugia (1881); Faber (1883); Frick (1883); Mojsisovics (1883); Mojsisovics (1884); Glowacki (1885); Anonymous (1886); Kolombatović (1886a); Kolombatović (1886b); Mojsisovics (1887); Kolombatović (1888); Mojsisovics (1889); Kišpatić (1893); Kolombatović (1894); Anonymous (1894g); Trois (1896); Glowacki (1896); Medić (1896); Hirc (1897); Mojsisovics (1897); Medić (1898); Horvat (1901); Medić (1901a); Brusina (1902); Katurić (1903); Kosić (1903); Brusina (1907); Kolombatović (1907); Vutskits (1918); Plančić (1923b); Tadić (1931); Tadić (1932); Maldini (1935a); Rotarides (1944); Berg (1948); Taler (1951f); Taler (1953a); Pešić (1955); Ristić (1963); Sabioncello (1967); Vuković and Ivanović (1971); Mikuska (1983a); Mikuska (1983b); Lelek (1987); Shubina et al. (1989); Hensel and Holčík (1997); Kottelat (1997); Jirásek and Fašaić (2000); Bloesch et al. (2006a); Bloesch et al. (2006b); Mrakovčić et al. (2006); Schmall and Friedrich (2014b); Schmall and Friedrich (2014d)

**Remarks:** regionally extinct species

EX4 *Acipenser sturio* Linnaeus, 1758

**English name:** Atlantic sturgeon

**Croatian name:** atlanska jesetra

**Range in Croatia:** Danube drainage - Danube, Drava and Sava Rivers; Adriatic Basin - Neretva River

**Literature:** Heckel and Kner (1858); Kolombatović (1881); Perugia (1881); Faber (1883); Kolombatović (1886a); Kolombatović (1886b); Seeley (1886); Kolombatović (1888); Hefele (1889); Kosić (1889); Brusina (1892); Kišpatić (1893); Katurić (1896d); Hawlitschek (1898); Brusina (1902); Katurić (1903); Kosić (1903); Langhoffer (1904); Kolombatović (1907); Anonymous (1908a); Čurčić (1910); Vutskits (1918); Thaller (1932); Anonymous (1935g); Maldini (1935a); Taler (1946a); Taler (1951f); Taler (1953a); Pešić (1955); Basioli (1959); Tadić (1966); Sabioncello (1967); Stevanović (1969a); Vuković and Ivanović (1971); Sofradžija and Hadžiselimović (1981); Bojčić et al. (1982); Tvrtković (1985); Lelek (1987); Holčík et al. (1989); Pirogovskii et al. (1989); Jardas (1996); Bloesch et al. (2006a); Bloesch et al. (2006b); Mrakovčić et al. (2006); Kottelat and Freyhof (2007); Kovačić (2008); Schmall and Friedrich (2014a); Schmall and Friedrich (2014d)

**Remarks:** regionally extinct species; reports for the Ombla River near Dubrovnik are not confirmed

## HUSO Brandt &amp; Ratzeburg, 1833

EX5 *Huso huso* (Linnaeus, 1758)

**Names under which the taxon was mentioned:** *Acipenser huso* Linnaeus, 1758

**English name:** Beluga

**Croatian name:** moruna

**Range in Croatia:** Danube drainage - Danube, Drava, Sava and Kupa Rivers; Adriatic Basin - Neretva River

**Literature:** Fitzinger and Heckel (1836); Heckel and Kner (1858); Brusina (1878); Perugia (1881); Kesterčanek (1886); Seeley (1886); Šoštarić (1888); Hefele (1889); Brusina (1892); Dudan (1893); Kišpatić (1893); Kolombatović (1894); Mojsisovics (1884); Anonymous (1894g); Katurić (1896d); Hirc (1897); Hawlitschek (1898); Steuer (1899); Anonymous (1900a); Brusina (1902); Katurić (1903); Kosić (1903); Langhoffer (1904); Kolombatović (1907); Anonymous (1908a); Čurčić (1910); Vutskits (1918); Thaller (1932); Anonymous (1935g); Maldini (1935a); Taler (1946a); Taler (1951f); Taler (1953a); Pešić (1955); Basioli (1959); Tadić (1966); Sabioncello (1967); Stevanović (1969a); Vuković and Ivanović (1971); Sofradžija and Hadžiselimović (1981); Bojčić et al. (1982); Tvrtković (1985); Lelek (1987); Holčík et al. (1989); Pirogovskii et al. (1989); Jardas (1996); Bloesch et al. (2006a); Bloesch et al. (2006b); Mrakovčić et al. (2006); Kottelat and Freyhof (2007); Kovačić (2008); Schmall and Friedrich (2014a); Schmall and Friedrich (2014d)

**Remarks:** regionally extinct species; introduced to fish farms for aquaculture purposes (Recirculation Aquaculture Systems)

## FAMILY: POLYODONTIDAE Bonaparte, 1835

## POLYODON Lacepède, 1797

UI2 *Polyodon spathula* (Walbaum, 1792)

**English name:** Paddlefish

**Croatian name:** veslokljunka

**Range in Croatia:** Danube drainage - Danube River

**Literature:** Jelkić and Opačak (2013); Piria et al. (2016b); Piria et al. (2018)

**Remarks:** non-native species in Croatia; only a few individuals recorded in the Danube River, originating from breeding programmes

## 2.2. ORDER: ANGUILLIFORMES

## 2.2.1. FAMILY: ANGUILLIDAE Rafinesque, 1810

## ANGUILLA Schrank, 1798

6. *Anguilla anguilla* (Linnaeus, 1758)

**Names under which the taxon was mentioned:** *Anguilla eurystoma* Heckel & Kner, 1858; *Anguilla fluviatilis* Anslijn, 1828; *Anguilla vulgaris* Shaw, 1803; *Muraena anguilla* Linnaeus, 1758

**English name:** European eel

**Croatian name:** jegulja

**Range in Croatia:** Danube drainage - sparse reports; Adriatic Basin - widespread

**Literature:** Fortis (1771); Fortis (1774); Taube (1777); Grisogono (1780); Rödlich (1811); Lanza (1842); Seljan (1843); Carrara (1846); Heckel and Kner (1858); Canestrini (1866); Šloser (1870); Brusina (1874); Brusina (1878); Kolombatović (1881); Faber (1883); Mojsisovics (1883); Mojsisovics (1884); Kesterčanek (1886); Kolombatović (1886a); Kolombatović (1886b); Seeley (1886); Katurić (1887); Kolombatović (1888); Kosić (1889); Mojsisovics (1889); Sebišanović (1890); Botteri (1891); Bullo (1891); Brusina (1892); Anonymous (1893d); Dudan (1893); Kišpatić (1893); Kolombatović (1893); Anonymous (1894e); Anonymous (1894f); Katurić (1896b); Katurić (1896c); Katurić (1896e); Hirc (1897); Mojsisovics (1897); Petermann (1899); Horvat (1900b); Horvat (1901); Kosić (1903); Langhoffer (1904); Largaiolli (1904); Anonymous (1906a); Anonymous (1907a); Brusina (1907); Katurić 1907; Kolombatović (1907); Anonymous (1908b); Anonymous (1908c); Brusina (1908); RHZZM (1908); Trgovčević (1908); Anonymous (1910b); Langhoffer (1910); Lorini (1910); Car (1911); Anonymous (1913b); Anonymous (1914); Fink (1920); Lorini (1921); Houška (1924); Hirc (1925); Anonymous (1928b); Anonymous (1928e); Hirtz (1928); Parenzan (1928); Wettstein (1928); Anonymous (1931e); Rössler (1931); Šoljan (1931); Thaller (1932); Gandolfi-Hornýold (1933); Tadić (1933); Hafner-Lahorski (1935b); Maldini (1935b); Gridelli (1936); Čurčić (1938); Gandolfi-Hornýold (1938); Maldini (1938b); Dojmi (1939); Anonymous (1947d); Hafner-Lahorski (1947a); Morović (1947); Fijan (1948b); Morović (1948); Plančić (1948); Taler (1948c); Fijan (1949); Plančić (1949); Plančić (1950); Fijan (1951a); Taler (1951g); Basioli (1952); Kovačević (1952); Plančić (1952c); Plančić (1952d); Fijan (1953); Hafner-Lahorski (1953b); Plančić et al. (1953); Plančić (1953a); Plančić (1953b); Škovrlj (1953a); Taler (1953a); Taler (1954a); Anonymous (1955b); Morović (1955); Plančić (1955); Fijan (1956); Grce (1956); Basioli (1957a); Basioli (1957b); Grce (1957); Grubišić (1957); Anonymous (1958b); Basioli (1958a); Basioli (1958b); Porečnik (1958); Basioli (1959); Grce (1959); Basioli (1960); Dubac (1961); Morović (1961); Pešić (1961); Livojević (1962b); Livojević (1962a); Morović (1962); Marčić Brusina (1963); Morović (1963); Vuković (1963); Anonymous (1964); Morović (1964b); Morović (1964a); Sabioncello et al. (1964); Anonymous (1965c); Morović (1966); Stepanek (1966); Anonymous (1967); Habeković (1967); Morović (1967); Sabioncello (1967); Stevanović (1969b); Giunio (1970); Morović (1970); Basioli (1971); Vuković and Ivanović (1971); Kolaković (1972); Morović (1972); Morović (1976); Morović (1978); Klašterka (1979); Mikuska (1979); Žikić and Bertoša (1980); Bojčić et al. (1982); Veljović (1982); Mikuska (1983a); Mikuska (1983b); Ocvirk (1984); Popović et al. (1984); Treer et al. (1984); Leiner (1985); Ocvirk (1985); Tvrković (1985); Bojčić (1987); Lelek (1987); Mišetić et al. (1989); Treer (1989); Fašaić et al. (1990); Mrakovčić and Mišetić (1990a); Povž et al. (1990); Habeković (1993); Host (1993); Leiner and Povž (1993); Peričić (1993); Curić (1994); Leiner and Povž (1994); Leiner et al. (1995); Mrakovčić et al. (1995); Jardas (1996); Maitland and Crivelli (1996); Mrakovčić et al. (1996a); Mrakovčić et al. (1996b); Holčík and Mrakovčić (1997); Kottelat (1997); Bonacci et al. (1998); Kerovec (1998); Leiner (1998b); Pallaoro (1998); Schneider (1998); Tvrković (1998); Mrakovčić et al. (2000a); Mrakovčić et al. (2000b); Mikavica et al. (2001); Simonović (2001); Povž (2002); Treer et al. (2002); Treer et al. (2003c); Balbo (2005); Bašić (2005); Jakirčević (2005); Matić-Skoko et al. (2005); Mustafić (2005); Pažur (2005); Treer et al. (2005); Dulčić and Glamuzina (2006); Has-Schön et al. (2006); Mrakovčić et al. (2006); Tvrković and Veen (2006); Valić (2006); Dulčić et al. (2007); Kottelat and Freyhof (2007); Sallai and Mrakovčić (2007); Tutman et al. (2007); Valić et al. (2007); Kovačić (2008); Marguš (2008); Muhamedagić et al. (2008); Sallai and Kontos (2008); Kužir et al. (2009); Sofradžija (2009); Tvrković et al. (2009); Bukvić et al. (2010); Glamuzina (2010); Marević (2010); Valić (2010); Vardić Smržlić (2010); Mrakovčić and Ćaleta (2011); Jelić et al. (2012); Šiljeg (2012); Glamuzina et al. (2013); Miočić-Stošić and Kovačević (2013); Duplić (2014); Piria et al. (2014); Tomljanović (2014); Babić (2016); Jelić et al. (2016); Piria et al. (2016b); Piria et al. (2016c); Piria et al. (2016d); Mustafić et al. (2017); Pofuk et al. (2017)

**Remarks:** in the Danube drainage is very rare based on natural migration and latest reports probably originate from breeding

### 2.3. ORDER: CLUPEIFORMES

#### 2.3.1. FAMILY: CLUPEIDAE Cuvier, 1816

ALOSA Garsault, 1764

7. *Alosa fallax* (Lacepède, 1803)

**Names under which the taxon was mentioned:** *Alosa alosa* (Linnaeus, 1758); *Alosa fallax nilotica* (Geoffroy Saint-Hilaire, 1809); *Alosa finta* (Cuvier, 1829); *Alosa vulgaris* (Valenciennes, 1847)

**English name:** Twaite shad

**Croatian name:** čepa

**Range in Croatia:** Adriatic Basin - Neretva River drainage and Baćinska Lakes

**Literature:** Kolombatović (1881); Kolombatović (1886b); Kosić (1899); Botteri (1891); Kosić (1903); Katurić 1907; Morović (1948); Šoljan (1948); Taler (1953a); Morović (1958); Vuković (1961); Vuković (1962); Vuković (1963); Sabioncello (1967); Vuković and Ivanović (1971); Šoljan (1975); Morović (1976); Bojčić et al. (1982); Lelek (1987); Quignard and Douchement (1991); Mrakovčić et al. (1995); Jardas (1996); Kovačić (1998); Mrakovčić (1998); Mrakovčić et al. (2000a); Mikavica et al. (2001); Bianco (2002); Aprahamian (2003); Mrakovčić et al. (2006); Dulčić and Glamuzina (2006); Dulčić et al. (2007); Muhamedagić et al. (2008); Sofradžija (2009); Glamuzina et al. (2010b); Lipej and Dulčić (2010); Glamuzina et al. (2013); Piria et al.

al. (2016b)

**Remarks:** reports for the Ombla River near Dubrovnik have not been confirmed

EX6     *Alosa immaculata* Bennett, 1835

**Names under which the taxon was mentioned:** *Alausa vulgaris* Valenciennes, 1847; *Alosa alosa* (Linnaeus, 1758); *Alosa caspia nordmanni* Antipa, 1904; *Alosa finta* (Cuvier, 1829); *Alosa kessleri pontica* (Eichwald, 1838); *Alosa pontica* (Eichwald, 1838); *Alosa vulgaris* (Valenciennes, 1847); *Caspialosa nordmanni* Knipowitsch, 1923

**English name:** Pontic shad

**Croatian name:** dunavska haringa

**Range in Croatia:** Danube drainage - Danube, Drava and Sava Rivers

**Literature:** Mojsisovics (1884); Mojsisovics (1887); Mojsisovics (1897); Glowacki (1885); Sabioncello (1967); Vuković and Ivanović (1971); Mikuska (1979); Bojčić et al. (1982); Mikuska (1983b); Mrakovčić et al. (2006); Sofradžija 2009)

**Remarks:** regionally extinct species

#### 2.4. ORDER: CYPRINIFORMES

##### 2.4.1. FAMILY: COBITIDAE Swainson, 1838

COBITIS Linnaeus, 1758

8. *Cobitis bilineata* Canestrini, 1865

**Names under which the taxon was mentioned:** *Cobitis taenia bilineata* Canestrini, 1865; *Cobitis taenia dalmatina* Karaman, 1928

**English name:** Italian spined loach

**Croatian name:** dvoprugasti vijun

**Range in Croatia:** Danube drainage - Plitvice Lakes; Adriatic Basin - Zrmanja River drainage

**Literature:** Mrakovčić et al. (1995); Mrakovčić et al. (2000c); Schneider et al. (2000b); Bohlen and Ráb (2001); Freyhof and Stelbrink (2007); Kottelat and Freyhof (2007); Buj et al. (2008b); Mrakovčić et al. (2008); Mustafić et al. (2008); Perdices et al. (2008); Zrnčić et al. (2009b); Buj (2010a); Miočić-Stošić and Kovačević (2013); Buj et al. (2014); Buj et al. (2015a); Buj et al. (2015c)

**Remarks:** taxonomic investigation of specimens from the Plitvice Lakes, previously reported as *C. taenia* and *C. elongatooides*, proved to be *C. bilineata*

9. *Cobitis dalmatina* Karaman, 1928

**Names under which the taxon was mentioned:** *Cobitis taenia* Linnaeus, 1758; *Cobitis taenia dalmatina* Karaman, 1928

**English name:** Dalmatian spined loach

**Croatian name:** cetinski vijun

**Range in Croatia:** Adriatic Basin - Cetina River drainage

**Literature:** Giglioli (1880); Faber (1883); Katurić (1883); Kolombatović (1886a); Kolombatović (1888); Katurić (1896a); Langhoffer (1904); Brusina (1907); Karaman (1928); Karaman (1929); Rössler (1931); Taler (1953a); Sabioncello (1967); Marko et al. (1968); Vuković and Ivanović (1971); Bojčić et al. (1982); Lelek (1987); Povž et al. (1990); Habeković (1993); Mrakovčić et al. (1995); Kottelat (1997); Kerovec (1998); Schneider (1998); Tvrtković (1998); Nocita and Vanni (1999); Habeković and Mišetić (2000); Mrakovčić et al. (2000c); Schneider et al. (2000b); Bohlen and Ráb (2001); Odak et al. (2002); Mateš (2004); Mustafić (2005); Mrakovčić et al. (2006); Freyhof and Stelbrink (2007); Kottelat and Freyhof (2007); Buj et al. (2008b); Duplić (2008); Jelić et al. (2008); Mrakovčić et al. (2008); Mustafić et al. (2008); Perdices et al. (2008); Šanda et al. (2008); Tvrtković et al. (2009); Buj (2010a); Popović (2010); Mrakovčić and Ćaleta (2011); Freyhof (2012); Kottelat (2012); Buj et al. (2014); Buj et al. (2015a); Buj et al. (2015c); Ćaleta et al. (2015)

**Remarks:** reports for the Zrmanja River is result of misidentification; stenoendemic to the Cetina River and endemic to Croatia

10. *Cobitis elongata* Heckel & Kner, 1858

**Names under which the taxon was mentioned:** *Cobitis taenia* Linnaeus, 1758; *Cobitis taenia elongata* Heckel & Kner, 1858

**English name:** Balkan spined loach

**Croatian name:** veliki vijun

**Range in Croatia:** Danube drainage - Sava, Kupa and Una Rivers and their tributaries

**Literature:** Steindachner (1866b); Sebišanović (1880); Brusina (1892); Medić (1901b); RHZZM (1908); Maldini (1935c); Karaman (1952); Vuković and Ivanović (1971); Delić (1993); Habeković et al. (1997); Honsig-Erlenburg et al. (1997); Povž et al. (1998); Mrakovčić et al. (2000c); Povž and Šumer (2000); Bohlen and Ráb (2001); Mrakovčić et al. (2002); Delić et al. (2003a); Povž and Šumer (2003); Mustafić (2005); Mrakovčić et al. (2006); Ćaleta (2007); Ivelić et al. (2007); Kottelat and Freyhof (2007); Buj et al. (2008b); Kopjar et al. (2008); Kučinić (2008); Mičetić et al. (2008); Mrakovčić et al. (2008); Treer et al. (2008a); Dumbović et al. (2009); Sofradžija (2009); Bučar et al. (2010); Buj (2010a); Popović (2010); Piria et al. (2011b); Jakovlić et al. (2013); Delić et al. (2014a); Delić et al. (2014b); Ćaleta et al. (2015); Piria et al. (2016a); Piria et al. (2016b); Simonović et al. (2017b)

**Remarks:** endemic to the Danube drainage

11. *Cobitis elongatoides* Băcescu & Mayer, 1969

**Names under which the taxon was mentioned:** *Cobitis taenia* Linnaeus, 1758; *Cobitis taenia danubialis* Nalbant, 1993

**English name:** Danube spined loach

**Croatian name:** obični vijun

**Range in Croatia:** Danube drainage - middle and lower course of rivers

**Literature:** Heckel and Kner (1858); Jurinac (1880); Sebišanović (1880); Sebišanović (1881); Mojsisovics (1883); Jurinac (1884); Mojsisovics (1884); Glowacki (1885); Anonymous (1886); Mojsisovics (1889); Sebišanović (1890); Dudan (1893); Kišpatić (1893); Glowacki (1896); Hirc (1897); Hirc (1898); RHZZM (1908); Hirc (1902d); Čurčić (1910); Franić (1910); Hirc (1911); Vutskits (1918); Karaman (1923b); Anonymous (1925); Pešić (1955); Sabioncello (1967); Zobundžija (1968); Vuković and Ivanović (1971); Mikuska (1979); Sofradžija and Hadžiselimović (1981); Bojčić et al. (1982); Veljović (1982); Mikuska (1983a); Mikuska (1983b); Leiner (1985); Habeković et al. (1986); Lelek (1987); Habeković et al. (1990); Povž and Sket (1990); Habeković and Popović (1991); Habeković et al. (1992); Mrakovčić (1992); Delić (1993); Mrakovčić et al. (1996b); Habeković et al. (1997); Honsig-Erlenburg et al. (1997); Leiner (1998a); Majer (1998); Povž et al. (1998); Schneider (1998); Mrakovčić et al. (2000c); Povž and Šumer (2000); Schneider et al. (2000b); Zanella et al. (2000); Mustafić (2001); Mrakovčić et al. (2002); Bakota et al. (2003); Delić et al. (2003a); Mustafić et al. (2003); Getz (2004); Jugović (2004); Mustafić (2005); Sallai and Kontos (2005); Mrakovčić et al. (2006); Ćaleta (2007); Ivelić et al. (2007); Kottelat and Freyhof (2007); Prpa et al. (2007); Sallai and Mrakovčić (2007); Buj et al. (2008b); Mrakovčić et al. (2008); Sallai and Kontos (2008); Sevcik and Erös (2008); Treer et al. (2008a); Delić et al. (2009); Dumbović et al. (2009); Jelić et al. (2009); Kerestessy et al. (2009); Sofradžija (2009); Treer et al. (2009); Zrnčić et al. (2009b); Bučar et al. (2010); Buj (2010a); Jelić et al. (2010); Tvrtković (2010); Vardić Smržlić (2010); Piria et al. (2011b); Jelić et al. (2012); Delić et al. (2014a); Žutinić et al. (2014); Huang et al. (2016); Piria et al. (2016a); Simonović et al. (2017b)

**Remarks:** Co-occurrence of *C. elongatoides* with all-female triploid hybrid biotypes has been reported from the Sava and Drava River systems

12. *Cobitis illyrica* Freyhof & Stelbrink, 2007

**Names under which the taxon was mentioned:** *Cobitis narentana* Karaman, 1928; *Cobitis taenia* Linnaeus, 1758; *Cobitis taenia dalmatina* Karaman, 1928; *Cobitis taenia narentana* Karaman, 1928

**English name:** Illyrian spined loach

**Croatian name:** ilirska vijun

**Range in Croatia:** Adriatic Basin - Prološko Blato Lake and Baćinska Lakes, Matica River near Vrgorac

**Literature:** Faber (1883); Katurić (1883); Kolombatović (1886a); Kolombatović (1886b (*Cobitis taenia*)); Kolombatović (1888); Katurić (1896a); Mrakovčić et al. (1996a); Holčík and Mrakovčić (1997); Leiner (1998b); Schneider (1998); Durand et al. (2000); Mrakovčić et al. (2000a); Schneider et al. (2000a); Miotti (2002); Zanella et al. (2003a); Freyhof and Stelbrink (2007); Kottelat and Freyhof (2007); Duplić (2008); Jelić et al. (2008); Mrakovčić et al. (2008); Mustafić et al. (2008); Šanda et al. (2008); Buj (2010a); Popović (2010); Freyhof (2012); Kottelat (2012); Buj et al. (2014); Buj et al. (2015a); Buj et al. (2015c); Ćaleta et al. (2015)

**Remarks:** endemic to the Adriatic Basin

13. *Cobitis jadovaensis* Mustafic & Mrakovcic, 2008

**Names under which the taxon was mentioned:** *Barbatula barbatula* (Linnaeus, 1758); *Cobitis taenia* Linnaeus, 1758

**English name:** Jadova spined loach

**Croatian name:** jadovski vijun

**Range in Croatia:** Adriatic Basin - Jadova River

**Literature:** Buj et al. (2008b); Jelić et al. (2008); Buj et al. (2008b); Duplić (2008); Mrakovčić et al. (2008); Mustafić et al. (2008); Buj (2010a); Popović (2010); Freyhof (2012); Kottelat (2012); Buj et al. (2014); Buj et al. (2015c); Ćaleta et al. (2015); Mihinjač et al. (2015a); Jelić et al. (2016); Jelić and Krivek (2017)

**Remarks:** stenoendemic to the Jadova River and endemic to Croatia

14. *Cobitis narentana* Karaman, 1928

**Names under which the taxon was mentioned:** *Cobitis taenia* Linnaeus, 1758; *Cobitis taenia narentana* Karaman, 1928

**English name:** Neretva spined loach

**Croatian name:** neretvanski vijun

**Range in Croatia:** Adriatic Basin - Neretva River drainage

**Literature:** Faber (1883); Katurić (1883); Katurić (1896a); Katurić 1907; Karaman (1928); Karaman (1929); Taler (1953a); Vuković (1963); Sabioncello (1967); Vuković and Ivanović (1971); Bojčić et al. (1982); Kottelat (1997); Leiner (1998b); Schneider (1998); Mrakovčić et al. (2000c); Schneider et al. (2000a); Schneider et al. (2000b); Bohlen and Ráb (2001); Odak et al. (2002); Zanella et al. (2003a); Mrakovčić et al. (2006); Freyhof and Stelbrink (2007); Kottelat and Freyhof (2007); Buj et al. (2008b); Jelić et al. (2008); Mrakovčić et al. (2008); Mustafić et al. (2008); Šanda et al. (2008); Sofradžija (2009); Zanella et al. (2009b); Buj (2010a); Glamuzina et al. (2010b); Popović (2010); Gabelica et al. (2011); Freyhof (2012); Kottelat

(2012); Glamuzina et al. (2013); Buj et al. (2014); Buj et al. (2015a); Buj et al. (2015c); Ćaleta et al. (2015)

**Remarks:** reports for the Cetina River is the result of misidentification; endemic to the Neretva River drainage

MISGURNUS Lacepède, 1803

15. *Misgurnus fossilis* (Linnaeus, 1758)

**Names under which the taxon was mentioned:** *Cobitis fossilis* Linnaeus, 1758

**English name:** Weatherfish

**Croatian name:** piškur

**Range in Croatia:** Danube drainage - lower course and backwaters of rivers; Adriatic Basin - Gacka River, Blata Field and Stajnička Jaruga creek in the Lika region

**Literature:** Taube (1777); Heckel and Kner (1858); Brusina (1878); Jurinac (1880); Sebišanović (1880); Sebišanović (1881); Mojsisovics (1883); Jurinac (1884); Glowacki (1885); Anonymous (1886); Kesterčanek (1886); Jurinac (1887); Hefele (1889); Mojsisovics (1889); Sebišanović (1890); Brusina (1892); Dudan (1893); Kišpatić (1893); Anonymous (1894f); Glowacki (1896); Hirc (1896); Hirc (1897); Hirc (1899d); Ivakić (1905); RHZZM (1908); Trgovčević (1908); Anonymous (1909a); Čurčić (1910); Kempf (1910); Lang (1911); Vutskits (1918); Plančić (1920); Anonymous (1925); Kaitner (1928); Fink (1932a); Trgovčević (1932); Maldini (1935c); Taler (1947); Taler (1948c); Plančić et al. (1953); Taler (1953a); Pešić (1955); Sabioncello (1967); Zobundžija (1968); Vuković and Ivanović (1971); Klašterka (1979); Mikuska (1979); Sofradžija and Hadžiselimović (1981); Bojčić et al. (1982); Veljović (1982); Ocvirk (1984); Lelek (1987); Delić (1993); Crivelli (1995); Povž (1995); Delić et al. (1997); Leiner (1998a); Majer (1998); Mrakovčić et al. (2000c); Povž and Šumer (2000); Zanella et al. (2000); Mustafić (2001); Mrakovčić et al. (2002); Delić et al. (2003a); Eros et al. (2003); Jakirčević (2005); Mustafić (2005); Suić (2005); Mrakovčić et al. (2006); Tvrtković and Veen (2006); Ćaleta (2007); Knežević (2007); Kottelat and Freyhof (2007); Sallai and Mrakovčić (2007); Mrakovčić et al. (2008); Sallai and Kontos (2008); Delić et al. (2009); Sofradžija (2009); Bučar et al. (2010); Golub (2011); Zelić et al. (2011); Jelić et al. (2012); Jakovlić et al. (2013); Jelić et al. (2016); Pofuk et al. (2017)

**Remarks:** populations in the Lika region may have been introduced from the Danube drainage, although the presence of a native population in the Lika region cannot be ruled out without further investigation.

SABANEJEWIA Vladýkov, 1929

16. *Sabanejewia balcanica* (Karaman, 1922)

**Names under which the taxon was mentioned:** *Cobitis aurata* De Filippi, 1863; *Cobitis aurata balcanica* Karaman, 1922; *Cobitis balcanica* Karaman, 1922; *Sabanejewia*

*aurata* (De Filippi, 1863); *Sabanejewia aurata balcanica* Karaman, 1922; *Sabanejewia bulgarica* (Drensky 1928)

**English name:** Balkan golden loach

**Croatian name:** zlatni vijun

**Range in Croatia:** Danube drainage - middle and lower course of rivers

**Literature:** Karaman (1922); Karaman (1952); Sabioncello (1967); Vuković and Ivanović (1971); Lelek (1987); Delić (1993); Honsig-Erlenburg et al. (1997); Povž et al. (1998); Mrakovčić et al. (2000c); Povž and Šumer (2000); Delić et al. (2003a); Delić (2003); Delić et al. (2003b); Eros et al. (2003); Mustafić (2005); Sallai and Kontos (2005); Mrakovčić et al. (2006); Kottelat and Freyhof (2007); Sallai and Mrakovčić (2007); Buj et al. (2008a); Kučinić (2008); Mičetić et al. (2008); Mrakovčić et al. (2008); Sallai and Kontos (2008); Zanella et al. (2008b); Delić et al. (2009); Dumbović et al. (2009); Jelić et al. (2009); Zrnčić et al. (2009a); Bučar et al. (2010); Marešová et al. (2011); Jelić et al. (2012); Delić et al. (2014a); Delić et al. (2014b); Piria et al. (2016a)

**Remarks:** presence of *S. bulgarica* (Drensky, 1928) has not been confirmed for Croatia

17. *Sabanejewia larvata* (De Filippi, 1859)

**English name:** Italian loach

**Croatian name:** talijanski vijun

**Range in Croatia:** Danube drainage - Plitvice Lakes

**Literature:** personal data

**Remarks:** Recent investigation of morphology and phylogenetics (unpublished data) on material from the Plitvice Lakes that was previously reported as *C. taenia* or *C. elongatoides*, revealed the presence of *S. larvata*, which is the first report of this species in Croatia.

#### 2.4.2. FAMILY: NEMACHEILIDAE Regan, 1911

BARBATULA Linck, 1790

18. *Barbatula barbatula* (Linnaeus, 1758)

**Names under which the taxon was mentioned:** *Nemacheilus barbatulus* (Linnaeus, 1758); *Nemachilus barbatula*

**English name:** Stone loach

**Croatian name:** brkica

**Range in Croatia:** Danube drainage - upper and middle course of rivers

**Literature:** Jurinac (1880); Jurinac (1884); Mojsisovics (1884); Kišpatić (1893); Hirc (1897); Vutskits (1918); Sabioncello (1967); Vuković and Ivanović (1971); Brusina (1878); Klašterka (1979); Bojčić et al. (1982); Veljović (1982); Delić (1984); Vrenk (1984); Delić (1989); Habeković et al. (1990); Harka (1992); Martinović et al. (1992); Delić

(1993); Habeković (1993); Zrnčić (1995); Mrakovčić et al. (1996b); Delić et al. (1997); Honsig-Erlenburg et al. (1997); Kerovec (1998); Leiner (1998a); Majer (1998); Schneider (1998); Holčík and Delić (2000); Zanella et al. (2000); Mustafić (2001); Mrakovčić et al. (2002); Bakota et al. (2003); Bošnir et al. (2003); Delić et al. (2003a); Jugović (2004); Mateš (2004); Bošnir et al. (2005); Jakirčević (2005); Mustafić (2005); Mrakovčić et al. (2006); Bošnir et al. (2007); Ćaleta (2007); Prpa et al. (2007); Sallai and Mrakovčić (2007); Sallai and Kontos (2008); Šedivá et al. 2008; Treer et al. (2008a); Delić et al. (2009); Dumbović et al. (2009); Jelić et al. (2009); Sofradžija (2009); Treer et al. (2009); Bukvić et al. (2010); Jelić et al. (2010); Ozimec et al. (2010); Vardić Smrzlić (2010); Jelić et al. (2012); Piria et al. (2016a)

Piria et al. (2011b); Jelić et al. (2012); Delić et al. (2014a); Žutinić et al. (2014); Simonović et al. (2017b)

**Remarks:** non-native in the Adriatic Basin

#### 2.4.4. FAMILY: CYPRINIDAE Rafinesque, 1815

AULOPYGE Heckel, 1841

20. *Aulopyge huegeli* Heckel, 1843

**Names under which the taxon was mentioned:** *Aulopyge hugeli* Heckel 1841; *Aulopyge huegeli* Heckel, 1843; *Aulopyge hügeli* Heckel, 1843

**English name:** Dalmatian Barbel-gudgeon

**Croatian name:** oštrulja

**Range in Croatia:** Adriatic Basin – Krka, Čikola, Cetina, Ruda and Rumin Rivers

**Literature:** Heckel (1841a); Heckel (1841b); Heckel (1842); Heckel (1843); Bonaparte (1845); Bonaparte (1846); Carrara (1846); Heckel and Kner (1858); Brusina (1872); Brusina (1878); Giglioli (1880); Faber (1883); Katurić (1883); Kolombatović (1886a); Kolombatović (1886b); Seeley (1886); Kolombatović (1888); Brusina (1890); Botteri (1891); Kišpatić (1893); Katurić (1896a); Petermann (1899); Langhoffer (1904); Brusina (1907); Katurić 1907; Car (1911); Čurčić 1917; Karaman (1923b); Koller (1928); Čurčić (1939a); Taler (1949a); Plančić (1950); Taler (1951b); Taler (1951g); Anonymous (1953a); Škovrlj (1953a); Taler (1953a); Taler (1953f); Taler (1954a); Basioli (1958b); Pešić (1961); Aganović and Vuković and Prolić (1966); Kapetanović et al. (1966); Sabioncello (1967); Karaman (1971); Vuković and Ivanović (1971); Đurović 1975; Bojčić et al. (1982); Kottelat (1984); Tvrtković (1985); Bianco (1986); Guzina 1986; Howes (1987); Lelek (1987); Fašaić et al. (1990); Mrakovčić and Mišetić (1990a); Mrakovčić and Mišetić (1990b); Povž et al. (1990); Zupančić (1990); Habeković (1993); Habeković (1994b); Mrakovčić et al. (1995); Crivelli (1996); Maitland and Crivelli (1996); Freyhof (1997); Kottelat (1997); Kerovec (1998); Schneider (1998); Šorić and Bănărescu et al. (1999a); Nocita and Vanni (1999); Guzina (2000); Habeković and Mišetić (2000); Bless and Riehl (2002); Miotti (2002); Rüdiger and Rüdiger (2002); Tvrtković and Franičević (2002); Mustafić (2005); Mrakovčić et al. (2006); Tvrtković and Veen (2006); Valić (2006); Kottelat and Freyhof (2007); Prpa et al. (2007); Jelić et al. (2008); Marguš (2008); Treer et al. (2008a); Ćaleta et al. (2009b); Treer et al. (2009); Tvrtković et al. (2009); Popović (2010); Mrakovčić and Ćaleta (2011); Freyhof (2012); Glamuzina et al. (2013); Ćaleta et al. (2015); Landeka et al. (2015); Mustafić and Mrakovčić (2017)

**Remarks:** endemic to the Adriatic Basin; reports for the Zrmanja River not confirmed

#### 2.4.3. FAMILY: ACHEILOGNATHIDAE Bleeker, 1863

RHODEUS Agassiz, 1832

19. *Rhodeus amarus* (Bloch, 1782)

**Names under which the taxon was mentioned:** *Cyprinus amarus* Bloch, 1782; *Rhodeus sericeus* (Pallas, 1776); *Rhodeus sericeus amarus* (Bloch, 1782)

**English name:** European bitterling

**Croatian name:** gavčica

**Range in Croatia:** Danube drainage - widespread; Adriatic Basin - introduced to Zrmanja (personal data) and Neretva River drainages

**Literature:** Heckel and Kner (1858); Steindachner (1866b); Sebišanović (1880); Jurinac (1881); Glowacki (1885); Seeley (1886); Jurinac (1887); Sebišanović (1889a); Sebišanović (1890); Brusina (1892); Kišpatić (1893); Glowacki (1896); Hirc (1896); Hirc (1900a); Hirc (1902a); Hirc (1902c); Hirc (1902d); RHZZM (1908); Hirc (1911); Vutskits (1918); Anonymous (1925); Bergleitner (1925); Anonymous (1928h); Maldini (1936b); Rotarides (1944); Pešić (1955); Sabioncello (1967); Zobundžija (1968); Vuković and Ivanović (1971); Čanadjija (1977); Mikuska (1979); Sofradžija and Hadžiselimović (1981); Bojić et al. (1982); Mikuska (1983a); Mikuska (1983b); Lelek (1987); Delić (1989); Habeković et al. (1990); Martinović et al. (1992); Mrakovčić (1992); Delić (1993); Crivelli (1995); Mrakovčić et al. (1995); Mrakovčić et al. (1996b); Habeković et al. (1997); Leiner (1998a); Majer (1998); Povž et al. (1998); Holčík (1999); Zanella et al. (2000); Mikavica et al. (2001); Mustafić (2001); Mrakovčić et al. (2002); Bakota et al. (2003); Jugović (2004); Mustafić (2005); Sallai and Kontos (2005); Ćaleta (2007); Kottelat and Freyhof (2007); Prpa et al. (2007); Sallai and Mrakovčić (2007); Sallai and Kontos (2008); Treer et al. (2008a); Zanella et al. (2008b); Delić et al. (2009); Dumbović et al. (2009); Jelić et al. (2009); Kerestessy et al. (2009); Sofradžija (2009); Treer et al. (2009); Zrnčić et al. (2009a); Bryja et al. (2010); Bučar et al. (2010); Jelić et al. (2010); Tvrtković (2010); Ištak (2011);

**BARBUS** Cuvier & Cloquet, 1816

21. *Barbus balcanicus* Kotlík, Tsigenopoulos, Ráb & Berrebi, 2002

**Names under which the taxon was mentioned:** *Barbus caninus* Bonaparte, 1839; *Barbus meridionalis* Risso, 1827; *Barbus meridionalis petenyi* Heckel, 1852; *Barbus peloponnesius* Valenciennes, 1842; *Barbus petenyi* Heckel, 1852

**English name:** Danube barbel

**Croatian name:** potočna mrena

**Range in Croatia:** Danube drainage - upper and middle course of rivers

**Literature:** Steindachner (1866b); Sebišanović (1880); Sebišanović (1881); Glowacki (1885); Mojsisovics (1887); Mojsisovics (1889); Sebišanović (1890); Brusina (1892); Brusina (1893); Kišpatić (1893); Glowacki (1896); Hirc (1898); Hirc (1899d); Hirc (1900a); Medić (1901b); Langhoffer (1904); RHZZM (1908); Vutskits (1918); Koller (1926); Kaitner (1929b); Maldini (1935b); Smlatić (1961); Sabioncello (1967); Karaman (1971); Vuković and Ivanović (1971); Klašterka (1979); Delić (1984); Popović and Fašaić (1986); Lelek (1987); Delić (1989); Delić (1993); Mrakovčić et al. (1996b); Habeković et al. (1997); Honsig-Erlenburg et al. (1997); Povž et al. (1998); Holčík and Delić (2000); Mustafić (2001); Kotlík et al. (2002); Delić et al. (2003a); Economidis et al. (2003); Domitrović et al. (2004); Jugović (2004); Piria et al. (2004); Jakirčević (2005); Piria et al. (2005b); Mrakovčić et al. (2006); Treer et al. (2006); Kottelat and Freyhof (2007); Piria (2007); Piria et al. (2007); Prpa et al. (2007); Treer et al. (2008a); Delić et al. (2009); Dumbović et al. (2009); Jelić et al. (2009); Marková et al. (2010); Sofradžija (2009); Treer et al. (2009); Bučar et al. (2010); Kraljić (2010); Perović and Tvrtković (2010); Tvrtković (2010); Jelić et al. (2012); Delić et al. (2014a); Žutinić et al. (2014); Piria et al. (2016a); Simonović et al. (2017b)

22. *Barbus barbus* (Linnaeus, 1758)

**Names under which the taxon was mentioned:** *Barbus fluviatilis* Fitzinger, 1832; *Barbus vulgaris* Fleming, 1828

**English name:** Barbel

**Croatian name:** mrena

**Range in Croatia:** Danube drainage - middle and lower course of rivers

**Literature:** Heckel and Kner (1858); Jurinac (1880); Sebišanović (1880); Jurinac (1884); Glowacki (1885); Anonymous (1886); Kesterčanek (1886); Seeley (1886); Jurinac (1887); Šoštarić (1888); Hefele (1889); Sebišanović (1890); Brusina (1892); Franke (1892); Brusina (1893); Dudan (1893); Kišpatić (1893); Glowacki (1896); Hirc (1896); Hirc (1897); Franić (1898); Hirc (1898); Steuer (1899); RHZZM (1908); Čurčić (1910); Kempf (1910); Hirc (1911); Lang (1911); Vutskits (1918); Plančić (1923b);

Anonymous (1925); Anonymous (1930c); Anonymous (1931c); Fink (1932b); Trojanović (1934); Bek (1935); Maldini (1935b); Anonymous (1937b); Maldini (1938b); Taler (1945a); Anonymous (1946a); Bergleitner (1946); Hafner-Lahorski (1948b); Morović (1948); Basioli (1957a); Jagodić (1957); Sabioncello (1967); Vuković and Ivanović (1971); Čanadjija (1977); Klašterka (1979); Mikuska (1979); Bojić et al. (1982); Veljović (1982); Mikuska (1983a); Mikuska (1983b); Delić (1984); Mikuska (1984); Vrenk (1984); Tvrtković (1985); Veljović (1985); Habeković et al. (1986); Lelek (1987); Habeković et al. (1990); Habeković and Popović (1991); Homen et al. (1991); Mrakovčić (1992); Pažur (1993); Zrnčić (1995); Mrakovčić et al. (1996b); Habeković et al. (1997); Honsig-Erlenburg et al. (1997); Majer (1998); Povž et al. (1998); Mustafić (2001); Mrakovčić et al. (2002); Bănărescu et al. (2003); Bošnir et al. (2003); Domitrović et al. (2004); Piria et al. (2004); Bošnir et al. (2005); Jakirčević (2005); Mustafić (2005); Pažur (2005); Piria et al. (2005b); Piria et al. (2005a); Sallai and Kontos (2005); Mrakovčić et al. (2006); Treer et al. (2006); Bošnir et al. (2007); Čaleta (2007); Ivelić et al. (2007); Kottelat and Freyhof (2007); Piria (2007); Prpa et al. (2007); Sallai and Mrakovčić (2007); Sallai and Kontos (2008); Sevcik and Erös (2008); Treer et al. (2008a); Dumbović et al. (2009); Kerestessy et al. (2009); Sofradžija (2009); Treer et al. (2009); Bučar et al. (2010); Ozimec et al. (2010); Vardić Smržlić (2010); Matulić et al. (2011); Piria et al. (2011b); Jelić et al. (2012); Muhamedagić and Habibović (2013); Delić et al. (2014a); Piria et al. (2016a); Simonović et al. (2017b); Nedić et al. (2018); Zuliani et al. (2019)

23. *Barbus plebejus* Bonaparte, 1839

**Names under which the taxon was mentioned:** *Barbus meridionalis caninus* Almaça, 1969; *Barbus balcanicus* Kotlík, Tsigenopoulos, Ráb & Berrebi, 2002; *Barbus barbus* (Linnaeus, 1758); *Barbus barbus plebejus* Bonaparte, 1839; *Barbus caninus* Bonaparte, 1839; *Barbus eques* Bonaparte, 1839; *Barbus fluviatilis* Fitzinger, 1832; *Barbus meridionalis petenyi* Heckel, 1852; *Barbus plebeius* Valenciennes, 1842

**English name:** Italian barbel

**Croatian name:** mren

**Range in Croatia:** Adriatic Basin - rivers on the Istrian Peninsula, Krka and Zrmanja River drainage

**Literature:** Grisogono (1780); Carrara (1846); Heckel and Kner (1858); Dybowski (1862); Canestrini (1866); Brusina (1874); Canestrini (1874); Faber (1883); Katurić (1883); Kolombatović (1886a); Kolomatović (1886b); Seeley (1886); Katurić (1887); Kolomatović (1888); Botteri (1891); Kišpatić (1893); Katurić (1896a); Katurić (1896c); Petermann (1899); Langhoffer (1904); Largaiolli (1904); Katurić (1907); Kolomatović (1907); Karaman (1923b); Koller (1926); Karaman (1928); Rössler (1931); Gridelli (1936); Hafner-Lahorski (1947a); Taler (1954a); Basioli

(1958b); Anonymous (1967); Sabioncello (1967); Karaman (1971); Vuković and Ivanović (1971); Žikić and Bertoša (1980); Sofradžija and Hadžiselimović (1981); Bojčić et al. (1982); Almaca (1984b); Almaca (1984a); Leiner (1984); Leiner (1985); Lelek (1987); Fašaić et al. (1990); Mrakovčić and Mišetić (1990a); Povž et al. (1990); Povž (2002); Leiner and Povž (1993); Leiner and Povž (1994); Leiner et al. (1995); Bianco (1995b); Mrakovčić et al. (1995); Crivelli (1996); Maitland and Crivelli (1996); Kottelat (1997); Bianco (1998); Mrakovčić (1998); Schneider (1998); Nocita and Vanni (1999); Mrakovčić et al. (2000b); Bianco (2003); Zerunian (2004); Piria et al. (2005b); Mrakovčić et al. (2006); Kottelat and Freyhof (2007); Valić et al. (2007); Jelić et al. (2008); Marguš (2008); Bianco (2014a); Bianco (2014b); Ćaleta et al. (2015); Piria et al. (2016b)

**Remarks:** endemic to the Adriatic Basin

CARASSIUS Jarocki, 1822

24. *Carassius auratus* (Linnaeus, 1758)

**Names under which the taxon was mentioned:** *Carassius auratus auratus* (Linnaeus, 1758)

**English name:** Goldfish

**Croatian name:** zlatna ribica

**Range in Croatia:** Danube drainage and Adriatic Basin - introduced locally

**Literature:** Maldini (1935c); Leiner (1984); Leiner (1985); Treer (1989); Leiner and Povž (1993); Delić (1993); Crivelli (1995); Leiner et al. (1995); Szczerbowski and Szczerbowski (2002); Mrakovčić et al. (2006); Prpa et al. (2007); Jakovlić and Gui (2011); Povž and Gregorić (2014); Piria et al. (2016b); Jelić and Krivek (2017); Piria et al. (2018)

**Remarks:** non-native species in Croatia; it is possible that older reports of *C. auratus* are result of misidentification while new records are individuals of domesticated (colored) form

25. *Carassius carassius* (Linnaeus, 1758)

**Names under which the taxon was mentioned:** *Carassius vulgaris* Nordmann, 1840

**English name:** Crucian carp

**Croatian name:** karas

**Range in Croatia:** Danube drainage - floodplains in the drainage, introduced to the Krbavsko Field; Adriatic Basin - introduced to the Tribunj reservoir, Vransko Lake near Biograd and Jadova River in Lika region

**Literature:** Brusina (1878); Jurinac (1880); Sebišanović (1880); Jurinac (1881); Sebišanović (1881); Mojsisovics (1883); Jurinac (1884); Mojsisovics (1884); Glowacki (1885); Anonymous (1886); Kesterčanek (1886); Seeley (1886); Hefele (1889); Sebišanović (1889a); Sebišanović (1890); Brusina (1892); Brusina (1893); Dudan (1893); Kišpatić (1893); Anonymous (1896a); Glowacki (1896);

Horvat (1900c); Ivakić (1905); RHZZM (1908); Čurčić (1910); Kempf (1910); Vutskits (1918); Plančić (1920); Plančić (1923b); Anonymous (1925); Rössler (1928); Fink (1932a); Thaller (1932); Trojanović (1934); Maldini (1935c); Maldini (1938b); Anonymous (1946a); Franić (1949); Taler (1951e); Plančić (1955); Grce (1956); Grce (1957); Morović (1962); Knežević (1963b); Sabioncello et al. (1964); Pešić (1955); Habeković (1967); Sabioncello (1967); Pažur (1968a); Pažur (1969c); Zobundžija (1968); Pažur (1969b); Vuković and Ivanović (1971); Fijan (1976b); Čanadjija (1977); Klašterka (1979); Mikuska (1979); Bojčić et al. (1982); Veljović (1982); Mikuska (1983a); Mikuska (1983b); Delić (1984); Mikuska (1984); Pompe-Gotal (1984); Vrenk (1984); Tvrtković (1985); Veljović (1985); Habeković et al. (1986); Lelek (1987); Mišetić et al. (1989); Treer (1989); Habeković et al. (1990); Habeković and Popović (1991); Mrakovčić (1992); Crivelli (1995); Mrakovčić et al. (1995); Povž (1995); Mrakovčić et al. (1996b); Majer (1998); Zanella et al. (2000); Mustafić (2001); Mrakovčić et al. (2002); Szczerbowski and Szczerbowski (2002); Bakota et al. (2003); Leiner (2003); Jakirčević (2005); Pažur (2005); Suić (2005); Mrakovčić et al. (2006); Knežević (2007); Kottelat and Freyhof (2007); Sallai and Mrakovčić (2007); Sallai and Kontos (2008); Sevcik and Erös (2008); Treer et al. (2008a); Sofradžija (2009); Treer et al. (2009); Buj (2010c); Ozimec et al. (2010); Zelić et al. (2011); Jelić et al. (2012); Marčić et al. (2012); Marr et al. (2013); Jelić et al. (2016); Piria et al. (2016a); Mustafić et al. (2017); Pofuk et al. (2017)

**Remarks:** non-native in the Krbavsko Field and Adriatic Basin

26. *Carassius gibelio* (Bloch, 1782)

**Names under which the taxon was mentioned:** *Carassius auratus* (Linnaeus, 1758); *Carassius auratus gibelio* (Bloch, 1782); *Carassius carassius* (Linnaeus, 1758)

**English name:** Gibel carp

**Croatian name:** babuška

**Range in Croatia:** introduced to the Danube drainage and Adriatic Basin

**Literature:** Jurinac (1880); Jurinac (1880); Sebišanović (1880); Jurinac (1881); Jurinac (1884); Hirc (1897); Vutskits (1918); Maldini (1935c); Gridelli (1936); Plančić (1967); Sabioncello (1967); Vuković and Ivanović (1971); Mikuska (1979); Sofradžija and Hadžiselimović (1981); Bojčić et al. (1982); Povž (1982); Mikuska (1983a); Mikuska (1983b); Delić (1984); Leiner (1984); Delić (1985); Leiner (1985); Tvrtković (1985); Habeković et al. (1986); Lelek (1987); Turk et al. (1987); Delić (1989); Treer (1989); Habeković et al. (1990); Homen et al. (1991); Martinović et al. (1992); Mrakovčić (1992); Delić (1993); Habeković (1993); Leiner and Povž (1993); Habeković (1994b); Leiner and Povž (1994); Leiner et al. (1995); Mrakovčić et al. (1995); Povž (1995); Zrnčić (1995); Kajgana (1996); Mihaljević

et al. (1996); Mrakovčić et al. (1996b); Habeković et al. (1997); Kerovec (1998); Leiner (1998b); Leiner (1998a); Majer (1998); Schneider (1998); Mrakovčić et al. (2000a); Zanella et al. (2000); Mustafić (2001); Mrakovčić et al. (2002); Szczerbowski (2002); Bakota et al. (2003); Bošnir et al. (2003); Delić et al. (2003a); Leiner (2003); Treer et al. (2003c); Jugović (2004); Piria et al. (2004); Bošnir et al. (2005); Jakirčević (2005); Mustafić (2005); Pažur (2005); Suić (2005); Mrakovčić et al. (2006); Bošnir et al. (2007); Dulčić et al. (2007); Ćaleta (2007); Knežević (2007); Kottelat and Freyhof (2007); Sallai and Mrakovčić (2007); Valić et al. (2007); Duplić (2008); Sallai and Kontos (2008); Treer et al. (2008a); Valić et al. (2008); Delić et al. (2009); Dumbović et al. (2009); Jelić et al. (2009); Kerestessy et al. (2009); Tvrtković et al. (2009); Piria et al. (2009); Sofradžija (2009); Treer et al. (2009); Bukvić et al. (2010); Jelić et al. (2010); Jelkić et al. (2010); Ozimec et al. (2010); Treer et al. (2011); Vardić Smrzlić (2010); Matulić et al. (2011); Mrakovčić and Ćaleta (2011); Jelić et al. (2012); Marčić et al. (2012); Tomljanović et al. (2012b); Marr et al. (2013); Rylková et al. (2013); Zrnčić et al. (2013); Delić et al. (2014a); Duplić (2014); Nedić et al. (2014a); Nedić et al. (2014b); Povž and Gregori (2014); Riđanović et al. (2014); Žutinić et al. (2014); Piria et al. (2016a); Piria et al. (2016b); Piria et al. (2016c); Mustafić et al. (2017); Simonović et al. (2017b); Nedić et al. (2018); Piria et al. (2018)

**Remarks:** non-native, invasive species presence of *Carassius langsdorffii* Temminck & Schlegel, 1846 was not confirmed for Croatia although it was reported from Neretva river basin (Hutovo blato wetland) in Bosnia and Herzegovina (Kalous et al. 2013) very close to Croatian border

#### CYPRINUS Linnaeus, 1758

##### 27. *Cyprinus carpio* Linnaeus, 1758

**Names under which the taxon was mentioned:** *Cyprinus acuminatus* Heckel & Kner, 1858; *Cyprinus carpio carpio* Linnaeus, 1758

**English name:** Common carp

**Croatian name:** šaran

**Range in Croatia:** Danube drainage - middle and lower course of the rivers, lakes and reservoirs; Adriatic Basin - introduced to rivers and reservoirs

**Literature:** Taube (1777); Grisogono (1780); Heckel and Kner (1858); Šloser (1870); Brusina (1878); Jurinac (1880); Sebišanović (1880); Borne (1881); Mojsisovics (1883); Jurinac (1884); Glowacki (1885); Anonymous (1886); Kesterčanek (1886); Seeley (1886); Jurinac (1887); Hefele (1889); Sebišanović (1890); Dudan (1891); Brusina (1892); Anonymous (1893a); Brusina (1893); Dudan (1893); Kišpatić (1893); Anonymous (1894a); Flögel (1894); Anonymous (1896a); Glowacki (1896); Hirc (1896); Anonymous (1897a); Hirc (1897); Zagorac (1897); Anonymous (1899b); Anonymous (1899d); Aue (1900);

Hirc (1900b); Largaiolli (1904); Anonymous (1905a); Ivakić (1905); Peheim (1905); Anonymous (1906d); Anonymous (1906e); Anonymous (1907a); Anonymous (1907b); RHZZM (1908); Anonymous (1909a); Anonymous (1910b); Čurčić (1910); Lorini (1910); Rössler (1910); Anonymous (1911); Hruška (1911); Vutskits (1918); Plančić (1920); Plančić (1923a); Anonymous (1925); Kaitner (1926a); Anonymous (1927c); Anonymous (1927h); Anonymous (1928c); Rössler (1928); Anonymous (1929a); Anonymous (1930c); Anonymous (1931b); Anonymous (1931c); Fink (1932a); Fink (1932b); Krajačić (1932); Thaller (1932); Tadić (1933); Trojanović (1934); Anonymous (1935j); Hafner-Lahorski (1935a); Jedlička (1935); Maldini (1935c); Plančić (1935a); Samobor (1935); Maldini (1936a); Anonymous (1937b); Maldini (1938b); Anonymous (1946a); Anonymous (1947b); Anonymous (1947c); Taler (1947); Anonymous (1948b); Anonymous (1948c); Fijan (1948a); Fijan (1948b); Morović (1948); Taler (1948c); Taler (1948e); Anonymous (1949); Fijan (1949); Livojević (1949); Fijan (1950); Hafner-Lahorski (1950a); Hafner-Lahorski (1950b); Plančić (1950); Fijan (1951a); Fijan (1951b); Taler (1951e); Basioli (1952); Glavan (1952); Plančić (1952d); Fijan (1953); Hafner-Lahorski (1953a); Plančić (1953b); Škovrlj (1953a); Taler (1953a); Taler (1953d); Pešić (1955); Plančić (1955); Fijan (1956); Grce (1956); Plančić (1956a); Basioli (1957a); Grce (1957); Grubišić (1957); Jagodić (1957); Basioli (1958a); Basioli (1958b); Grce (1959); Sabioncello (1959); Basioli (1960); Vučetić (1960); Sokal (1961); Livojević (1962b); Livojević (1962a); Morović (1962); Morović (1963); Fijan (1964); Morović (1964a); Sabioncello et al. (1964); Bikić (1966); Vraneš (1966); Habeković (1967); Hadžić (1967); Morović (1967); Sabioncello (1967); Pažur (1968a); Zobundžija (1968); Anonymous (1969b); Morović (1970); Sabioncello et al. (1970); Vrebac (1970); Sabioncello (1971a); Tóth and Mikuska (1971); Vuković and Ivanović (1971); Pogrmilović (1972); Vrebac (1972); Habeković (1973); Herga (1968); Fijan (1975); Munjko (1975); Fijan (1976b); Munjko (1978); Klašterka (1979); Radaković et al. (1980); Žikić and Bertoša (1980); Sofradžija and Hadžiselimović (1981); Bojčić et al. (1982); Veljović (1982); Bauer (1983); Mikuska (1983a); Delić (1984); Leiner (1984); Mikuska (1984); Mikuska and Mamić (1984); Ocvirk (1984); Pompe-Gotal (1984); Ržaničanin et al. (1984a); Ržaničanin et al. (1985); Treer et al. (1984); Vrenk (1984); Leiner (1985); Mikuska (1985); Tvrtković (1985); Habeković et al. (1986); Delić (1987); Lelek (1987); Treer (1987); Turk et al. (1987); Delić (1989); Mišetić et al. (1989); Treer (1989); Treer et al. (1989); Habeković et al. (1990); Kažić et al. (1990); Mrakovčić and Mišetić (1990a); Homen et al. (1991); Treer et al. (1991); Mrakovčić (1992); Debeljak et al. (1993); Delić (1993); Leiner and Povž (1993); Pažur (1993); Leiner and Povž (1994); Leiner et al. (1995); Mrakovčić et al. (1995); Treer et al. (1995); Turk and Debeljak (1995); Maitland and Crivelli (1996); Mihaljević et al. (1996); Mrakovčić et al. (1996b); Habeković et al. (1997); Kerovec (1998); Leiner (1998a); Leiner (1998b); Majer (1998); Mrakovčić (1998);

Povž et al. (1998); Schneider (1998); Treer et al. (1998); Tvrtković (1998); Habeković and Mišetić (2000); Habeković and Pažur (2000); Holčík and Delić (2000); Mrakovčić et al. (2000a); Treer (2000a); Zanella et al. (2000); Mikavica et al. (2001); Mustafić (2001); Baruš et al. (2002); Mrakovčić et al. (2002); Treer et al. (2002); Delić et al. (2003a); Treer et al. (2003c); Getz (2004); Jugović (2004); Piria et al. (2004); Balbo (2005); Jakirčević (2005); Mustafić (2005); Pažur (2005); Has-Schön et al. (2006); Mrakovčić et al. (2006); Bogut et al. (2007); Domitrović et al. (2007); Dulčić et al. (2007); Ćaleta (2007); Kottelat and Freyhof (2007); Prpa et al. (2007); Sallai and Mrakovčić (2007); Sallai and Kontos (2008); Sevcik and Erös (2008); Suić et al. (2008); Treer et al. (2008a); Valić et al. (2008); Delić et al. (2009); Jelić et al. (2009); Tvrtković et al. (2009); Sofradžija (2009); Treer et al. (2009); Bukvić et al. (2010); Jelkić et al. (2010); Ozimec et al. (2010); Treer et al. (2011); Vardić Smrzlić (2010); Zupančič et al. (2010b); Ištok (2011); Labak (2011); Matulić et al. (2011); Mrakovčić and Ćaleta (2011); Tomljanović et al. (2011); Freyhof (2012); Jelić et al. (2012); Marčić et al. (2012); Vilizzi (2012); Jelkić and Opačak (2013); Marr et al. (2013); Tomljanović et al. (2013a); Zrnčić et al. (2013); Delić et al. (2014a); Nedić et al. (2014a); Nedić et al. (2014b); Riđanović et al. (2014); Jelić et al. (2016); Pavličević et al. (2016); Piria et al. (2016a); Piria et al. (2016b); Piria et al. (2016c); Croatian State Archives (2017); Mustafić et al. (2017); Pofuk et al. (2017); Nedić et al. (2018); Piria et al. (2018)

**Remarks:** non-native in the Adriatic Basin; according to phylogenetic research there are not difference between wild carp populations and individuals from fish farms. Further extensive taxonomic investigation needed.

#### 2.4.5. FAMILY: GOBIONIDAE Bleeker, 1863

GOBIO Cuvier, 1816

28. *Gobio obtusirostris* Valenciennes, 1842

**Names under which the taxon was mentioned:** *Gobio fluviatilis* Cuvier, 1842; *Gobius fluviatilis*; *Gobio gobio* (Linnaeus, 1758); *Gobio gobio obtusirostris*; *Gobio vulgaris* Heckel, 1837; *Gobius vulgaris*

**English name:** Danube gudgeon

**Croatian name:** dunavska krkuša

**Range in Croatia:** Danube drainage - middle and lower course of rivers; Adriatic Basin - introduced to the Mirna (Istrian peninsula), Ričica and Otuča Rivers (Lika region)

**Literature:** Piller and Mitterpacher (1783); Heckel and Kner (1858); Steindachner (1866b); Jurinac (1880); Sebišanović (1880); Jurinac (1881); Mojsisovics (1883); Jurinac (1884); Glowacki (1885); Kesterčanek (1886); Seeley (1886); Mojsisovics (1887); Sebišanović (1888); Mojsisovics (1889); Sebišanović (1889a); Sebišanović (1890); Brusina (1892); Kišpatić (1893); Glowacki (1896); Hirc (1896); Medić (1896); Hirc (1897); Hirc (1898); Langhoffer

(1904); RHZZM (1908); Kempf (1910); Hirc (1911); Vutskits (1918); Anonymous (1925); Hafner-Lahorski (1935a); Maldini (1936a); Knop (1947c); Sabioncello (1967); Zobundžija (1968); Vuković and Ivanović (1971); Čanadžija (1977); Klašterka (1979); Mikuska (1979); Sofradžija and Hadžiselimović (1981); Bojčić et al. (1982); Veljović (1982); Mikuska (1983b); Delić (1984); Leiner (1985); Tvrtković (1985); Veljović (1985); Habeković et al. (1986); Lelek (1987); Delić (1989); Habeković and Popović (1991); Habeković et al. (1992); Mrakovčić (1992); Delić (1993); Leiner and Povž (1993); Leiner and Povž (1994); Leiner et al. (1995); Mrakovčić et al. (1995); Mrakovčić et al. (1996b); Habeković et al. (1997); Honsig-Erlenburg et al. (1997); Leiner (1998a); Majer (1998); Povž et al. (1998); Bănărescu et al. (1999a); Holčík and Delić (2000); Mrakovčić et al. (2000b); Mustafić (2001); Mrakovčić et al. (2002); Bakota et al. (2003); Delić et al. (2003a); Jugović (2004); Mateš (2004); Jakirčević (2005); Mustafić (2005); Mustafić et al. (2005); Sallai and Kontos (2005); Mrakovčić et al. (2006); Ćaleta (2007); Ivelić et al. (2007); Kottelat and Freyhof (2007); Piria (2007); Prpa et al. (2007); Sallai and Mrakovčić (2007); Sallai and Kontos (2008); Treer et al. (2008a); Zanella et al. (2008b); Delić et al. (2009); Dumbović et al. (2009); Jelić et al. (2009); Piria et al. (2009); Sofradžija (2009); Treer et al. (2009); Zrnčić et al. (2009a); Bučar et al. (2010); Buj (2010c); Jelić et al. (2010); Perović and Tvrtković (2010); Piria et al. (2011b); Jelić et al. (2012); Delić et al. (2014a); Ćaleta et al. (2015); Jelić et al. (2016); Piria et al. (2016a); Piria et al. (2016b); Pofuk et al. (2017); Simonović et al. (2017b)

**Remarks:** endemic to the Danube drainage; non-native in the Adriatic Basin (Istria and Lika regions); report for the Plitvice Lakes not confirmed and are likely the result of misidentification

PSEUDORASBORA Bleeker, 1860

29. *Pseudorasbora parva* (Temminck & Schlegel, 1846)

**English name:** Topmouth gudgeon

**Croatian name:** bezribica

**Range in Croatia:** Danube drainage - introduced, widespread; Adriatic Basin - introduced to the Cetina and Neretva River drainages and Vransko Lake near Biograd

**Literature:** Tvrtković (1985); Habeković and Popović (1991); Janković and Karapetkova (1992); Martinović et al. (1992); Delić (1993); Habeković (1993); Mihaljević et al. (1996); Mrakovčić et al. (1996b); Habeković et al. (1997); Kerovec (1998); Leiner (1998b); Majer (1998); Schneider (1998); Bănărescu (1999b); Zanella et al. (2000); Mustafić (2001); Mrakovčić et al. (2002); Jugović (2004); Piria et al. (2004); Mustafić (2005); Mrakovčić et al. (2006); Ćaleta (2007); Kottelat and Freyhof (2007); Sallai and Mrakovčić (2007); Duplić (2008); Sallai and Kontos (2008); Sevcik and Erös (2008); Delić et al. (2009); Dumbović et al. (2009); Jelić et al. (2009); Kerestessy et al. (2009); Tvrtković et al.

(2009); Sofradžija (2009); Zrnčić et al. (2009a); Jelić et al. (2010); Ozimec et al. (2010); Mrakovčić and Ćaleta (2011); Jelić et al. (2012); Marr et al. (2013); Delić et al. (2014a); Povž and Gregori (2014); Piria et al. (2016a); Piria et al. (2016b); Mustafić et al. (2017); Piria et al. (2017); Pofuk et al. (2017); Simonović et al. (2017b); Piria et al. (2018)

**Remarks:** non-native, invasive species

ROMANOGOBIO Bănărescu, 1962

30. *Romanogobio benacensis* (Pollini, 1816)

**Names under which the taxon was mentioned:** *Gobio gobio* (Linnaeus, 1758)

**English name:** Italian gudgeon

**Croatian name:** talijanska krkuša

**Range in Croatia:** Adriatic Basin - Mirna River drainage

**Literature:** Leiner (1985); Leiner and Povž (1993); Ćaleta et al. (2015); Pofuk et al. (2017); Jelić et al. (2018)

**Remarks:** endemic to Adriatic Basin

31. *Romanogobio kesslerii* (Dybowski, 1862)

**Names under which the taxon was mentioned:** *Gobio kesslerii* Dybowski, 1862

**English name:** Kessler's gudgeon

**Croatian name:** Keslerova krkuša

**Range in Croatia:** Danube drainage - middle and lower course of rivers

**Literature:** Karaman (1952); Sabioncello (1967); Vuković and Ivanović (1971); Bănărescu and Nalbant (1973); Bojić et al. (1982); Habeković et al. (1986); Lelek (1987); Honsig-Erlenburg et al. (1997); Povž et al. (1998); Bănărescu (1999a); Mustafić (2001); Mustafić et al. (2005); Sallai and Kontos (2005); Mrakovčić et al. (2006); Kottelat and Freyhof (2007); Sallai and Mrakovčić (2007); Sallai and Kontos (2008); Sevcik and Erös (2008); Dumbović et al. (2009); Kerestessy et al. (2009); Sofradžija (2009); Jelić et al. (2012); Friedrich et al. (2018)

**Remarks:** it is possible in Croatia is present *R. carpathorossicus*, because specimens from the Kupa river used in article Friedrich et al. (2018) was identified as this species

32. *Romanogobio uranoscopus* (Agassiz, 1828)

**Names under which the taxon was mentioned:** *Gobio uranoscopus* (Agassiz, 1828)

**English name:** Stone gudgeon

**Croatian name:** tankorepa krkuša

**Range in Croatia:** Danube drainage - fast flowing rivers

**Literature:** Bonaparte (1832-1841); Heckel and Kner (1858); Siebold (1863); Jurinac (1881); Jurinac (1884);

Glowacki (1885); Seeley (1886); Sebišanović (1888); Sebišanović (1890); Kišpatić (1893); Glowacki (1896); Vutskits (1918); Sabioncello (1967); Vuković and Ivanović (1971); Bănărescu and Nalbant (1973); Bojić et al. (1982); Lelek (1987); Mrakovčić et al. (1996b); Povž et al. (1998); Bănărescu et al. (1999b); Mustafić et al. (2005); Sallai and Kontos (2005); Mrakovčić et al. (2006); Kottelat and Freyhof (2007); Sallai and Mrakovčić (2007); Sallai and Kontos (2008); Sevcik and Erös (2008); Ozimec et al. (2010); Ištak (2011); Jelić et al. (2012); Ćaleta et al. (2015); Piria et al. (2016a); Piria et al. (2016b); Friedrich et al. (2018)

**Remarks:** some literature data are likely the result of misidentification, endemic to the Danube drainage

33. *Romanogobio vladykovi* (Fang, 1943)

**Names under which the taxon was mentioned:** *Gobio albipinnatus* Lukasch, 1933; *Romanogobio albipinnatus* (Lukasch, 1933)

**English name:** Danube whitefin gudgeon

**Croatian name:** bjeloperajna krkuša

**Range in Croatia:** Danube drainage - middle and lower course of rivers

**Literature:** Vuković and Ivanović (1971); Bănărescu and Nalbant (1973); Bojić et al. (1982); Delić (1993); Naseka et al. (1999); Mrakovčić et al. (2002); Mustafić (2005); Mustafić et al. (2005); Sallai and Kontos (2005); Mrakovčić et al. (2006); Ćaleta (2007); Kottelat and Freyhof (2007); Sallai and Mrakovčić (2007); Sallai and Kontos (2008); Dumbović et al. (2009); Jelić et al. (2009); Kerestessy et al. (2009); Sofradžija (2009); Jelić et al. (2012); Delić et al. (2014a); Ćaleta et al. (2015); Piria et al. (2016b); Simonović et al. (2017b)

**Remarks:** endemic to the Danube drainage

#### 2.4.6. FAMILY: LEUCISCIDAE Bonaparte, 1835

ABRAMIS Cuvier, 1816

34. *Aramis brama* (Linnaeus, 1758)

**Names under which the taxon was mentioned:** *Aramis brama danubii* Pavlov, 1956

**English name:** Bream

**Croatian name:** deverika

**Range in Croatia:** Danube drainage - middle and lower course of rivers; Adriatic Basin - introduced to the Neretva River drainage

**Literature:** Heckel and Kner (1858); Brusina (1878); Jurinac (1880); Sebišanović (1880); Mojsisovics (1883); Jurinac (1884); Mojsisovics (1884); Glowacki (1885); Anonymous (1886); Kesterčanek (1886); Seeley (1886); Hefele (1889); Sebišanović (1890); Brusina (1892); Brusina (1893); Dudan (1893); Kišpatić (1893); Glowacki (1896);

Anonymous (1897b); Hirc (1897); Mojsisovics (1897); Medić (1898); RHZZM (1908); Čurčić (1910); Vutskits (1918); Plančić (1920); Plančić (1923b); Anonymous (1925); Anonymous (1931c); Fink (1932a); Trojanović (1934); Maldini (1935a); Anonymous (1946a); Franić (1949); Pešić (1955); Sabioncello (1967); Zobundžija (1968); Sabioncello et al. (1969); Vuković and Ivanović (1971); Ristić (1972a); Vrebac (1972); Klašterka (1979); Mikuska (1979); Bojčić et al. (1982); Veljović (1982); Bauer (1983); Mikuska (1983a); Mikuska (1983b); Delić (1984); Mikuska (1984); Mikuska and Mamić (1984); Vrenk (1984); Mikuska (1985); Tvrković (1985); Veljović (1985); Habeković et al. (1986); Delić (1989); Habeković et al. (1990); Habeković and Popović (1991); Homen et al. (1991); Martinović et al. (1992); Mrakovčić (1992); Delić (1993); Pažur (1993); Zrnčić (1995); Mihaljević et al. (1996); Mrakovčić et al. (1996b); Leiner (1998a); Majer (1998); Treer et al. (2000a); Zanella et al. (2000); Mustafić (2001); Simonović (2001); Mrakovčić et al. (2002); Bošnir et al. (2003); Treer et al. (2003a); Jugović (2004); Bošnir et al. (2005); Jakirčević (2005); Mustafić (2005); Pažur (2005); Bošnir et al. (2007); Ćaleta (2007); Kottelat and Freyhof (2007); Piria (2007); Prpa et al. (2007); Sallai and Mrakovčić (2007); Sallai and Kontos (2008); Sevcik and Erös (2008); Suić et al. (2008); Treer et al. (2008a); Delić et al. (2009); Dumbović et al. (2009); Jelić et al. (2009); Kerestessy et al. (2009); Sofradžija (2009); Treer et al. (2009); Jelić et al. (2010); Jelkić et al. (2010); Ozimec et al. (2010); Bartulović et al. (2011); Matulić et al. (2011); Piria et al. (2011b); Jelić et al. (2012); Glamuzina et al. (2013); Jelkić and Opačak (2013); Safner et al. (2013); Zrnčić et al. (2013); Delić et al. (2014a); Nedić et al. (2014a); Nedić et al. (2014b); Riđanović et al. (2014); Dulčić and Tutman (2015); Piria et al. (2016b); Piria et al. (2016c); Pofuk et al. (2017); Simonović et al. (2017b); Nedić et al. (2018)

**Remarks:** non-native in the Neretva River drainage

ALBURNOIDES Jeitteles, 1861

35. *Alburnoides bipunctatus* (Bloch, 1782)

**Names under which the taxon was mentioned:** *Alburnus bipunctatus* (Bloch, 1782)

**English name:** Schneider, Spirlin

**Croatian name:** dvoprugasta ukljija

**Range in Croatia:** Danube drainage - upper and middle course of rivers

**Literature:** Heckel and Kner (1858); Steindachner (1866b); Sebišanović (1880); Jurinac (1881); Jurinac (1884); Glowacki (1885); Anonymous (1886); Seeley (1886); Mojsisovics (1889); Sebišanović (1889a); Sebišanović (1890); Dudan (1893); Kišpatić (1893); Glowacki (1896); Hirc (1897); Hirc (1898); Medić (1901b); Langhoffer (1904); RHZZM (1908); Čurčić (1910); Hirc (1911); Lang (1911); Vutskits (1918); Plančić (1923b); Maldini (1935a); Rotarides (1944); Sabioncello (1967); Zobundžija (1968); Vuković and Ivanović (1971); Čanadjija (1977); Klašterka (1979); Mikuska (1979); Sofradžija and Hadžiselimović (1981); Bojčić et al. (1982); Mikuska (1983a); Mikuska (1983b); Mikuska and Mamić (1984); Mikuska (1985); Tvrković (1985); Bianco (1986); Habeković et al. (1986); Lelek (1987); Delić (1989); Habeković et al. (1990); Habeković and Popović (1991); Homen et al. (1991); Mrakovčić (1992); Delić (1993); Mrakovčić et al. (1996b); Habeković et al. (1997); Leiner (1998a); Majer (1998); Povž et al. (1998); Treer et al. (1998); Zanella et al. (2000); Jaković and Treer (2001); Mustafić (2001); Simonović (2001);

and Hadžiselimović (1981); Bojčić et al. (1982); Mikuska (1983b); Tvrković (1985); Lelek (1987); Habeković and Popović (1991); Mrakovčić (1992); Mrakovčić et al. (1996b); Habeković et al. (1997); Honsig-Erlenburg et al. (1997); Povž et al. (1998); Treer et al. (2000b); Mustafić (2001); Delić et al. (2003a); Domitrović et al. (2004); Jugović (2004); Piria et al. (2004); Mustafić (2005); Piria et al. (2005b); Sallai and Kontos (2005); Mrakovčić et al. (2006); Treer et al. (2006); Ćaleta (2007); Ivelić et al. (2007); Kottelat and Freyhof (2007); Piria (2007); Prpa et al. (2007); Sallai and Mrakovčić (2007); Sallai and Kontos (2008); Treer et al. (2008a); Zanella et al. (2008b); Delić et al. (2009); Dumbović et al. (2009); Jelić et al. (2009); Kerestessy et al. (2009); Sofradžija (2009); Treer et al. (2009); Bučar et al. (2010); Buj (2010c); Jelić et al. (2010); Perović and Tvrković (2010); Ištak (2011); Jelić et al. (2012); Delić et al. (2014a); Stierandová et al. (2016); Simonović et al. (2017b)

**Remarks:** probably complex of several species, Croatian freshwaters are likely inhabited by yet undescribed species (Stierandová et al. 2016)

ALBURNUS Rafinesque, 1820

36. *Alburnus alburnus* (Linnaeus, 1758)

**Names under which the taxon was mentioned:** *Abramis alburnus* (Linnaeus, 1758); *Alburnus alburnus alburnus* (Linnaeus, 1758); *Abramis lucidus* (Heckel, 1843); *Alburnus lucidus* Heckel, 1843;

**English name:** Bleak

**Croatian name:** obična ukljija

**Range in Croatia:** Danube drainage - middle and lower course of rivers; Adriatic Basin - introduced to the Lika River system

**Literature:** Heckel and Kner (1858); Brusina (1878); Jurinac (1880); Sebišanović (1880); Sebišanović (1881); Jurinac (1884); Glowacki (1885); Anonymous (1886); Jurinac (1887); Hefele (1889); Mojsisovics (1889); Sebišanović (1889a); Sebišanović (1890); Brusina (1892); Brusina (1893); Dudan (1893); Kišpatić (1893); Glowacki (1896); Hirc (1896); Medić (1901b); Langhoffer (1904); RHZZM (1908); Čurčić (1910); Hirc (1911); Lang (1911); Vutskits (1918); Plančić (1923b); Maldini (1935a); Rotarides (1944); Sabioncello (1967); Zobundžija (1968); Vuković and Ivanović (1971); Čanadjija (1977); Klašterka (1979); Mikuska (1979); Sofradžija and Hadžiselimović (1981); Bojčić et al. (1982); Mikuska (1983a); Mikuska (1983b); Mikuska and Mamić (1984); Mikuska (1985); Tvrković (1985); Bianco (1986); Habeković et al. (1986); Lelek (1987); Delić (1989); Habeković et al. (1990); Habeković and Popović (1991); Homen et al. (1991); Mrakovčić (1992); Delić (1993); Mrakovčić et al. (1996b); Habeković et al. (1997); Leiner (1998a); Majer (1998); Povž et al. (1998); Treer et al. (1998); Zanella et al. (2000); Jaković and Treer (2001); Mustafić (2001); Simonović (2001);

Mrakovčić et al. (2002); Pizzul et al. (2002); Bakota et al. (2003); Delić et al. (2003a); Leiner (2003); Domitrović et al. (2004); Jugović (2004); Piria et al. (2004); Jakirčević (2005); Mustafić (2005); Piria et al. (2005b); Treer et al. (2006); Ćaleta (2007); Ivelić et al. (2007); Kottelat and Freyhof (2007); Piria (2007); Prpa et al. (2007); Sallai and Mrakovčić (2007); Polačik et al. (2008); Sallai and Kontos (2008); Sevcšik and Erös (2008); Treer et al. (2008a); Delić et al. (2009); Dumbović et al. (2009); Jelić et al. (2009); Kerestessy et al. (2009); Sofradžija (2009); Treer et al. (2009); Zrnčić et al. (2009a); Bučar et al. (2010); Jelić et al. (2010); Jelkić et al. (2010); Ozimec et al. (2010); Vardić Smržlić (2010); Matulić et al. (2011); Piria et al. (2011b); Jelić et al. (2012); Jelkić and Opačak (2013); Safner et al. (2013); Zrnčić et al. (2013); Delić et al. (2014a); Nedić et al. (2014a); Nedić et al. (2014b); Riđanović et al. (2014); Žutinić et al. (2014); Jelić et al. (2016); Kolarević et al. (2016); Pofuk et al. (2017); Simonović et al. (2017b); Nedić et al. (2018); Zuliani et al. (2019)

**Remarks:** non-native in the Lika River system

### 37. *Alburnus arborella* (Bonaparte, 1841)

**Names under which the taxon was mentioned:** *Alburnus albidus* (Costa, 1838); *Alburnus albidus arborella* (De Filippi, 1844); *Alburnus alburnus* (Linnaeus, 1758); *Alburnus alburnus arborella* (De Filippi, 1844); *Alburnus arborella* (De Filippi, 1844)

**English name:** Alborella

**Croatian name:** primorska ukljija

**Range in Croatia:** Adriatic Basin - rivers on the Istrian Peninsula, Zrmanja River drainage, introduced to Ričica River and reservoirs in the Lika region

**Literature:** Heckel and Kner (1858); Dybowski (1862); Brusina (1878); Faber (1883); Kolombatović (1886a); Kolombatović (1886b); Kišpatić (1893); Largaiolli (1904); Karaman (1923b); Gridelli (1936); Anonymous (1967); Sabioncello (1967); Vuković and Ivanović (1971); Sofradžija and Hadžiselimović (1981); Bojčić et al. (1982); Leiner (1984); Leiner (1985); Lelek (1987); Povž et al. (1990); Leiner and Povž (1993); Leiner and Povž (1994); Leiner et al. (1995); Mrakovčić et al. (1995); Crivelli (1996); Schneider (1998); Mrakovčić et al. (2000b); Zerunian (2004); Piria et al. (2005b); Mrakovčić et al. (2006); Kottelat and Freyhof (2007); Buj et al. (2010); Miočić-Stošić and Kovačević (2013); Bianco (2014a); Bianco (2014b); Jelić et al. (2016); Jelić and Krivek (2017)

**Remarks:** introduced from the Zrmanja River to the Ričica River in the Lika region due to pumping of water for the Velebit pumped-storage hydro power plant; reports for the Krka River not confirmed

### 38. *Alburnus neretvae* Buj, Šanda & Perea, 2010

**Names under which the taxon was mentioned:** *Alburnus*

*albidus* (Costa, 1838); *Alburnus albidus arborella* (De Filippi, 1844); *Alburnus arborella* (De Filippi, 1844); *Alburnus alburnellus* (Martens, 1857); *Alburnus alburnus arborella* (De Filippi, 1844); *Alburnus arborella* (Bonaparte, 1841)

**English name:** Neretva bleak

**Croatian name:** neretvanska ukljija

**Range in Croatia:** Adriatic Basin - Neretva River drainage, Matica River near Vrgorac and Baćinska Lakes

**Literature:** Faber (1883); Katurić (1883); Kolombatović (1886a); Kolombatović (1886b); Seeley (1886); Kolombatović (1888); Katurić (1896a); Kolombatović (1907); Vuković (1961); Kolaković (1972); Mrakovčić et al. (1995); Leiner (1998b); Tvrtković (1998); Nocita and Vanni (1999); Mrakovčić et al. (2000a); Mikavica et al. (2001); Aprahamian (2003); Kottelat and Freyhof (2007); Sofradžija (2009); Buj et al. (2010); Glamuzina et al. (2010b); Glamuzina et al. (2013); Ćaleta et al. (2015)

**Remarks:** endemic to the Adriatic Basin

### 39. *Alburnus sava* Bogutskaya, Zupančič, Jelić, Diripasko & Naseka, 2017

**Names under which the taxon was mentioned:** *Alburnus mento* (Heckel, 1837); *Alburnus sarmaticus* Freyhof & Kottelat, 2007; *Chalcalburnus chalcooides* (Güldenstädt, 1772); *Chalcalburnus chalcooides danubicus* (Antipa, 1909); *Chalcalburnus chalcooides mento* (Agassiz, 1832)

**English name:** Sava bleak

**Croatian name:** velika pliska

**Range in Croatia:** Danube drainage – Kupa, Mrežnica and Sava Rivers

**Literature:** Anonymous (1886); Sebišanović (1890); Dudan (1893); Kišpatić (1893); Glowacki (1896); Hirc (1897); Čurčić (1910); Vutskits (1918); Maldini (1935a); Sabioncello (1967); Vuković and Ivanović (1971); Bojčić et al. (1982); Veljović (1982); Mrakovčić et al. (1996b); Honsig-Erlenburg et al. (1997); Povž et al. (1998); Mustafić (2001); Jakirčević (2005); Mrakovčić et al. (2006); Kottelat and Freyhof (2007); Sofradžija (2009); Buj (2010b); Jelić et al. (2012); Bogutskaya et al. (2017); Simonović et al. (2017b); Vucić et al. (2017)

**Remarks:** endemic to the Danube drainage

### BALLERUS Heckel, 1843

#### 40. *Ballerus ballerus* (Linnaeus, 1758)

**Names under which the taxon was mentioned:** *Aramis ballerus* (Linnaeus, 1758)

**English name:** Blue bream

**Croatian name:** kosalj

**Range in Croatia:** Danube drainage - middle and lower course of the rivers

**Literature:** Sebišanović (1881); Mojsisovics (1883); Glowacki (1885); Anonymous (1886); Kesterčanek (1886); Seeley (1886); Brusina (1893); Dudan (1893); Kišpatić (1893); Glowacki (1896); Hirc (1897); Medić (1898); Medić (1902); RHZZM (1908); Čurčić (1910); Vutskits (1918); Plančić (1923b); Juzbašić (1928); Fink (1932b); Trojanović (1934); Maldini (1935a); Maldini (1937); Sabioncello (1967); Zobundžija (1968); Vuković and Ivanović (1971); Čanadjija (1977); Klašterka (1979); Mikuska (1979); Sofradžija and Hadžiselimović (1981); Bojčić et al. (1982); Veljović (1982); Mikuska (1983a); Mikuska (1983b); Delić (1984); Mikuska (1984); Mikuska and Mamić (1984); Vrenk (1984); Mikuska (1985); Veljović (1985); Lelek (1987); Homen et al. (1991); Harka (1992); Mrakovčić (1992); Mrakovčić et al. (1996b); Majer (1998); Zanella et al. (2000); Mustafić (2001); Simonović (2001); Mrakovčić et al. (2002); Bakota et al. (2003); Jugović (2004); Jakirčević (2005); Mustafić (2005); Mrakovčić et al. (2006); Ćaleta (2007); Kottelat and Freyhof (2007); Sallai and Mrakovčić (2007); Sallai and Kontos (2008); Sofradžija (2009); Treer et al. (2009); Ozimec et al. (2010); Jelić et al. (2012); Jelkić and Opačak (2013); Simonović et al. (2017b)

41. *Ballerus sapa* (Pallas, 1814)

**Names under which the taxon was mentioned:** *Abramis sapa* (Pallas, 1814)

**English name:** White-eye bream

**Croatian name:** crnooka deverika

**Range in Croatia:** Danube drainage - middle and lower course of rivers

**Literature:** Heckel and Kner (1858); Glowacki (1885); Anonymous (1886); Kesterčanek (1886); Seeley (1886); Brusina (1893); Dudan (1893); Kišpatić (1893); Glowacki (1896); Mojsisovics (1897); RHZZM (1908); Čurčić (1910); Vutskits (1918); Plančić (1923b); Anonymous (1925); Pešić (1955); Sabioncello (1967); Vuković and Ivanović (1971); Klašterka (1979); Mikuska (1979); Bojčić et al. (1982); Veljović (1982); Mikuska (1983a); Mikuska (1983b); Mikuska and Mamić (1984); Vrenk (1984); Mikuska (1985); Veljović (1985); Lelek (1987); Homen et al. (1991); Mrakovčić et al. (1996b); Leiner (1998a); Majer (1998); Mustafić (2001); Simonović (2001); Leiner (2003); Jakirčević (2005); Mustafić (2005); Mrakovčić et al. (2006); Ćaleta (2007); Kottelat and Freyhof (2007); Prpa et al. (2007); Sallai and Mrakovčić (2007); Sallai and Kontos (2008); Treer et al. (2008a); Sofradžija (2009); Treer et al. (2009); Ozimec et al. (2010); Jelić et al. (2012); Jelkić and Opačak (2013); Piria et al. (2016a); Simonović et al. (2017b); Nedić et al. (2018)

BLICCA Heckel, 1843

42. *Blicca bjoerkna* (Linnaeus, 1758)

**Names under which the taxon was mentioned:** *Abramis bjoerkna* (Linnaeus, 1758); *Abramis blicca* (Bloch, 1782);

*Blicca argyroleuca* Heckel, 1843

**English name:** White bream

**Croatian name:** krupatica

**Range in Croatia:** Danube drainage - middle and lower course of rivers

**Literature:** Brusina (1878); Jurinac (1880); Sebišanović (1880); Mojsisovics (1883); Jurinac (1884); Glowacki (1885); Anonymous (1886); Jurinac (1887); Hefe (1889); Mojsisovics (1889); Sebišanović (1890); Brusina (1892); Brusina (1893); Kišpatić (1893); Glowacki (1896); Mojsisovics (1897); Medić (1898); Čurčić (1910); Vutskits (1918); Maldini (1935b); Pešić (1955); Sabioncello (1967); Vuković and Ivanović (1971); Klašterka (1979); Mikuska (1979); Sofradžija and Hadžiselimović (1981); Bojčić et al. (1982); Veljović (1982); Mikuska (1983a); Mikuska (1983b); Delić (1984); Mikuska (1984); Mikuska and Mamić (1984); Delić (1985); Mikuska (1985); Tvrtković (1985); Veljović (1985); Habeković et al. (1986); Lelek (1987); Homen et al. (1991); Mrakovčić (1992); Delić (1993); Mrakovčić et al. (1996b); Leiner (1998a); Majer (1998); Zanella et al. (2000); Mustafić (2001); Mrakovčić et al. (2002); Bakota et al. (2003); Jugović (2004); Jakirčević (2005); Mustafić (2005); Ćaleta (2007); Kottelat and Freyhof (2007); Sallai and Mrakovčić (2007); Sallai and Kontos (2008); Sevcsik and Erös (2008); Delić et al. (2009); Dumbović et al. (2009); Jelić et al. (2009); Kerestessy et al. (2009); Sofradžija (2009); Treer et al. (2009); Jelić et al. (2010); Jelkić et al. (2010); Ozimec et al. (2010); Vardić Smržlić (2010); Matulić et al. (2011); Jelić et al. (2012); Piria et al. (2016a); Simonović et al. (2017b); Nedić et al. (2018)

CHONDROSTOMA Agassiz, 1832

43. *Chondrostoma kneri* Heckel, 1843

**Names under which the taxon was mentioned:** *Chondrostoma kneri* Heckel, 1843; *Chondrostomum kneri* Heckel, 1843

**English name:** Dalmatian nase

**Croatian name:** podustva

**Range in Croatia:** Adriatic Basin - Neretva River drainage and Baćinska Lakes

**Literature:** Heckel (1843); Bonaparte (1845); Bonaparte (1846); Carrara (1846); Heckel (1852); Heckel and Kner (1858); Dybowski (1862); Canestrini (1866); Canestrini (1874); Brusina (1878); Giglioli (1880); Faber (1883); Katurić (1883); Kolombatović (1886a); Kolombatović (1886b); Seeley (1886); Kolombatović (1888); Botteri (1891); Dudan (1893); Kišpatić (1893); Hamann (1896); Katurić (1896a); Petermann (1899); Langhoffer (1901); Katurić (1907); Kolombatović (1907); Brusina (1908); Karaman (1923b); Basioli (1952); Basioli (1958a); Vuković (1961); Vuković (1963); Sabioncello (1967); Kolaković (1972); Vuković and Ivanović (1971); Vuković and Kosorić (1978); Klašterka (1979); Sofradžija and Hadžiselimović

(1981); Bojčić et al. (1982); Povž (1983); Bianco (1986); Elvira (1987); Economidis and Bănărescu (1991); Mrakovčić et al. (1995); Crivelli (1996); Elvira (1997); Kottelat (1997); Leiner (1998b); Mrakovčić (1998); Schneider (1998); Tvrtković (1998); Nocita and Vanni (1999); Mikavica et al. (2001); Aprahamian (2003); Mrakovčić et al. (2006); Glamuzina (2007); Kottelat and Freyhof (2007); Jelić et al. (2008); Muhamedagić et al. (2008); Tutman et al. (2008b); Glamuzina et al. (2010b); Freyhof (2012); Glamuzina et al. (2013); Ćaleta et al. (2015)

**Remarks:** endemic to the Neretva River drainage and to Adriatic Basin

#### 44. *Chondrostoma nasus* (Linnaeus, 1758)

**Names under which the taxon was mentioned:** *Chondrostoma nasus nasus* (Linnaeus, 1758)

**English name:** Common nase

**Croatian name:** podust

**Range in Croatia:** Danube drainage - middle and lower course of rivers

**Literature:** Heckel and Kner (1858); Canestrini (1866); Canestrini (1874); Brusina (1878); Jurinac (1880); Sebišanović (1880); Sebišanović (1881); Jurinac (1884); Mojsisovics (1884); Seeley (1886); Botteri (1891); Franke (1892); Brusina (1893); Kišpatić (1893); Hirc (1897); Hirc (1902d); RHZZM (1908); Kempf (1910); Vutskits (1918); Crnić (1923); Anonymous (1925); Bergleitner (1925); Rössler (1931); Maldini (1935c); Taler (1945a); Kosorić (1955); Jagodić (1957); Vuković (1963); Marko et al. (1968); Vuković et al. (1970); Vuković and Ivanović (1971); Vrebac (1972); Čanadjija (1977); Klašterka (1979); Bojčić et al. (1982); Bianco (1986); Economidis and Bănărescu (1991); Habeković (1993); Crivelli (1996); Elvira (1997); Honsig-Erlenburg et al. (1997); Kerovec (1998); Schneider (1998); Miotti (2002); Mrakovčić et al. (2002); Hrbek et al. (2004); Pažur (2005); Mrakovčić et al. (2006); Kottelat and Freyhof (2007); Prpa et al. (2007); Jelić et al. (2008); Ćaleta et al. (2009a); Dumbović et al. (2009); Sofradžija (2009); Treer et al. (2009); Tvrtković et al. (2009); Freyhof (2012); Zrnčić et al. (2013); Delić et al. (2014a); Piria et al. (2016b); Simonović et al. (2017b); Nedić et al. (2018)

#### 45. *Chondrostoma phoxinus* Heckel, 1843

**English name:** Minnow nase

**Croatian name:** podbila

**Range in Croatia:** Adriatic Basin - Cetina River drainage and Prološko Blato Lake

**Literature:** Carrara (1846); Heckel (1852); Heckel and Kner (1858); Dybowski (1862); Canestrini (1866); Canestrini (1874); Brusina (1878); Giglioli (1880); Faber (1883); Kolombatović (1886a); Seeley (1886); Kolombatović (1888); Botteri (1891); Kišpatić (1893); Karaman (1923a); Karaman (1923b); Koller (1928); Rössler (1931); Taler

(1951g); Taler (1953a); Taler (1953f); Vuković (1963); Marko et al. (1968); Vuković et al. (1970); Vuković and Ivanović (1971); Bojčić et al. (1982); Kottelat (1984); Bianco (1986); Economidis and Bănărescu (1991); Habeković (1993); Crivelli (1996); Elvira (1997); Kerovec (1998); Schneider (1998); Miotti (2002); Hrbek et al. (2004); Mrakovčić et al. (2006); Tvrtković and Veen (2006); Kottelat and Freyhof (2007); Jelić et al. (2008); Valić et al. (2008); Ćaleta et al. (2009a); Tvrtković et al. (2009); Sofradžija (2009); Mrakovčić and Ćaleta (2011); Freyhof (2012); Ćaleta et al. (2015); Pofuk et al. (2017)

**Remarks:** report for the Vrba River (Krka River drainage) not confirmed; endemic to the Adriatic Basin

DELMINICHTHYS Freyhof, Lieckfeldt, Bogutskaya, Pitra & Ludwig, 2006

#### 46. *Delminichthys adspersus* (Heckel, 1843)

**Names under which the taxon was mentioned:** *Leuciscus adspersus* (Heckel, 1843); *Leucos adspersus* Heckel, 1843; *Paraphoxinus adspersus* (Heckel, 1843); *Phoxinellus adspersus* (Heckel, 1843); *Phoxinellus scharfetteri*

**English name:** Spotted minnow

**Croatian name:** imotska gaovica

**Range in Croatia:** Adriatic Basin - Neretva and Vrljika River drainage, Prološko Blato and Baćinska Lakes, lakes near Imotski, Matica River near Vrgorac

**Literature:** Heckel (1843); Bonaparte (1845); Bonaparte (1846); Carrara (1846); Heckel and Kner (1858); Dybowski (1862); Canestrini (1866); Canestrini (1874); Brusina (1878); Giglioli (1880); Steindachner (1882a); Faber (1883); Katurić (1883); Kolombatović (1886a); Kolombatović (1886b); Seeley (1886); Kolombatović (1888); Brusina (1890); Botteri (1891); Katurić (1896a); Petermann (1899); Trgovčević (1905a); Trgovčević (1905c); Katurić 1907; Kolombatović (1907); Car (1911); Karaman (1923a); Karaman (1923b); Trgovčević (1932); Maldini (1936a); Vraneš (1966); Sabioncello (1967); Bilopavlović (1970); Berberović et al. (1971); Guzina and Vuković (1971); Miladinović et al. (1971); Vuković and Ivanović (1971); Karaman (1972); Sofradžija and Hadžiselimović (1981); Bojčić et al. (1982); Vuković (1982); Bianco (1986); Crivelli (1996); Mrakovčić et al. (1996a); Holčík and Mrakovčić (1997); Kottelat (1997); Leiner (1998b); Schneider (1998); Tvrtković (1998); Nocita and Vanni (1999); Aspacher et al. (2000); Habeković and Pažur (2000); Mrakovčić et al. (2000a); Zupančič and Bogutskaya (2000); Miotti (2002); Tvrtković and Franičević (2002); Zupančič and Bogutskaya (2002); Bogutskaya and Zupančič (2003); Franičević and Tičina (2003); Freyhof et al. (2006); Mrakovčić et al. (2006); Kottelat and Freyhof (2007); Jelić et al. (2008); Šanda et al. (2008); Zupančič (2008); Sofradžija (2009); Glamuzina et al. (2010b); Palandačić et al. (2010); Gabelica et al. (2011); Freyhof (2012); Palandačić (2012a); Palandačić (2012b); Palandačić et al. (2012a); Palandačić

et al. (2012b); Glamuzina et al. (2013); Duplić (2014); Ćaleta et al. (2015); Ozimec (2015); Mustafić et al. (2016)

**Remarks:** reports for the Lika region not confirmed and are likely the result of misidentification; endemic to the Adriatic Basin

47. *Delminichthys ghetaldi* (Steindachner, 1882)

**Names under which the taxon was mentioned:** *Paraphoxinus ghetaldi* Steindachner, 1882; *Paraphoxinus pstrissii* Steindachner, 1882; *Phoxinellus ghetaldi* (Steindachner, 1882);

**English name:** Southern Dalmatian minnow

**Croatian name:** popovska gaovica

**Range in Croatia:** Adriatic Basin - Ombla River, springs and small creeks in the Konavosko Field

**Literature:** Kišpatić (1893); Kosić (1903); Trgovčević (1905a); Trgovčević (1905c); Karaman (1923a); Karaman (1923b); Trgovčević (1932); Maldini (1936b); Čurčić (1938); Taler (1953f); Sabioncello (1967); Vuković and Ivanović (1971); Sofradžija and Berberović (1972); Bianco (1986); Mrakovčić and Mišetić (1990a); Mrakovčić et al. (1995); Crivelli (1996); Maitland and Crivelli (1996); Grmek and Balabanić (2000); Tvrtković and Franičević (2002); Zupančić and Bogutskaya (2002); Bogutskaya and Zupančić (2003); Mrakovčić et al. (2006); Tvrtković and Veen (2006); Kottelat and Freyhof (2007); Jelić et al. (2008); Perea et al. (2010); Freyhof (2012); Glamuzina et al. (2013); Ćaleta et al. (2015); Jelić and Jelić (2015); Ozimec (2015); Mustafić et al. (2016)

**Remarks:** reports for the Krka, Vrljika and Neretva Rivers are likely the result of misidentification; endemic to the Trebišnjica River system in Bosnia and Herzegovina and Croatia

48. *Delminichthys jadovensis* (Zupančić & Bogutskaya, 2002)

**Names under which the taxon was mentioned:** *Leucaspis adspersus* (Heckel, 1843); *Paraphoxinus adspersus* (Heckel, 1843); *Phoxinellus jadovensis* Zupančić & Bogutskaya, 2002

**English name:** Jadova minnow

**Croatian name:** jadovska gaovica

**Range in Croatia:** Adriatic Basin - Jadova River

**Literature:** Heckel (1843); Car (1911); Taler (1953a); Zupančić and Bogutskaya (2002); Bogutskaya and Zupančić (2003); Freyhof et al. (2006); Mrakovčić et al. (2006); Kottelat and Freyhof (2007); Duplić (2008); Jelić et al. (2008); Valić et al. (2008); Palandačić et al. (2010); Perea et al. (2010); Popović (2010); Freyhof (2012); Palandačić (2012a); Ćaleta et al. (2015); Ozimec (2015); Jelić et al. (2016); Jelić and Krivek (2017); Mustafić et al. (2016)

**Remarks:** early reports of species of the genera *Paraphoxinus* and *Phoxinellus* in the Lika River system cannot be identified, given the presence of *T. croaticus* and *D. jadovensis* here; stenoendemic to the Jadova River and endemic to the Adriatic Basin and Croatia

49. *Delminichthys krbavensis* (Zupančić & Bogutskaya, 2002)

**Names under which the taxon was mentioned:** *Paraphoxinus ghetaldi* Steindachner, 1882; *Phoxinellus krbavensis* Zupančić & Bogutskaya, 2002

**English name:** Krbava minnow

**Croatian name:** krbavska gaovica

**Range in Croatia:** Danube drainage - Krbavsko Field

**Literature:** RHZZM (1908); Trgovčević (1908); Taler (1953a); Vraneš (1966); Zupančić and Bogutskaya (2002); Bogutskaya and Zupančić (2003); Mateš (2004); Freyhof et al. (2006); Mrakovčić et al. (2006); Tvrtković and Veen (2006); Kottelat and Freyhof (2007); Duplić (2008); Jelić et al. (2008); Valić et al. (2008); Palandačić et al. (2010); Perea et al. (2010); Popović (2010); Freyhof (2012); Palandačić (2012a); Palandačić (2012b); Mihinjač et al. (2015b); Ćaleta et al. (2015); Ozimec (2015); Jelić et al. (2016); Mustafić et al. (2016)

**Remarks:** stenoendemic to the Krbavsko Field, endemic to the Danube drainage and Croatia

LEUCASPIUS Heckel & Kner, 1858

50. *Leucaspius delineatus* (Heckel, 1843)

**English name:** Belica

**Croatian name:** bjelica

**Range in Croatia:** Danube drainage - lower course of rivers

**Literature:** Giglioli (1880); Kolombatović (1886a); Seeley (1886); Kolombatović (1888); Mojsisovics (1897); Vutskits (1918); Sabioncello (1967); Vuković and Ivanović (1971); Čanadija (1977); Klašterka (1979); Mikuska (1979); Bojić et al. (1982); Veljović (1982); Mikuska (1983b); Veljović (1985); Lelek (1987); Harka (1992); Mrakovčić (1992); Delić (1993); Mrakovčić et al. (1996b); Nocita and Vanni (1999 (Kerka)); Zanella et al. (2000); Mustafić (2001); Jakirčević (2005); Mrakovčić et al. (2006); Kottelat and Freyhof (2007); Sallai and Mrakovčić (2007); Sallai and Kontos (2008); Jelić et al. (2009); Sofradžija (2009); Jelić et al. (2012)

**Remarks:** a rare species in Croatia that has only been recorded in the Žutica Forest and Ilova River in the past 20 years; some literature reports are likely the result of misidentification; reports in the Krka River (Adriatic Basin) not confirmed and are also likely due to misidentification

**LEUCISCUS** Cuvier, 1816

**51. *Leuciscus aspius* (Linnaeus, 1758)**

**Names under which the taxon was mentioned:** *Aspius aspius* (Linnaeus, 1758); *Aspius rapax* Agassiz, 1835

**English name:** Asp

**Croatian name:** bolen

**Range in Croatia:** Danube drainage - middle and lower course of the rivers

**Literature:** Heckel and Kner (1858); Jurinac (1880); Sebišanović (1880); Sebišanović (1881); Jurinac (1884); Glowacki (1885); Anonymous (1886); Hefele (1889); Sebišanović (1890); Brusina (1892); Brusina (1893); Dudan (1893); Kišpatić (1893); Glowacki (1896); Hirc (1896); Anonymous (1897b); Hirc (1897); Mojsisovics (1897); Medić (1898); Horvat (1901); Medić (1901b); Šimunčić (1902); RHZZM (1908); Čurčić (1910); Vutskits (1918); Plančić (1923a); Plančić (1923b); Anonymous (1925); Bergleitner (1925); Anonymous (1931c); Trojanović (1934); Anonymous (1935g); Maldini (1935b); Anonymous (1946a); Knop (1947a); Pešić (1955); Jagodić (1957); Sabioncello (1967); Zobundžija (1968); Sabioncello et al. (1969); Vuković and Ivanović (1971); Klašterka (1979); Mikuska (1979); Bojčić et al. (1982); Veljović (1982); Mikuska (1983a); Mikuska (1983b); Mikuska (1984); Vrenk (1984); Tvrtković (1985); Veljović (1985); Lelek (1987); Habeković and Popović (1991); Homen et al. (1991); Mrakovčić (1992); Pažur (1993); Mihaljević et al. (1996); Mrakovčić et al. (1996b); Leiner (1998a); Majer (1998); Zanella et al. (2000); Mustafić (2001); Mrakovčić et al. (2002); Bakota et al. (2003); Jugović (2004); Jakirčević (2005); Mustafić (2005); Pažur (2005); Mrakovčić et al. (2006); Ćaleta (2007); Kottelat and Freyhof (2007); Sallai and Mrakovčić (2007); Sallai and Kontos (2008); Suić et al. (2008); Treer et al. (2008a); Dumbović et al. (2009); Sofradžija (2009); Treer et al. (2009); Jelić et al. (2010); Jelkić et al. (2010); Ozimec et al. (2010); Matulić et al. (2011); Jelić et al. (2012); Zrnčić et al. (2013); Delić et al. (2014a); Simonović et al. (2017b); Nedić et al. (2018)

**52. *Leuciscus idus* (Linnaeus, 1758)**

**Names under which the taxon was mentioned:** *Idus jeses* (Linnaeus, 1758); *Idus melanotus* (Heckel, 1843);

**English name:** Ide

**Croatian name:** jez

**Range in Croatia:** Danube drainage - middle and lower course of rivers

**Literature:** Jurinac (1880); Sebišanović (1880); Sebišanović (1881); Mojsisovics (1883); Jurinac (1884); Mojsisovics (1884); Glowacki (1885); Anonymous (1886); Seeley (1886); Hefele (1889); Mojsisovics (1889); Sebišanović (1889b); Sebišanović (1890); Brusina (1892); Dudan

(1893); Kišpatić (1893); Glowacki (1896); Hirc (1897); Mojsisovics (1897); Medić (1898); RHZZM (1908); Čurčić (1910); Vutskits (1918); Plančić (1923b); Trojanović (1934); Maldini (1936a); Anonymous (1946a); Franić (1949); Glavan (1952); Jagodić (1957); Sabioncello (1967); Sabioncello et al. (1969); Vuković and Ivanović (1971); Munjko (1975); Mikuska (1979); Klašterka (1979); Sofradžija and Hadžiselimović (1981); Bojčić et al. (1982); Veljović (1982); Bauer (1983); Mikuska (1983a); Mikuska (1983b); Delić (1984); Mikuska (1984); Mikuska and Mamić (1984); Vrenk (1984); Mikuska (1985); Tvrtković (1985); Veljović (1985); Lelek (1987); Habeković and Popović (1991); Homen et al. (1991); Mrakovčić (1992); Pažur (1993); Mihaljević et al. (1996); Mrakovčić et al. (1996b); Leiner (1998a); Majer (1998); Zanella et al. (2000); Mustafić (2001); Mrakovčić et al. (2002); Bakota et al. (2003); Jugović (2004); Jakirčević (2005); Mustafić (2005); Pažur (2005); Mrakovčić et al. (2006); Ćaleta (2007); Kottelat and Freyhof (2007); Sallai and Mrakovčić (2007); Sallai and Kontos (2008); Suić et al. (2008); Treer et al. (2008a); Dumbović et al. (2009); Sofradžija (2009); Treer et al. (2009); Jelić et al. (2010); Jelkić et al. (2010); Ozimec et al. (2010); Matulić et al. (2011); Jelić et al. (2012); Zrnčić et al. (2013); Delić et al. (2014a); Simonović et al. (2017b)

**53. *Leuciscus leuciscus* (Linnaeus, 1758)**

**Names under which the taxon was mentioned:** *Leuciscus dobula* (Linnaeus, 1758); *Leuciscus vulgaris* Fleming, 1828; *Squalius lepusculus* Heckel, 1852; *Squalius leuciscus* Fatio, 1882

**English name:** Common dace

**Croatian name:** klenić

**Range in Croatia:** Danube drainage - middle and lower course of rivers

**Literature:** Heckel and Kner (1858); Šloser (1870); Jurinac (1881); Jurinac (1884); Glowacki (1885); Anonymous (1886); Mojsisovics (1887); Hefele (1889); Sebišanović (1890); Brusina (1892); Brusina (1893); Dudan (1893); Kišpatić (1893); Glowacki (1896); RHZZM (1908); Hirc (1911); Vutskits (1918); Anonymous (1925); Maldini (1936a); Sabioncello (1967); Pažur (1969c); Pažur (1969b); Vuković and Ivanović (1971); Mikuska (1979); Sofradžija and Hadžiselimović (1981); Bojčić et al. (1982); Veljović (1982); Mikuska (1983b); Vrenk (1984); Veljović (1985); Habeković et al. (1986); Lelek (1987); Delić (1989); Mrakovčić (1992); Delić (1993); Mrakovčić et al. (1996b); Habeković et al. (1997); Majer (1998); Treer et al. (1998); Zanella et al. (2000); Mustafić (2001); Delić et al. (2003a); Jugović (2004); Bošnir et al. (2005); Jakirčević (2005); Mustafić (2005); Bošnir et al. (2007); Kottelat and Freyhof (2007); Prpa et al. (2007); Piria (2007); Sallai and Mrakovčić (2007); Sallai and Kontos (2008); Delić et al. (2009); Jelić et al. (2009); Kerestessy et al. (2009); Sofradžija (2009); Treer et al. (2009); Zrnčić et al. (2009a); Bučar et al. (2010); Jelić

et al. (2010); Ozimec et al. (2010); Jelić et al. (2012); Piria et al. (2016a); Pofuk et al. (2017)

**Remarks:** report on the introduction to the Kruščica Reservoir not confirmed

PELECUS Agassiz, 1836

54. *Pelecus cultratus* (Linnaeus, 1758)

**English name:** Ziege

**Croatian name:** sabljarka

**Range in Croatia:** Danube drainage - lower course of rivers

**Literature:** Heckel and Kner (1858); Brusina (1878); Sebišanović (1880); Mojsisovics (1883); Glowacki (1885); Anonymous (1886); Kesterčanek (1886); Seeley (1886); Jurinac (1887); Hefele (1889); Brusina (1892); Brusina (1893); Dudan (1893); Kišpatić (1893); Mojsisovics (1884); Glowacki (1896); Hirc (1897); Mojsisovics (1897); Medić (1902); RHZZM (1908); Čurčić (1910); Vutskits (1918); Maldini (1936b); Pešić (1955); Sabioncello (1967); Vuković and Ivanović (1971); Klašterka (1979); Mikuska (1979); Bojčić et al. (1982); Veljović (1982); Mikuska (1983a); Mikuska (1983b); Mikuska (1984); Veljović (1985); Lelek (1987); Homen et al. (1991); Mrakovčić et al. (1996b); Majer (1998); Mustafić (2001); Jakirčević (2005); Mustafić (2005); Mrakovčić et al. (2006); Sallai and Mrakovčić (2007); Sallai and Kontos (2008); Sofradžija (2009); Ozimec et al. (2010); Jelić et al. (2012)

PHOXINELLUS Heckel, 1843

55. *Phoxinellus alepidotus* Heckel, 1843

**Names under which the taxon was mentioned:** *Leucos adspersus* Heckel, 1843; *Paraphoxinus alepidotus* (Heckel, 1843)

**English name:** Dinaric minnow

**Croatian name:** dinarska pijurica

**Range in Croatia:** Adriatic Basin - Cetina River drainage

**Literature:** Carrara (1846); Heckel and Kner (1858); Dybowski (1862); Bleeker (1863); Canestrini (1866); Brusina (1872); Canestrini (1874); Brusina (1878); Steindachner (1882a); Faber (1883); Katurić (1883); Kolombatović (1886a); Kolombatović (1886b); Seeley (1886); Kolombatović (1888); Brusina (1890); Katurić (1896a); Petermann (1899); Trgovčević (1905a); Brusina (1907); Katurić (1907); Car (1911); Karaman (1923b); Koller (1928); Anonymous (1953a); Taler (1953a); Taler (1953f); Pešić (1961); Sabioncello (1967); Vuković et al. (1970); Trewavas (1971); Vuković and Ivanović (1971); Sofradžija and Berberović (1972); Vuković (1977); Sofradžija and Hadžiselimović (1981); Bojčić et al. (1982); Kottelat (1984); Howes (1985); Bianco (1986); Povž et al. (1990); Crivelli (1996); Kottelat (1997); Leiner (1998b); Tvrtković (1998); Nocita and Vanni (1999) (Neretva i Cetina)); Zupančić and Bogutskaya (2000); Zupančić and Bogutskaya (2002);

Bogutskaya and Zupančić (2003); Mrakovčić et al. (2006); Tvrtković and Veen (2006); Jelić et al. (2008); Tvrtković et al. (2009); Sofradžija (2009); Mrakovčić and Ćaleta (2011); Ćaleta et al. (2015); Landeka et al. (2015); Ozimec (2015)

**Remarks:** reports for the Neretva River drainage not confirmed and are likely the result of misidentification; endemic to the Adriatic Basin

56. *Phoxinellus dalmaticus* Zupančić & Bogutskaya, 2000

**Names under which the taxon was mentioned:** *Paraphoxinus adspersus* (Heckel, 1843)

**English name:** Dalmatian minnow

**Croatian name:** dalmatinska pijurica

**Range in Croatia:** Adriatic Basin – Čikola River (Krka River drainage)

**Literature:** Brusina (1890); Basioli (1958b); Zupančić and Bogutskaya (2000); Miotti (2002); Zupančić and Bogutskaya (2002); Bogutskaya and Zupančić (2003); Hrbek et al. (2004); Freyhof et al. (2006); Mrakovčić et al. (2006); Tvrtković and Veen (2006); Kottelat and Freyhof (2007); Duplić (2008); Jelić et al. (2008); Palandačić et al. (2010); Perea et al. (2010); Popović (2010); Freyhof (2012); Palandačić (2012a); Ćaleta et al. (2015); Landeka et al. (2015); Ozimec (2015)

**Remarks:** stenoendemic to the Čikola River drainage and endemic to the Adriatic Basin and Croatia

PHOXINUS Rafinesque, 1820

57. *Phoxinus lumaireul* Schinz, 1840

**Names under which the taxon was mentioned:** *Leuciscus phoxinus* (Linnaeus, 1758); *Phoxinellus alepidotus* Heckel, 1843; 2015 *Phoxinus aphyia* (Linnaeus, 1758); *Phoxinus ketmaieri* Bianco & De Bonis, 2015; *Phoxinus laevis* Fitzinger, 1832; *Phoxinus likai* Bianco & De Bonis, *Phoxinus marsili* Heckel, 1836

**English name:** Italian minnow

**Croatian name:** pijor

**Range in Croatia:** Danube drainage – upper course of rivers; Adriatic Basin - Krk Island, Lika region, Zrmanja River, Krka River

**Literature:** Carrara (1846); Heckel and Kner (1858); Steindachner (1866a); Steindachner (1866b); Katurić (1883); Glowacki (1885); Kesterčanek (1886); Kolombatović (1886a); Kolombatović (1886b); Seeley (1886); Katurić (1887); Kolombatović (1888); Sebišanović (1890); Botteri (1891); Hirc (1891); Brusina (1892); Kišpatić (1893); Anonymous (1894f); Glowacki (1896); Hirc (1896); Katurić (1896a); Katurić (1896c); Hirc (1897); Hirc (1898); Hirc (1899c); Hirc (1900a); Talpaš (1901); Langhoffer (1904); Katurić (1907); Kolombatović (1907); RHZZM (1908); Trgovčević (1908); Hirc (1911); Vutskits

(1918); Karaman (1923b); Bergleitner (1925); Bergleitner (1928); Bergleitner (1929); Rössler (1929a); Rössler (1929b); Rössler (1930); Rössler (1931); Rössler (1932); Gridelli (1936); Maldini (1936b); Lovrić (1938); Plančić (1938); Anonymous (1945); Bergleitner (1946); Karaman (1952); Taler (1953b); Plančić (1956b); Stepanek (1956); Bogdanović (1957); Taler (1958); Bogdanović (1959); Sabioncello (1967); Pažur (1969b); Pažur (1969c); Pažur (1970); Vuković and Ivanović (1971); Čanadjija (1977); Klašterka (1979); Sofradžija and Hadžiselimović (1981); Bojčić et al. (1982); Leiner (1985); Tvrtković (1985); Bianco (1986); Lelek (1987); Mrakovčić et al. (1989); Fašaić et al. (1990); Delić (1993); Leiner and Povž (1993); Leiner and Povž (1994); Leiner et al. (1995); Mrakovčić et al. (1995); Mrakovčić et al. (1996b); Honsig-Erlenburg et al. (1997); Leiner (1998b); Povž et al. (1998); Leiner (1999); Mrakovčić et al. (2000b); Mikavica et al. (2001); Mustafić (2001); Delić et al. (2003a); Jugović (2004); Mateš (2004); Kottelat and Freyhof (2007); Prpa et al. (2007); Sallai and Mrakovčić (2007); Jalžić et al. (2008); Muhamedagić et al. (2008); Sallai and Kontos (2008); Treer et al. (2008a); Delić et al. (2009); Dumbović et al. (2009); Kerestessy et al. (2009); Sofradžija (2009); Treer et al. (2009); Bučar et al. (2010); Buj (2010c); Jelić et al. (2010); Perović and Tvrtković (2010); Trgovčić (2010); Jelić et al. (2012); Marčić et al. (2012); Miočić-Stošić and Kovačević (2013); Bianco (2014a); Delić et al. (2014a); Bianco and De Bonis (2015); Palandačić et al. (2015); Jelić et al. (2016); Palandačić et al. (2017); Vucić et al. (2018)

**Remarks:** dominant species of minnow in Croatia, all reports of *Phoxinus phoxinus* are in fact *P. lumaireul*. Recent reports (Bianco & De Bonis, 2015; Palandačić et al., 2015) indicate the presence of more than two species (multispecies concept) of the genus *Phoxinus* in Croatia, though their precise distribution and taxonomic classification are still unclear. In addition to *Phoxinus lumaireul*, there are reports of *Phoxinus karsticus* and *Phoxinus sp.* in Croatia.

#### 58. *Phoxinus marsilii* Heckel 1836

**Names under which the taxon was mentioned:** *Phoxinus phoxinus* (Linnaeus 1758)

**English name:** Marsili's minnow

**Croatian name:** Marsilijev pijor

**Range in Croatia:** Danube drainage - streams on Mt. Papuk in the Drava River system

**Literature:** Palandačić et al. (2017); Vucić et al. (2018)

**Remarks:** this species has only recently been reported for the first time in Croatia; however, its presence and distribution range have not yet been clarified.

*RUTILUS* Rafinesque, 1820

#### 59. *Rutilus aula* (Bonaparte, 1841)

**Names under which the taxon was mentioned:** *Gordonus aula*; *Leuciscus aula* (Bonaparte, 1841); *Leuciscus rubella* Bonaparte, 1837; *Leuciscus rutilus* (Linnaeus, 1758); *Leucos rubella* Heckel, 1843; *Leucos rubellicus* Bonaparte, 1845; *Rutilus rubilio* (Bonaparte, 1837)

**English name:** Adriatic roach

**Croatian name:** masnica

**Range in Croatia:** Adriatic Basin - rivers of the Istrian Peninsula and small watercourses near Zadar and Nin

**Literature:** Heckel (1843); Bonaparte (1845); Bonaparte (1846); Carrara (1846); Heckel and Kner (1858); Dybowski (1862); Canestrini (1874); Faber (1883); Katurić (1883); Kolombatović (1886b); Kolombatović (1888); Seeley (1886); Botteri (1891); Katurić (1896d); Langhoffer (1904); Largaiolli (1904); Katurić 1907; Car (1911); Karaman (1923b); Koller (1928); Gridelli (1936); Maldini (1936a); Taler (1953a); Treer et al. (1984); Leiner (1985); Treer (1989); Povž et al. (1990); Leiner and Povž (1993); Leiner and Povž (1994); Leiner et al. (1995); Kottelat (1997); Freyhof et al. (2006); Mrakovčić et al. (2006); Kottelat and Freyhof (2007); Jelić et al. (2008); Treer et al. (2008a); Perea et al. (2010); Ćaleta et al. (2015); Piria et al. (2016b); Piria et al. (2016c)

**Remarks:** reports for Vransko Lake near Biograd, Tribalj Reservoir near Novi Vinodolski not confirmed and are likely due to misidentification; endemic to the Adriatic Basin

#### 60. *Rutilus basak* (Heckel, 1843)

**Names under which the taxon was mentioned:** *Leuciscus basak* Heckel & Kner 1858; *Leuciscus rubella* Bonaparte, 1837; *Leucos aula* Heckel, 1843; *Leucos rubella* Heckel, 1843; *Rutilus basak* (Heckel, 1843); *Rutilus pigus* (Lacepède, 1803); *Rutilus rubilio* (Bonaparte, 1837)

**English name:** Neretva roach

**Croatian name:** basak

**Range in Croatia:** Adriatic Basin - Neretva and Vrljika River drainages, Prološko Bato and Baćinska Lakes, Matica River near Vrgorac

**Literature:** Heckel (1843); Bonaparte (1845); Bonaparte (1846); Heckel and Kner (1858); Dybowski (1862); Canestrini (1866); Giglioli (1880); Faber (1883); Katurić (1883); Kolombatović (1886a); Kolombatović (1886b); Kolombatović (1888); Botteri (1891); Katurić (1896a); Katurić 1907; Brusina (1908); Car (1911); Karaman (1923b); Maldini (1936a); Čurčić (1938); Basioli (1957a); Vuković and Vuković (1968); Vuković and Ivanović (1971); Sofradžija and Hadžiselimović (1981); Bojčić et al. (1982); Bianco and Taraborelli (1985); Bianco (1986); Lelek (1987); Economidis and Bănărescu (1991); Habeković

(1993); Mrakovčić et al. (1995); Crivelli (1996); Mrakovčić et al. (1996a); Holčík and Mrakovčić (1997); Kottelat (1997); Leiner (1998b); Tvrtković (1998); Nocita and Vanni (1999); Habeković and Pažur (2000); Mrakovčić et al. (2000a); Mikavica et al. (2001); Tutman et al. (2002); Mrakovčić et al. (2006); Kottelat and Freyhof (2007); Prpa et al. (2007); Jelić et al. (2008); Ketmaier et al. (2008); Muhamedagić et al. (2008); Šanda et al. (2008); Sofradžija (2009); Glamuzina et al. (2010b); Marić (2010); Popović (2010); Glamuzina et al. (2013); Duplić (2014); Ćaleta et al. (2015); Piria et al. (2016b); Piria et al. (2016c)

**Remarks:** reports for the Cetina and Ruda River not confirmed and are likely the result of misidentification; endemic to the Adriatic Basin

#### 61. *Rutilus rutilus* (Linnaeus, 1758)

**Names under which the taxon was mentioned:** 1836; *Leuciscus rutilus* (Linnaeus, 1758); *Rutilus aula* (Bonaparte, 1841); *Rutilus rubilio* (Bonaparte, 1837); *Rutilus rutilus carpathorossicus* Vladkov, 1930

**English name:** Roach

**Croatian name:** bodorka

**Range in Croatia:** Danube drainage - middle and lower course of rivers; Adriatic Basin -introduced to Cetina and Lika River drainages, Gacka River, Butoniga and Tribalj reservoirs

**Literature:** Heckel and Kner (1858); Brusina (1878); Jurinac (1880); Sebišanović (1880); Jurinac (1881); Sebišanović (1881); Mojsisovics (1883); Jurinac (1884); Glowacki (1885); Anonymous (1886); Kesterčanek (1886); Seeley (1886); Jurinac (1887); Hefele (1889); Mojsisovics (1889); Sebišanović (1890); Brusina (1892); Brusina (1893); Dudan (1893); Kišpatić (1893); Glowacki (1896); Hirc (1897); Medić (1898); RHZZM (1908); Čurčić (1910); Hirc (1911); Vutskits (1918); Plančić (1923b); Anonymous (1925); Anonymous (1931c); Zaplata (1932); Maldini (1936a); Maldini (1938c); Rotarides (1944); Kosorić (1955); Smilatić (1961); Sabioncello (1967); Sabioncello et al. (1969); Vuković and Ivanović (1971); Munjko (1975); Klašterka (1979); Mikuska (1979); Sofradžija and Hadžiselimović (1981); Bojčić et al. (1982); Veljović (1982); Mikuska (1983a); Mikuska (1983b); Delić (1984); Mikuska (1984); Mikuska and Mamić (1984); Ocvirk (1984); Delić (1985); Mikuska (1985); Tvrtković (1985); Veljović (1985); Habeković et al. (1986); Habeković et al. (1990); Habeković and Popović (1991); Homen et al. (1991); Mrakovčić (1992); Povž (1995); Mihaljević et al. (1996); Mrakovčić et al. (1996b); Habeković et al. (1997); Leiner (1998a); Majer (1998); Povž et al. (1998); Treer et al. (1998); Leiner (1999); Zanella et al. (2000); Jakovlić and Treer (2001); Mustafić (2001); Šprem et al. (2001); Mrakovčić et al. (2002); Bakota et al. (2003); Bošnir et al. (2003); Leiner (2003); Jugović (2004); Bošnir et al. (2005); Jakirčević (2005); Mustafić (2005); Suić (2005); Dulčić and Glamuzina (2006); Bošnir et al. (2007); Ćaleta (2007); Knežević (2007); Kottelat and Freyhof (2007); Piria (2007);

Prpa et al. (2007); Sallai and Mrakovčić (2007); Sallai and Kontos (2008); Sevcsik and Erös (2008); Treer et al. (2008a); Dumbović et al. (2009); Jelić et al. (2009); Kerestessy et al. (2009); Sofradžija (2009); Treer et al. (2009); Zrnčić et al. (2009a); Jelić et al. (2010); Ozimec et al. (2010); Perea et al. (2010); Vardić Smrzlić (2010); Matulić et al. (2011); Piria et al. (2011b); Jelić et al. (2012); Jelkić and Opačak (2013); Zrnčić et al. (2013); Delić et al. (2014a); Jelić et al. (2016); Piria et al. (2016b); Pofuk et al. (2017); Simonović et al. (2017b); Zuliani et al. (2019)

**Remarks:** non-native in the Adriatic Basin

#### 62. *Rutilus virgo* (Heckel, 1852)

**Names under which the taxon was mentioned:** *Leuciscus pigus virgo*; *Leuciscus roseus* Bonaparte, 1839; *Leuciscus virgo* Heckel, 1852; *Rutilus pigus* (Lacepède, 1803); *Rutilus pigus virgo* (Heckel, 1852)

**English name:** Danube roach

**Croatian name:** plotica

**Range in Croatia:** Danube drainage - middle and lower course of rivers

**Literature:** Bonaparte (1832-1841); Heckel and Kner (1858); Jurinac (1880); Jurinac (1884); Glowacki (1885); Seeley (1886); Sebišanović (1890); Brusina (1892); Franke (1892); Brusina (1893); Dudan (1893); Kišpatić (1893); Glowacki (1896); Hirc (1896); Hirc (1898); Hirc (1902d); Medić (1902); Langhoffer (1904); RHZZM (1908); Čurčić (1910); Hirc (1911); Vutskits (1918); Plančić (1923b); Anonymous (1925); Anonymous (1931c); Zaplata (1932); Maldini (1936a); Maldini (1938c); Rotarides (1944); Kosorić (1955); Smilatić (1961); Sabioncello (1967); Sabioncello et al. (1969); Vuković and Ivanović (1971); Munjko (1975); Klašterka (1979); Mikuska (1979); Bojčić et al. (1982); Bauer (1983); Mikuska (1983a); Mikuska (1983b); Vrenk (1984); Tvrtković (1985); Lelek (1987); Habeković and Popović (1991); Habeković et al. (1997); Leiner (1998a); Povž et al. (1998); Povž (1999); Mustafić (2001); Mrakovčić et al. (2002); Leiner (2003); Jakirčević (2005); Mustafić (2005); Pažur (2005); Sallai and Kontos (2005); Mrakovčić et al. (2006); Ćaleta (2007); Kottelat and Freyhof (2007); Piria (2007); Prpa et al. (2007); Sallai and Mrakovčić (2007); Mateš (2008); Sallai and Kontos (2008); Treer et al. (2008a); Delić et al. (2009); Dumbović et al. (2009); Treer et al. (2009); Sofradžija (2009); Bučar et al. (2010); Popović (2010); Jelić et al. (2012); Muhamedagić and Habibović (2013); Delić et al. (2014a); Ćaleta et al. (2015); Piria et al. (2016b); Simonović et al. (2017b); Nedić et al. (2018); Zuliani et al. (2019)

**Remarks:** endemic to the Danube drainage

**SCARDINIUS** Bonaparte, 1840

63. *Scardinius dergle* Heckel & Kner, 1858

**Names under which the taxon was mentioned:** *Leuciscus erythrophthalmus* (Linnaeus, 1758); *Leuciscus heegeri* Agassiz, 1835; *Leuciscus hesperidicus* Bonaparte, 1845; *Scardinius erythrophthalmus* (Linnaeus, 1758); *Scardinius erythrophthalmus hesperidicus* Heckel 1843; *Scardinius erythrophthalmus krkensis*; *Scardinius hegeri* Bonaparte, 1845; *Scardinius hesperidicus* Bonaparte, 1845; *Scardinius scardafa* (Bonaparte, 1837)

**English name:** Dalmatian rudd

**Croatian name:** drlja

**Range in Croatia:** Adriatic Basin - Krka and Cetina River drainages, Vransko Lake near Biograd, Vransko Lake on Cres Island

**Literature:** Bonaparte (1832-1841); Heckel (1843); Bonaparte (1845); Bonaparte (1846); Carrara (1846); Heckel and Kner (1858); Dybowski (1862); Canestrini (1866); Canestrini (1874); Giglioli (1880); Faber (1883); Katurić (1883); Kolombatović (1886a); Kolombatović (1886b); Seeley (1886); Kolombatović (1888); Botteri (1891); Kišpatić (1893); Katurić (1896a); Brusina (1907); Katurić 1907; Kolombatović (1907); Karaman (1923b); Hafner-Lahorski (1935b); Plančić (1950); Taler (1953a); Taler (1954a); Basioli (1958b); Pešić (1961); Vuković and Ivanović (1971); Ivanović (1972); Kosorić (1978); Klašterka (1979); Bojčić et al. (1982); Leiner (1985); Fašaić et al. (1990); Mrakovčić and Mišetić (1990a); Martinović (1995); Mrakovčić et al. (1995); Maitland and Crivelli (1996); Mrakovčić et al. (1996a); Kottelat (1997); Nocita and Vanni (1999); Topić Popović et al. (2000); Miotti (2002); Tutman et al. (2002); Mrakovčić et al. (2006); Valić (2006); Kottelat and Freyhof (2007); Valić et al. (2007); Jelić et al. (2008); Marguš (2008); Sofradžija (2009); Perea et al. (2010); Popović (2010); Valić (2010); Vardić Smrzlić (2010); Valić et al. (2013); Ćaleta et al. (2015); Landeka et al. (2015); Babić (2016); Mustafić et al. (2017)

**Remarks:** endemic to the Adriatic Basin, reports for the waters of the Istrian peninsula and Zrmanja River requires revision due to the lack of data in the recent period

64. *Scardinius erythrophthalmus* (Linnaeus, 1758)

**Names under which the taxon was mentioned:** *Leuciscus erythrophthalmus* (Linnaeus, 1758); *Scardinius erythrophthalmus hisperidicus*; *Scardinius erythrophthalmus scardapha*

**English name:** Rudd

**Croatian name:** crvenperka

**Range in Croatia:** Danube drainage - middle and lower course of rivers, introduced to the Plitvice lakes; Adriatic Basin - introduced to the Tribalj reservoir and Lika River system

**Literature:** Heckel and Kner (1858); Brusina (1878); Jurinac (1880); Sebišanović (1880); Jurinac (1881); Sebišanović (1881); Faber (1883); Mojsisovics (1883); Jurinac (1884); Glowacki (1885); Anonymous (1886); Sebišanović (1889a); Sebišanović (1890); Brusina (1892); Brusina (1893); Dudan (1893); Kišpatić (1893); Glowacki (1896); Hirc (1896); Hirc (1897); Medić (1898); Brusina (1907); RHZZM (1908); Čurčić (1910); Vutskits (1918); Karaman (1923b); Plančić (1923b); Anonymous (1925); Fink (1932a); Trojanović (1934); Anonymous (1946a); Franić (1949); Taler (1953a); Basioli (1957b); Morović (1962); Vuković and Ivanišević (1962); Sabioncello et al. (1964); Habeković (1967); Sabioncello (1967); Zobundžija (1968); Sabioncello et al. (1969); Vrebac (1970); Vuković and Ivanović (1971); Ivanović (1972); Vrebac (1972); Čanadjija (1977); Klašterka (1979); Mikuska (1979); Sofradžija and Hadžiselimović (1981); Bojčić et al. (1982); Veljović (1982); Mikuska (1983a); Mikuska (1983b); Delić (1984); Mikuska (1984); Mikuska and Mamić (1984); Pompe-Gotal (1984); Vrenk (1984); Mikuska (1985); Ocvirk (1985); Tvrtković (1985); Veljović (1985); Habeković et al. (1986); Lelek (1987); Treer (1989); Habeković et al. (1990); Mrakovčić (1992); Delić (1993); Pažur (1993); Martinović (1995); Mrakovčić et al. (1995); Zrnčić (1995); Mihaljević et al. (1996); Mrakovčić et al. (1996b); Leiner (1998a); Majer (1998); Zanella et al. (2000); Jakovlić and Treer (2001); Mustafić (2001); Mrakovčić et al. (2002); Bakota et al. (2003); Jugović (2004); Jakirčević (2005); Mustafić (2005); Suić (2005); Šprem et al. (2005c); Mrakovčić et al. (2006); Ćaleta (2007); Knežević (2007); Kottelat and Freyhof (2007); Sallai and Mrakovčić (2007); Sallai and Kontos (2008); Sevcsik and Erös (2008); Treer et al. (2008a); Delić et al. (2009); Kerestessy et al. (2009); Sofradžija (2009); Treer et al. (2009); Jelić et al. (2010); Ozimec et al. (2010); Šprem et al. (2010); Treer et al. (2011); Matulić et al. (2011); Piria et al. (2011a); Jelić et al. (2012); Valić et al. (2013); Nedić et al. (2014a); Nedić et al. (2014b); Riđanović et al. (2014); Jelić et al. (2016); Piria et al. (2016b); Piria et al. (2016c); Pofuk et al. (2017)

**Remarks:** non-native in the Plitvice Lakes and Adriatic Basin

65. *Scardinius plotizza* Heckel & Kner, 1858

**Names under which the taxon was mentioned:** *Leuciscus plotizza*; *Leuciscus erythrophthalmus* (Linnaeus, 1758); *scardafa* (Bonaparte, 1837); *Scardinius erythrophthalmus* (Linnaeus, 1758); *Scardinius erythrophthalmus scardapha* (Bonaparte, 1837); *Scardinius platizza* Heckel, 1845; *Scardinius scardafa* (Bonaparte, 1837)

**English name:** Neretva rudd

**Croatian name:** peškelj

**Range in Croatia:** Adriatic Basin - Neretva River drainage, Baćinska Lakes and Matica River near Vrgorac

**Literature:** Heckel (1843); Bonaparte (1845); Bonaparte

(1846); Carrara (1846); Heckel and Kner (1858); Dybowski (1862); Giglioli (1880); Faber (1883); Katurić (1883); Kolombatović (1886a); Kolombatović (1886b); Seeley (1886); Katurić (1887); Kolombatović (1888); Botteri (1891); Kišpatić (1893); Katurić (1896a); Katurić (1896c); Brusina (1907); Katurić 1907); Kolombatović (1907); Brusina (1908); Car (1911); Karaman (1923b); Koller (1928); Maldini (1936b); Basioli (1952); Taler (1953a); Basioli (1958a); Vuković and Ivanišević (1962); Sabioncello (1967); Vuković and Ivanović (1971); Ivanović (1972); Kolaković (1972); Morović (1976); Bojčić et al. (1982); Martinović (1995); Mrakovčić et al. (1995); Crivelli (1996); Kottelat (1997); Leiner (1998b); Tvrtković (1998); Nocita and Vanni (1999); Mrakovčić et al. (2000a); Mikavica et al. (2001); Ketmaier et al. (2004); Freyhof et al. (2005a); Mrakovčić et al. (2006); Kottelat and Freyhof (2007); Jelić et al. (2008); Bukvić et al. (2010); Glamuzina et al. (2010b); Glamuzina et al. (2013); Ćaleta et al. (2015); Tutman et al. (2016)

**Remarks:** endemic to the Neretva River drainage and Adriatic Basin

SQUALIUS Bonaparte, 1841

66. *Squalius cephalus* (Linnaeus, 1758)

**Names under which the taxon was mentioned:** *Leuciscus cephalus* (Linnaeus, 1758); *Squalius dobula*; *Squalius albus* (Bonaparte, 1838)

**English name:** Chub

**Croatian name:** obični klen

**Range in Croatia:** Danube drainage - widespread; Adriatic Basin - introduced to Lika River system and Tribalj reservoir

**Literature:** Heckel and Kner (1858); Dybowski (1862); Steindachner (1866a); Steindachner (1866b); Brusina (1878); Jurinac (1880); Sebišanović (1880); Sebišanović (1881); Mojsisovics (1883); Jurinac (1884); Mojsisovics (1884); Glowacki (1885); Kesterčanek (1886); Anonymous (1886); Seeley (1886); Jurinac (1887); Hefele (1889); Sebišanović (1889b); Sebišanović (1889a); Sebišanović (1890); Brusina (1892); Franke (1892); Anonymous (1893a); Brusina (1893); Dudan (1893); Kišpatić (1893); Anonymous (1894a); Glowacki (1896); Hirc (1896); Hirc (1897); Hirc (1898); Hirc (1900a); Hirc (1902b); Langhoffer (1904); Brusina (1907); RHZZM (1908); Čurčić (1910); Franić (1910); Kempf (1910); Hirc (1911); Lang (1911); Vutskits (1918); Plančić (1923a); Plančić (1923b); Anonymous (1925); Bergleitner (1925); Bergleitner (1928); Kaitner (1928); Kaitner (1929b); Anonymous (1930c); Rössler (1930); Anonymous (1931c); Krajačić (1932); Hafner-Lahorski (1935a); Popović (1935); Taler (1935b); Maldini (1936b); Lovrić (1938); Taler (1945a); Anonymous (1946a); Bergleitner (1946); Knop (1947b); Taler (1947); Taler (1951e); Kosorić (1955); Plančić (1956b); Jagodić (1957); Vučetić (1960); Pešić (1961); Knežević (1963b); Vinterhalter (1963); Vraneš (1966); Sabioncello

(1967); Anonymus (1968); Pažur (1968a); Pažur (1969c); Pažur (1969b); Sabioncello et al. (1969); Pažur (1970); Vuković and Ivanović (1971); Munjko (1975); Čanadjija (1977); Klašterka (1979); Mikuska (1979); Sofradžija and Hadžiselimović (1981); Veljović (1982); Mikuska (1983a); Mikuska (1983b); Delić (1984); Ocvirk (1984); Vrenk (1984); Delić (1985); Veljović (1985); Tvrtković (1985); Habeković et al. (1986); Delić (1989); Mišetić et al. (1989); Mrakovčić et al. (1989); Habeković et al. (1990); Habeković and Popović (1991); Mrakovčić (1992); Delić (1993); Habeković et al. (1993a); Pažur (1993); Mrakovčić et al. (1996b); Habeković et al. (1997); Honsig-Erlenburg et al. (1997); Treer et al. (1997); Leiner (1998a); Majer (1998); Povž et al. (1998); Treer et al. (1998); Kolak et al. (1999); Leiner (1999); Nocita and Vanni (1999); Treer et al. (1999); Holčík and Delić (2000); Zanella et al. (2000); Jakovlić and Treer (2001); Mustafić (2001); Mrakovčić et al. (2002); Bošnir et al. (2003); Delić et al. (2003a); Leiner (2003); Domitrović et al. (2004); Jugović (2004); Mateš (2004); Piria et al. (2004); Jakirčević (2005); Mustafić (2005); Pažur (2005); Piria et al. (2005a); Piria et al. (2005b); Dulčić and Glamuzina (2006); Treer et al. (2006); Ćaleta (2007); Dragun et al. (2007); Ivelić et al. (2007); Kurtović et al. (2007); Kottelat and Freyhof (2007); Piria (2007); Prpa et al. (2007); Sallai and Mrakovčić (2007); Mateš (2008); Sallai and Kontos (2008); Sevcik and Erös (2008); Treer et al. (2008a); Zanella et al. (2008b); Delić et al. (2009); Dumbović et al. (2009); Jelić et al. (2009); Kerestessy et al. (2009); Kurtović et al. (2009); Majnarić (2009); Marijić (2009); Piria et al. (2009); Podrug et al. (2009); Podrug and Raspor (2009); Sofradžija (2009); Treer et al. (2009); Zrnčić et al. (2009a); Bučar et al. (2010); Buj (2010c); Jelić et al. (2010); Ozimec et al. (2010); Perović and Tvrtković (2010); Vardić Smrzlić (2010); Zupančić et al. (2010a); Zupančić et al. (2010b); Matulić et al. (2011); Pavlica et al. (2011); Piria et al. (2011b); Dragun et al. (2012); Jelić et al. (2012); Marčić et al. (2012); Dragun et al. (2013); Filipović Marijić et al. (2013); Krasnić et al. (2013); Delić et al. (2014a); Filipović et al. (2014); Filipović and Raspor (2014); Nedić et al. (2014a); Nedić et al. (2014b); Vukosav et al. (2014); Žutinić et al. (2014); Riđanović et al. (2014); Jelić et al. (2016); Mihailović et al. (2016); Piria et al. (2016a); Piria et al. (2016b); Jelić and Krivek (2017); Mustafić et al. (2017); Pofuk et al. (2017); Simonović et al. (2017b); Nedić et al. (2018); Zuliani et al. (2019)

**Remarks:** non-native in the Adriatic Basin

67. *Squalius illyricus* Heckel & Kner, 1858

**Names under which the taxon was mentioned:** *Leuciscus illyricus* (Heckel & Kner, 1858); *Leuciscus svallize* (Heckel & Kner, 1858); *Squalius albus* (Bonaparte, 1838); *Squalius cephalus* (Linnaeus, 1758); *Squalius svallize* Heckel & Kner, 1858

**English name:** Illyrian chub

**Croatian name:** ilirski klen

**Range in Croatia:** Adriatic Basin - Krka and Cetina River drainages

**Literature:** Heckel and Kner (1858); Dybowski (1862); Canestrini (1866); Brusina (1872); Canestrini (1874); Brusina (1878); Giglioli (1880); Faber (1883); Kolombatović (1886a); Kolombatović (1886b); Seeley (1886); Kolombatović (1888); Kišpatić (1893); Katurić (1896a); Brusina (1907); Kolombatović (1907); Brusina (1908); Car (1911); Karaman (1923b); Plančić (1950); Taler (1953a); Basioli (1958b); Vinterhalter (1963); Sabioncello (1967); Marko et al. (1968); Vuković and Ivanović (1971); Klašterka (1979); Popović and Habeković (1981); Bojčić et al. (1982); Tvrković (1985); Bianco (1986); Bianco and Knežević (1987); Fašaić et al. (1990); Mrakovčić and Mišetić (1990a); Povž et al. (1990); Economidis and Bănărescu (1991); Popović et al. (1992); Habeković (1993); Habeković (1994b); Popović (1994); Mrakovčić et al. (1995); Crivelli (1996); Maitland and Crivelli (1996); Kottelat (1997); Kerovec (1998); Bogutskaya and Zupančič (1999); Nocita and Vanni (1999); Habeković and Mišetić (2000); Miotti (2002); Mateš (2004); Mustafić (2005); Mrakovčić et al. (2006); Tvrković and Veen (2006); Valić (2006); Kottelat and Freyhof (2007); Prpa et al. (2007); Valić et al. (2007); Jelić et al. (2008); Marguš (2008); Treer et al. (2008a); Treer et al. (2009); Tvrković et al. (2009); Perea et al. (2010); Popović (2010); Valić (2010); Vardić Smržlić (2010); Zupančič et al. (2010a); Zupančič et al. (2010b); Mrakovčić and Ćaleta (2011); Ćaleta et al. (2015); Piria et al. (2016c); Mustafić and Mrakovčić (2017); Pofuk et al. (2017); Jakšić et al. (2019)

**Remarks:** reports for the Zrmanja River not confirmed, although hybrid individuals *S. illyricus* x *S. zrmanjae* were found in the Zrmanja River by the authors (unpublished data); stenoendemic to the Krka and Cetina Rivers, endemic to the Adriatic Basin and Croatia

#### 68. *Squalius microlepis* Heckel, 1843

**Names under which the taxon was mentioned:** *Leuciscus microlepis* (Heckel, 1843); *Leuciscus turskyi microlepis* (Heckel, 1843);

**English name:** Makal dace

**Croatian name:** makal

**Range in Croatia:** Adriatic Basin - Vrljika River system, Prološko Blato and Baćinska Lakes, Matica River near Vrgorac

**Literature:** Heckel (1843); Carrara (1846); Heckel and Kner (1858); Dybowski (1862); Canestrini (1866); Brusina (1872); Canestrini (1874); Brusina (1878); Giglioli (1880); Faber (1883); Katurić (1883); Kolombatović (1886a); Seeley (1886); Kolombatović (1888); Botteri (1891); Kišpatić (1893); Steindachner (1895); Katurić (1896c); Langhoffer (1904); Largaiolli (1904); Brusina (1907); Car (1911); Koller (1928); Hafner-Lahorski (1935b); Gridelli (1936); Sabioncello (1967); Vuković and Ivanović (1971); Morović (1976); Žikić and Bertoša (1980); Sofradžija and Hadžiselimović (1981); Bojčić et al. (1982); Vuković (1982); Leiner (1984); Leiner and Popović (1984); Leiner (1985); Bianco and Knežević (1987); Fašaić et al. (1990); Povž et al. (1990); Povž and Sket (1990); Habeković et al. (1993ba); Leiner and Povž (1993); Leiner and Povž (1994); Leiner et al. (1995); Mrakovčić et al. (1995); Mrakovčić et al. (1996a); Leiner (1998b); Bogutskaya and Zupančič (1999); Mrakovčić et al. (2000b); Topić et al. 2000); Mikavica et al. (2001); Povž (2002); Piria et al. (2005b); Mrakovčić et al. (2006); Valić (2006); Kottelat and Freyhof (2007); Šorić (2007); Muhamedagić et al. (2008); Bogutskaya and Zupančič et al. (2010b); Zupančič et al. (2010a); Zupančič et al. (2010b); Freyhof (2012); Glamuzina et al. (2013); Bianco (2014a); Bianco (2014b); Ćaleta et al. (2015); Babić (2016); Piria et al. (2016b); Piria et al. (2016c); Mustafić and Mrakovčić (2017)

et al. (1996a); Kottelat (1997); Bănărescu et al. (1998); Schneider (1998); Nocita and Vanni (1999); Habeković and Pažur (2000); Mrakovčić et al. (2000a); Miotti (2002); Freyhof et al. (2005a); Freyhof et al. (2006); Mrakovčić et al. (2006); Kottelat and Freyhof (2007); Jelić et al. (2008); Valić et al. (2008); Glamuzina et al. (2010b); Popović (2010); Gabelica et al. (2011); Freyhof (2012); Glamuzina et al. (2013); Duplić (2014); Ćaleta et al. (2015); Piria et al. (2016c); Mustafić and Mrakovčić (2017)

**Remarks:** reports for Cetina River not confirmed and likely the result of misidentification; endemic to the Adriatic Basin

#### 69. *Squalius squalus* (Bonaparte, 1837)

**Names under which the taxon was mentioned:** *Leuciscus cavedanus* Bonaparte, 1838; *Leuciscus cephalus* (Linnaeus, 1758); *Leuciscus cephalus albus* Bonaparte, 1838; *Leuciscus cephalus cabeda* Risso, 1827; *Leuciscus cephalus cavedanus*; *Leuciscus leuciscus* (Linnaeus, 1758); *Leuciscus svallize* (Heckel & Kner, 1858); *Leuciscus zrmanjae* (Karaman, 1928); *Squalius albus* (Bonaparte, 1838); *Squalius cavedanus* (Bonaparte 1838); *Squalius cephalus* (Linnaeus, 1758); *Squalius svallize* Heckel & Kner, 1858; *Squalius tyberinus* Bonaparte, 1841

**English name:** Italian chub

**Croatian name:** bijeli klen

**Range in Croatia:** Adriatic Basin - middle and lower course of the rivers on the Istrian Peninsula, Krka River

**Literature:** Bonaparte (1832-1841); Heckel and Kner (1858); Faber (1883); Kolombatović (1886a); Kolombatović (1886b); Seeley (1886); Kolombatović (1888); Botteri (1891); Kišpatić (1893); Steindachner (1895); Katurić (1896c); Langhoffer (1904); Largaiolli (1904); Brusina (1907); Car (1911); Koller (1928); Hafner-Lahorski (1935b); Gridelli (1936); Sabioncello (1967); Vuković and Ivanović (1971); Morović (1976); Žikić and Bertoša (1980); Sofradžija and Hadžiselimović (1981); Bojčić et al. (1982); Vuković (1982); Leiner (1984); Leiner and Popović (1984); Leiner (1985); Bianco and Knežević (1987); Fašaić et al. (1990); Povž et al. (1990); Povž and Sket (1990); Habeković et al. (1993ba); Leiner and Povž (1993); Leiner and Povž (1994); Leiner et al. (1995); Mrakovčić et al. (1995); Mrakovčić et al. (1996a); Leiner (1998b); Bogutskaya and Zupančič (1999); Mrakovčić et al. (2000b); Topić et al. 2000); Mikavica et al. (2001); Povž (2002); Piria et al. (2005b); Mrakovčić et al. (2006); Valić (2006); Kottelat and Freyhof (2007); Šorić (2007); Muhamedagić et al. (2008); Bogutskaya and Zupančič et al. (2010b); Zupančič et al. (2010a); Zupančič et al. (2010b); Freyhof (2012); Glamuzina et al. (2013); Bianco (2014a); Bianco (2014b); Ćaleta et al. (2015); Babić (2016); Piria et al. (2016b); Piria et al. (2016c); Mustafić and Mrakovčić (2017)

**Remarks:** Bogutskaya & Zupančič (2010) described new species (*Sq. janae*) to Istrian Peninsula, Adriatic

Basin (Dragonja, Boljunščica and Pazinčica Rivers). New phylogenetic research (Buj et al. 2019 *in press*) proved that this is not a valid species but a synonym of *S. squalus*.

70. *Squalius svallize* Heckel & Kner, 1858

**Names under which the taxon was mentioned:** *Leuciscus svallize* (Heckel & Kner, 1858)

**English name:** Neretva chub

**Croatian name:** svalić

**Range in Croatia:** Adriatic Basin - Neretva River drainage and Konavosko Field

**Literature:** Heckel and Kner (1858); Dybowski (1862); Giglioli (1880); Steindachner (1882b); Faber (1883); Katurić (1883); Kolombatović (1886a); Kolombatović (1886b); Seeley (1886); Katurić (1887); Kolombatović (1888); Kišpatić (1893); Katurić (1896a); Kolombatović (1902); Kosić (1903); Langhoffer (1904); Katurić (1907); Kolombatović (1907); Brusina (1908); Car (1911); Karaman (1923b); Koller (1928); Maldini (1936b); Vuković (1961); Vinterhalter (1963); Sabioncello (1967); Vuković and Ivanović (1971); Kolaković (1972); Klašterka (1979); Sofradžija and Hadžiselimović (1981); Bojčić et al. (1982); Leiner (1984); Bianco and Knežević (1987); Mrakovčić and Mišetić (1990a); Povž et al. (1990); Leiner et al. (1995); Mrakovčić et al. (1995); Crivelli (1996); Maitland and Crivelli (1996); Mrakovčić et al. (1996a); Kottelat (1997); Leiner (1998b); Schneider (1998); Tvrtković (1998); Bogutskaya and Zupančič (1999); Nocita and Vanni (1999); Mrakovčić et al. (2000a); Mikavica et al. (2001); Tutman et al. (2002); Tvrtković and Franičević (2002); Aprahamian (2003); Has-Schön et al. (2006); Mrakovčić et al. (2006); Dulčić et al. (2007); Kottelat and Freyhof (2007); Prpa et al. (2007); Jelić et al. (2008); Marguš (2008); Muhamedagić et al. (2008); Treer et al. (2008a); Sofradžija (2009); Treer et al. (2009); Bukvić et al. (2010); Popović (2010); Zupančič et al. (2010a); Freyhof (2012); Piria et al. (2012); Glamuzina et al. (2013); Ćaleta et al. (2015); Piria et al. (2016c); Mustafić and Mrakovčić (2017)

**Remarks:** reports for the other rivers in the Adriatic Basin, than the two mentioned above, are not confirmed and are likely the result of misidentification; population and taxonomic status of *Squalius* in the Matica River near Vrgorac and Baćinska Lake is uncertain since there are no recent reports and the presence of *S. svallize* and *S. microlepis*; *S. svallize* population from the Ljuta River in the Konavosko Field is of hybrid origin (introduced mitochondrial DNA of *S. squalus*, Buj et al., 2019, *in press*); endemic to the Adriatic Basin

71. *Squalius tenellus* Heckel, 1843

**Names under which the taxon was mentioned:** *Leuciscus turskyi tenellus* (Heckel, 1843)

**English name:** Livno masnica

**Croatian name:** sitnoljuskavi klen

**Range in Croatia:** Adriatic Basin - introduced to the Cetina River drainage

**Literature:** Carrara (1846); Heckel and Kner (1858); Dybowski (1862); Canestrini (1866); Faber (1883); Botteri (1891); Kišpatić (1893); Brusina (1907); Karaman (1923a); Karaman (1923b); Čurčić (1938); Vuković and Ivanović (1971); Bojčić et al. (1982); Vuković (1982); Habeković and Pažur (2000); Kottelat and Freyhof (2007); Jelić et al. (2008); Freyhof (2012); Ćaleta et al. (2015); Piria et al. (2016c); Mustafić and Mrakovčić (2017)

**Remarks:** introduced to the Cetina River drainage from Buško Blato Lake (in Bosnia and Herzegovina) through the subterranean system of the Orlovac hydro power plant; reports for the Vrljika River not confirmed and are likely the result of misidentification; endemic to the Adriatic Basin

72. *Squalius zrmanjae* Karaman, 1928

**Names under which the taxon was mentioned:** *Leuciscus svallize* (Heckel & Kner, 1858); *Leuciscus svallizze zrmanjae* Karaman, 1928; *Leuciscus zrmanjae* (Karaman, 1928); *Squalius cavedanus* (Bonaparte 1838); *Squalius cephalus* (Linnaeus, 1758); *Squalius svallize* Heckel & Kner, 1858

**English name:** Zrmanja chub

**Croatian name:** zrmanjski klen

**Range in Croatia:** Adriatic Basin - Zrmanja and Krka River drainages, introduced to the Ričica River in the Lika region

**Literature:** Katurić (1896f); Karaman (1928); Karaman (1929); Hafner-Lahorski (1935b); Anonymous (1967); Vuković and Ivanović (1971); Vuković (1982); Leiner (1985); Bianco and Knežević (1987); Kottelat (1997); Schneider (1998); Bogutskaya and Zupančič (1999); Durand et al. (2000); Mrakovčić et al. (2006); Kottelat and Freyhof (2007); Valić et al. (2007); Duplić (2008); Jelić et al. (2008); Perea et al. (2010); Popović (2010); Valić (2010); Vardić Smržlić (2010); Zupančič et al. (2010a); Zupančič et al. (2010b); Miočić-Stošić and Kovačević (2013); Ćaleta et al. (2015); Jelić et al. (2016); Piria et al. (2016c); Mustafić and Mrakovčić (2017)

**Remarks:** stenoendemic to the Zrmanja and Krka Rivers, endemic to the Adriatic Basin and Croatia

TELESTES Bonaparte, 1840

73. *Telestes croaticus* (Steindachner, 1866)

**Names under which the taxon was mentioned:** *Paraphoxinus adspersus* (Heckel, 1843); *Paraphoxinus croaticus* (Steindachner, 1866); *Phoxinellus croaticus* Steindachner, 1866

**English name:** Croatian pijor

**Croatian name:** hrvatski pijor

**Range in Croatia:** Adriatic Basin - Jadova, Ričica, Otuča and Obsenica River systems in the Lika region

**Literature:** Steindachner (1866b); Brusina (1878); Steindachner (1882a); Faber (1883); Seeley (1886); Brusina (1890); Hirc (1897); Hirc (1899b); Hirc (1900a); Hirc (1900b); Langhoffer (1904); Trgovčević (1905a); Trgovčević (1905b); RHZZM (1908); Trgovčević (1908); Car (1911); Vutskits (1918); Karaman (1923a); Karaman (1923b); Poljak (1924); Hirc (1925); Bergleitner (1928); Koller (1928); Trgovčević (1932); Taler (1947); Taler (1951g); Taler (1953a); Vraneš (1966); Anonymous (1967); Sabioncello (1967); Berberović et al. (1971); Gužina and Vuković (1971); Vuković and Ivanović (1971); Sofradžija and Hadžiselimović (1981); Bojić et al. (1982); Bianco (1986); Povž et al. (1990); Habeković et al. (1992); Mrakovčić et al. (1995); Crivelli (1996); Kottelat (1997); Schneider (1998); Zupančič and Bogutskaya (2000); Miotti (2002); Tvrković and Franičević (2002); Zupančič and Bogutskaya (2002); Bogutskaya and Zupančič (2003); Ketmaier et al. (2004); Mateš (2004); Freyhof et al. (2006); Mrakovčić et al. (2006); Kottelat and Freyhof (2007); Duplić (2008); Jelić et al. (2008); Palandačić et al. (2010); Perea et al. (2010); Popović (2010); Marčić et al. (2011); Freyhof (2012); Palandačić (2012a); Ćaleta et al. (2015); Ozimec (2015); Jelić et al. (2016); Jelić and Krivek (2017); Buj et al. (2017)

**Remarks:** reports for the Krbavsko Field, Zrmanja and Zagorska Mrežnica Rivers in the Danube drainage not confirmed and are likely the result of misidentification; locally extinct from the Gacka and Lika Rivers; stenoendemic to the Lika region and endemic to Croatia

#### 74. *Telestes fontinalis* (Karaman, 1972)

**Names under which the taxon was mentioned:** *Paraphoxinus croaticus* (Steindachner, 1866); *Phoxinellus adspersus fontinalis* Karaman, 1972; *Phoxinellus fontinalis* Karaman, 1972

**English name:** Krbava dace

**Croatian name:** krbavski pijor

**Range in Croatia:** Danube drainage - Krbavsko Field

**Literature:** Langhoffer (1904); Trgovčević (1905b); Taler (1951e); Taler (1953a); Karaman (1972); Zupančič and Bogutskaya (2000); Tvrković and Franičević (2002); Zupančič and Bogutskaya (2002); Bogutskaya and Zupančič (2003); Freyhof et al. (2006); Mrakovčić et al. (2006); Kottelat and Freyhof (2007); Duplić (2008); Palandačić et al. (2010); Perea et al. (2010); Popović (2010); Freyhof (2012); Palandačić (2012a); Palandačić (2012b); Ćaleta et al. (2015); Ozimec (2015); Jelić et al. (2016); Jelić and Krivek (2017); Buj et al. (2017)

**Remarks:** stenoendemic to the Krbavsko Field and endemic to the Danube drainage and Croatia

#### 75. *Telestes karsticus* Marčić & Mrakovčić, 2011

**Names under which the taxon was mentioned:** *Leuciscus polylepis* (Steindachner, 1866); *Paraphoxinus alepidotus* (Heckel, 1843); *Telestes polylepis* Steindachner, 1866

**English name:** Karst dace

**Croatian name:** kapelska svijetlica

**Range in Croatia:** Danube drainage - small creeks in Lug, Jasenačko, Drežničko, Stajničko and Plaško Fields

**Literature:** Giglioli (1880); Kišpatić (1893); Trgovčević (1905d); Wettstein (1928); Taler (1953a); Vraneš (1966); Hrbek et al. (2004); Ketmaier et al. (2004); Mateš (2004); Freyhof et al. (2006); Zanella et al. (2008a); Buj (2010b); Perea et al. (2010); Popović (2010); Marčić et al. (2011); Freyhof (2012); Marčić (2013); Ćaleta et al. (2015); Ozimec (2015); Marčić et al. (2017a); Marčić et al. (2017b); Buj et al. (2017)

**Remarks:** stenoendemic to the waters around Ogulin and endemic to the Danube drainage and Croatia

#### 76. *Telestes miloradi* Bogutskaya, Zupančič, Bogut & Naseka, 2012

**Names under which the taxon was mentioned:** *Paraphoxinus metohiensis* Steindachner, 1901; *Paraphoxinus pstromii* Steindachner, 1882; *Phoxinellus metohiensis* (Steindachner, 1901); *Telestes metohiensis* (Steindachner, 1901)

**English name:** Konavle dace

**Croatian name:** konavoski pijor

**Range in Croatia:** Adriatic Basin - Konavosko Field

**Literature:** Steindachner (1901); Kolombatović (1902); Kolombatović (1903); Trgovčević (1905a); Taler (1953a); Taler (1953f); Povž et al. (1990); Kottelat (1997); Zupančič and Bogutskaya (2002); Bogutskaya and Zupančič (2003); Mrakovčić et al. (2006); Bogutskaya et al. (2012); Ćaleta et al. (2015); Jelić and Jelić (2015); Landeka et al. (2015); Ozimec (2015); Mustafić and Mrakovčić (2017); Buj et al. (2017)

**Remarks:** stenoendemic to the Ljuta River drainage and endemic to the Adriatic Basin and Croatia

#### 77. *Telestes polylepis* Steindachner, 1866

**Names under which the taxon was mentioned:** *Leuciscus polylepis* (Steindachner, 1866); *Paraphoxinus croaticus* (Steindachner, 1866); *Phoxinus marsilii* Heckel, 1836

**English name:** Croatian dace

**Croatian name:** svijetlica

**Range in Croatia:** Danube drainage - Dobra and Zagorska Mrežnica Rivers and small creeks and lakes around Josipdol and Ogulin

**Literature:** Brusina (1878); Steindachner (1866a); Seeley

(1886); Brusina (1890); Kišpatić (1893); Glowacki (1896); Hirc (1897); Hirc (1900a); Trgovčević (1905d); RHZZM (1908); Car (1911); Vutskits (1918); Karaman (1923a); Karaman (1923b); Anonymous (1925); Bergleitner (1925); Koller (1928); Trgovčević (1932); Taler (1951b); Taler (1953a); Vraneš (1966); Sabioncello (1967); Vuković and Ivanović (1971); Conci and Michelangeli (1974); Bojčić et al. (1982); Tvrković (1985); Bianco (1986); Mrakovčić and Mišetić (1990a); Povž et al. (1990); Economidis and Bănărescu (1991); Mrakovčić et al. (1995); Crivelli (1996); Maitland and Crivelli (1996); Kottelat (1997); Bănărescu et al. (1998); Miotti (2002); Tvrković and Franičević (2002); Mateš (2004); Mrakovčić et al. (2006); Tvrković and Veen (2006); Kottelat and Freyhof (2007); Duplić (2008); Jalžić et al. (2008); Valić et al. (2008); Buj (2010b); Perea et al. (2010); Popović (2010); Marčić et al. (2011); Freyhof (2012); Marčić (2013); Čaleta et al. (2015); Ozimec (2015); Buj et al. (2017)

**Remarks:** stenoendemic to the waters around Ogulin, endemic to the Danube drainage and Croatia; reports for the Krka and Čikola Rivers not confirmed and are likely the result of misidentification

#### 78. *Telestes souffia* (Risso, 1827)

**Names under which the taxon was mentioned:** *Leuciscus agassizii* Valenciennes, 1844; *Leuciscus souffia* Risso, 1827; *Leuciscus souffia agassizi* Valenciennes, 1844; *Telestes agassizii* (Valenciennes, 1844)

**English name:** Souffia

**Croatian name:** blistavac

**Range in Croatia:** Danube drainage - upper part of the Sava River with small tributaries

**Literature:** Heckel and Kner (1858); Glowacki (1885); Anonymous (1886); Kišpatić (1893); Glowacki (1896); Mojsisovics (1897); Lang (1911); Vutskits (1918); Vuković and Ivanović (1971); Crivelli (1996); Mrakovčić et al. (1996b); Habeković et al. (1997); Mrakovčić et al. (2006); Tvrković and Veen (2006); Kottelat and Freyhof (2007); Treer et al. (2008a); Treer et al. (2009); Jelić et al. (2012); Ozimec (2015); Vučić et al. (2017); Buj et al. (2017)

#### 79. *Telestes turskyi* (Heckel 1843)

**Names under which the taxon was mentioned:** *Leuciscus polylepis* (Steindachner, 1866); *Leuciscus turskyi* (Heckel, 1843); *Squalius turskyi* Heckel, 1843; *Squalius turskyi*

**English name:** Tursky dace

**Croatian name:** turski klen

**Range in Croatia:** Adriatic Basin - Krka River drainage

**Literature:** Heckel (1843); Bonaparte (1845); Bonaparte (1846); Carrara (1846); Heckel and Kner (1858); Dybowski (1862); Canestrini (1866); Giglioli (1880); Faber (1883); Kolombatović (1886a); Kolombatović (1886b); Seeley (1886); Kolombatović (1888); Botteri (1891); Kišpatić (1893); Brusina (1907); Car (1911); Karaman (1923a); Karaman (1923b); Taler (1953a); Sabioncello (1967); Marko et al. (1968); Vuković and Ivanović (1971); Popović and Habeković (1981); Bojčić et al. (1982); Leiner and Popović (1984); Tvrković (1985); Bianco (1986); Povž et al. (1990); Economidis and Bănărescu (1991); Habeković (1993); Habeković (1994b); Mrakovčić et al. (1995); Crivelli (1996); Kottelat (1997); Bănărescu et al. (1998); Kerovec (1998); Schneider (1998); Nocita and Vanni (1999); Habeković and Mišetić (2000); Faber (1883); Miotti (2002); Zanella (2003); Ketmaier et al. (2004); Mustafić (2005); Mrakovčić et al. (2006); Kottelat and Freyhof (2007); Prpa et al. (2007); Duplić (2008); Jelić et al. (2008); Treer et al. (2008a); Valić et al. (2008); Zanella et al. (2008a); Treer et al. (2009); Tvrković et al. (2009); Zanella et al. (2009c); Perea et al. (2010); Popović (2010); Valić et al. (2010); Marčić et al. (2011); Mrakovčić and Čaleta (2011); Freyhof (2012); Čaleta et al. (2015); Ozimec (2015); Mustafić and Mrakovčić (2017); Buj et al. (2017)

Kišpatić (1893); Brusina (1907); Car (1911); Karaman (1923a); Karaman (1923b); Pešić (1961); Sabioncello (1967); Vuković and Ivanović (1971); Sofradžija and Hadžiselimović (1981); Bojčić et al. (1982); Tvrković (1985); Bianco (1986); Povž et al. (1990); Crivelli (1996); Kottelat (1997); Bănărescu et al. (1998); Nocita and Vanni (1999); Miotti (2002); Tvrković and Franičević (2002); Salzburger et al. (2003); Hrbek et al. (2004); Ketmaier et al. (2004); Freyhof et al. (2006); Mrakovčić et al. (2006); Kottelat and Freyhof (2007); Jelić et al. (2008); Valić et al. (2008); Zanella et al. (2008a); Sofradžija (2009); Perea et al. (2010); Popović (2010); Freyhof (2012); Mihinjač et al. (2014); Čaleta et al. (2015); Landeka et al. (2015); Ozimec (2015); Mustafić and Mrakovčić (2017); Buj et al. (2017)

**Remarks:** stenoendemic to the Krka River drainage and endemic to the Adriatic Basin and Croatia

#### 80. *Telestes ukliva* (Heckel, 1843)

**Names under which the taxon was mentioned:** *Leuciscus souffia* Risso, 1827; *Leuciscus souffia agassizi* Valenciennes, 1844; *Leuciscus souffia muticellus* Bonaparte, 1837; *Leuciscus ukliva* (Heckel, 1843); *Paraphoxinus alepidotus* (Heckel, 1843); *Squalius ukliva* Heckel, 1843; *Telestes souffia* (Risso, 1827)

**English name:** Cetina dace

**Croatian name:** cetinska ukliva

**Range in Croatia:** Adriatic Basin - Čikola River drainage

**Literature:** Heckel (1843); Bonaparte (1845); Bonaparte (1846); Carrara (1846); Heckel and Kner (1858); Dybowski (1862); Canestrini (1866); Giglioli (1880); Faber (1883); Kolombatović (1886a); Kolombatović (1886b); Seeley (1886); Kolombatović (1888); Botteri (1891); Kišpatić (1893); Brusina (1907); Car (1911); Karaman (1923a); Karaman (1923b); Taler (1953a); Sabioncello (1967); Marko et al. (1968); Vuković and Ivanović (1971); Popović and Habeković (1981); Bojčić et al. (1982); Leiner and Popović (1984); Tvrković (1985); Bianco (1986); Povž et al. (1990); Economidis and Bănărescu (1991); Habeković (1993); Habeković (1994b); Mrakovčić et al. (1995); Crivelli (1996); Kottelat (1997); Bănărescu et al. (1998); Kerovec (1998); Schneider (1998); Nocita and Vanni (1999); Habeković and Mišetić (2000); Faber (1883); Miotti (2002); Zanella (2003); Ketmaier et al. (2004); Mustafić (2005); Mrakovčić et al. (2006); Kottelat and Freyhof (2007); Prpa et al. (2007); Duplić (2008); Jelić et al. (2008); Treer et al. (2008a); Valić et al. (2008); Zanella et al. (2008a); Treer et al. (2009); Tvrković et al. (2009); Zanella et al. (2009c); Perea et al. (2010); Popović (2010); Valić et al. (2010); Marčić et al. (2011); Mrakovčić and Čaleta (2011); Freyhof (2012); Čaleta et al. (2015); Ozimec (2015); Mustafić and Mrakovčić (2017); Buj et al. (2017)

**Remarks:** reports for the lakes near Imotski not confirmed and are likely the result of misidentification; stenoendemic to the Cetina River drainage and endemic to the Adriatic

**Basin and Croatia**

**VIMBA** Fitzinger, 1873

81. *Vimba vimba* (Linnaeus, 1758)

**Names under which the taxon was mentioned:** *Abramis melanops* (Heckel, 1837); *Abramis vimba* (Linnaeus, 1758); *Vimba elongata* (Valenciennes, 1844); *Vimba vimba carinata* (Pallas, 1814)

**English name:** Zarte

**Croatian name:** nosara

**Range in Croatia:** Danube drainage - middle and lower course of rivers

**Literature:** Heckel and Kner (1858); Steindachner (1866b); Jurinac (1884); Glowacki (1885); Kesterčanek (1886); Seeley (1886); Brusina (1892); Brusina (1893); Kišpatić (1893); Glowacki (1896); Mojsisovics (1897); Langhoffer (1904); RHZZM (1908); Čurčić (1910); Vutskits (1918); Plančić (1923b); Maldini (1935a); Rotarides (1944); Sabioncello (1967); Vuković and Ivanović (1971); Mikuska (1979); Sofradžija and Hadžiselimović (1981); Bojčić et al. (1982); Veljović (1982); Mikuska (1983a); Mikuska (1983b); Mikuska (1984); Vrenk (1984); Veljović (1985); Habeković et al. (1986); Lelek (1987); Habeković et al. (1990); Habeković and Popović (1991); Mrakovčić (1992); Mrakovčić et al. (1996b); Habeković et al. (1997); Honsig-Erlenburg et al. (1997); Leiner (1998a); Majer (1998); Povž et al. (1998); Mustafić (2001); Jakirčević (2005); Mustafić (2005); Mrakovčić et al. (2006); Ćaleta (2007); Kottelat and Freyhof (2007); Piria (2007); Prpa et al. (2007); Sallai and Mrakovčić (2007); Sallai and Kontos (2008); Treer et al. (2008a); Delić et al. (2009); Dumbović et al. (2009); Kerestessy et al. (2009); Sofradžija (2009); Treer et al. (2009); Ozimec et al. (2010); Jelić et al. (2012); Delić et al. (2014a); Nedić et al. (2014a); Nedić et al. (2014b); Riđanović et al. (2014); Piria et al. (2016a); Simonović et al. (2017b); Nedić et al. (2018)

#### 2.4.7. FAMILY: TINCIDAE Jordan, 1878

**TINCA** Cuvier, 1816

82. *Tinca tinca* (Linnaeus, 1758)

**Names under which the taxon was mentioned:** *Cyprinus tinca* Linnaeus, 1758; *Tinca chrysitis* Fitzinger, 1832; *Tinca vulgaris* Fleming, 1828

**English name:** Tench

**Croatian name:** linjak

**Range in Croatia:** Danube drainage - middle and lower course of rivers and lakes; Adriatic Basin - introduced to rivers and reservoirs

**Literature:** Fortis (1771); Carrara (1846); Heckel and Kner (1858); Steindachner (1866b); Šloser (1870); Brusina (1878); Jurinac (1880); Sebišanović (1880); Sebišanović

(1881); Mojsisovics (1883); Jurinac (1884); Mojsisovics (1884); Glowacki (1885); Anonymous (1886); Kesterčanek (1886); Seeley (1886); Hefele (1889); Sebišanović (1889a); Sebišanović (1890); Brusina (1892); Brusina (1893); Dudan (1893); Kišpatić (1893); Kolombatović (1893); Glowacki (1896); Hirc (1897); Hirc (1899d); Hirc (1900b); Horvat (1900c); Hirc (1902d); Largaiolli (1904); Ivakić (1905); Anonymous (1906d); Katurić 1907); RHZZM (1908); Anonymous (1910b); Čurčić (1910); Hirc (1911); Karaman (1923b); Plančić (1923b); Karaman (1928); Rössler (1928); Kaitner (1929a); Anonymous (1931c); Fink (1932a); Thaller (1932); Gridelli (1936); Maldini (1936b); Maldini (1938c); Fijan (1948a); Morović (1948); Taler (1948c); Taler (1948e); Fijan (1949); Franić (1949); Fijan (1951a); Basioli (1952); Glavan (1952); Plančić (1952c); Plančić (1952d); Taler (1953d); Taler (1953a); Škovrlj (1953a); Pešić (1955); Plančić (1955); Fijan (1956); Grce (1956); Asaj and Šalić (1957); Basioli (1957b); Grce (1957); Morović (1962); Morović (1963); Morović (1964a); Sabioncello et al. (1964); Vraneš (1966); Habeković (1967); Sabioncello (1967); Zobundžija (1968); Sabioncello et al. (1969); Sabioncello (1971a); Vuković and Ivanović (1971); Pogrmilović (1972); Munjko (1978); Klašterka (1979); Mikuska (1979); Sofradžija and Hadžiselimović (1981); Bojčić et al. (1982); Veljović (1982); Mikuska (1983a); Mikuska (1983b); Leiner (1984); Mikuska (1984); Mikuska and Mamić (1984); Ocvirk (1984); Pompe-Gotal (1984); Vrenk (1984); Leiner (1985); Mikuska (1985); Ocvirk (1985); Tvrtković (1985); Habeković et al. (1986); Delić (1987); Lelek (1987); Turk et al. (1987); Mišetić et al. (1989); Fašaić et al. (1990); Habeković et al. (1990); Mrakovčić and Mišetić (1990a); Habeković (1991); Mrakovčić (1992); Delić (1993); Host (1993); Leiner and Povž (1993); Kolar-Dimitrijević (1994); Leiner and Povž (1994); Leiner et al. (1995); Mrakovčić et al. (1995); Povž (1995); Maitland and Crivelli (1996); Mrakovčić et al. (1996a); Mrakovčić et al. (1996b); Leiner (1998a); Leiner (1998b); Majer (1998); Mrakovčić (1998); Povž et al. (1998); Treer et al. (1998); Tvrtković (1998); Brylińska et al. (1999); Mrakovčić et al. (2000a); Mrakovčić et al. (2000b); Zanella et al. (2000); Topić Popović et al. (2000); Mustafić (2001); Mrakovčić et al. (2002); Bakota et al. (2003); Jugović (2004); Bašić (2005); Jakirčević (2005); Mustafić (2005); Pažur (2005); Suić (2005); Has-Schön et al. (2006); Mrakovčić et al. (2006); Valić (2006); Knežević (2007); Kottelat and Freyhof (2007); Prpa et al. (2007); Sallai and Mrakovčić (2007); Valić et al. (2007); Marguš (2008); Sallai and Kontos (2008); Sevcik and Erös (2008); Suić et al. (2008); Treer et al. (2008a); Dumbović et al. (2009); Jelić et al. (2009); Sofradžija (2009); Treer et al. (2009); Buj (2010c); Bukvić et al. (2010); Ozimec et al. (2010); Valić (2010); Vardić Smržlić (2010); Jelić et al. (2012); Marčić et al. (2012); Glamuzina et al. (2013); Marr et al. (2013); Delić et al. (2014a); Babić (2016); Jelić et al. (2016); Jelić and Krivek (2017); Lujić et al. (2017); Mustafić et al. (2017); Pofuk et al. (2017); Nedić et al. (2018)

**Remarks:** non-native in the Adriatic Basin

#### 2.4.8. FAMILY: XENOCYPRIDIDAE Gunther, 1868

CTENOPHARYNGODON Steindachner, 1866

83. *Ctenopharyngodon idella* (Valenciennes, 1844)

**English name:** Grass carp

**Croatian name:** amur

**Range in Croatia:** Danube drainage: middle and lower course of rivers, lakes and reservoirs; Adriatic Basin - reservoirs

**Literature:** Sabioncello (1967); Vinterhalter (1967); Fijan and Vojta (1969); Vinterhalter (1969); Marko and Stojsavljević (1972); Pogrmičić (1972); Fijan (1976a); Mikuska (1979); Bojčić et al. (1982); Veljović (1982); Meštrov and Justić (1983); Mikuska (1983a); Mikuska (1983b); Mikuska (1984); Mikuska and Mamić (1984); Pompe-Gotal (1984); Leiner (1985); Mikuska (1985); Delić (1987); Safner (1987); Turk et al. (1987); Delić (1989); Delić (1993); Turk and Debeljak (1995); Mihaljević et al. (1996); Mrakovčić et al. (1996b); Majer (1998); Treer et al. (1998); Mustafić (2001); Piria et al. (2004); Jakirčević (2005); Mustafić (2005); Pažur (2005); Mrakovčić et al. (2006); Prpa et al. (2007); Sallai and Mrakovčić (2007); Sallai and Kontos (2008); Treer et al. (2008a); Sofradžija (2009); Treer et al. (2009); Ozimec et al. (2010); Jelić et al. (2012); Marčić et al. (2012); Marr et al. (2013); Zrnčić et al. (2013); Nedić et al. (2014a); Nedić et al. (2014b); Povž and Gregori (2014); Riđanović et al. (2014); Jelić et al. (2016); Piria et al. (2016b); Mustafić et al. (2017); Pofuk et al. (2017)

**Remarks:** non-native species

HYPOPHTHALMICHTHYS Bleeker, 1860

84. *Hypophthalmichthys molitrix* (Valenciennes, 1844)

**English name:** Silver carp

**Croatian name:** bijeli glavaš

**Range in Croatia:** Danube drainage - lower course of rivers and reservoirs; Adriatic Basin - Neretva River and some reservoirs

**Literature:** Vinterhalter (1967); Fijan and Vojta (1969); Vuković and Ivanović (1971); Pogrmičić (1972); Mikuska (1979); Meštrov and Justić (1983); Mikuska (1983a); Mikuska (1983b); Mikuska (1984); Pompe-Gotal (1984); Vrenk (1984); Delić (1987); Turk et al. (1987); Delić (1989); Homen et al. (1991); Harka (1992); Delić (1993); Turk and Debeljak (1995); Mrakovčić et al. (1996b); Treer et al. (1998); Jakirčević (2005); Mustafić (2005); Pažur (2005); Mrakovčić et al. (2006); Sallai and Mrakovčić (2007); Sallai and Kontos (2008); Jelić et al. (2009); Buj (2010c); Ozimec et al. (2010); Jelić et al. (2012); Glamuzina et al. (2013); Zrnčić et al. (2013); Piria et al. (2016b); Piria et al. (2016c); Mustafić et al. (2017); Pofuk et al. (2017); Piria et al. (2018)

**Remarks:** non-native species

85. *Hypophthalmichthys nobilis* (Richardson, 1845)

**Names under which the taxon was mentioned:** *Aristichthys nobilis* (Richardson 1845)

**English name:** Bighead carp

**Croatian name:** sivi glavaš

**Range in Croatia:** Danube drainage - lower course of rivers and reservoirs; Adriatic Basin - Neretva, Cetina and Like Rivers and some reservoirs

**Literature:** Pogrmičić (1972); Vrenk (1984); Delić (1987); Turk et al. (1987); Delić (1989); Mišetić et al. (1989); Turk and Debeljak (1995); Zrnčić (1995); Mrakovčić et al. (1996b); Majer (1998); Simonović (2001); Piria et al. (2004); Mustafić (2005); Pažur (2005); Mrakovčić et al. (2006); Sallai and Mrakovčić (2007); Sallai and Kontos (2008); Ozimec et al. (2010); Jelić et al. (2012); Marčić et al. (2012); Jelkić and Opačak (2013); Jelić et al. (2016); Piria et al. (2016b); Piria et al. (2016c); Mustafić et al. (2017); Pofuk et al. (2017); Piria et al. (2018)

**Remarks:** non-native species

ORDER: CHARACIFORMES

#### FAMILY: SERRASALMIDAE Bleeker, 1859

PIARACTUS Eigenmann, 1903

UI3 *Piaractus brachypomus* (Cuvier, 1818)

**English name:** Pirapitinga

**Croatian name:** Pirapitinga

**Range in Croatia:** Danube drainage - two specimens reported in the lower Drava River near Osijek

**Literature:** Ćaleta et al. (2011a); Piria et al. (2016b); Piria et al. (2018)

**Remarks:** non-native species; individual reports without the establishment of a self-sustaining population

2.5. ORDER: SILURIFORMES

#### FAMILY: MOCHOKIDAE Jordan, 1923

SYNODONTIS Cuvier, 1816

UI4 *Synodontis eupterus* Boulenger, 1901

**English name:** Featherfin squeaker

**Croatian name:** krilasti som

**Range in Croatia:** Adriatic Basin - Mala Neretva (Neretva River drainage) near Opuzen

**Literature:** Dulčić et al. (2018)

**Remarks:** non-native, aquarium species; one recorded individual, no self-sustaining populations established

## 2.5.1. FAMILY: SILURIDAE Rafinesque, 1815

SILURUS Linnaeus, 1758

86. *Silurus glanis* Linnaeus, 1758

**English name:** Wels catfish

**Croatian name:** som

**Range in Croatia:** Danube drainage - middle and lower course of rivers and lakes; Adriatic Basin - introduced to Vransko Lake near Biograd and the Lika River

**Literature:** Heckel and Kner (1858); Šloser (1870); Brusina (1878); Jurinac (1880); Sebišanović (1880); Borne (1881); Sebišanović (1881); Mojsisovics (1883); Mojsisovics (1884); Jurinac (1884); Glowacki (1885); Anonymous (1886); Kesterčanek (1886); Seeley (1886); Jurinac (1887); Šoštarić (1888); Hefele (1889); Sebišanović (1890); Brusina (1892); Franke (1892); Anonymous (1893b); Brusina (1893); Dudan (1893); Kišpatić (1893); Flögel (1894); Glowacki (1896); Hirc (1896); Hirc (1897); Anonymous (1899c); Steuer (1899); Aue (1900); Anonymous (1901); Horvat (1901); Ribić (1901); Ivakić (1905); Peheim (1905); Anonymous (1906d); Anonymous (1906e); RHZZM (1908); Peheim (1909); Čurčić (1910); Kempf (1910); Vutskits (1918); Plančić (1920); Plančić (1923a); Anonymous (1925); Anonymous (1926); Anonymous (1927b); Bajić (1928); Rössler (1928); Anonymous (1930b); Anonymous (1930f); Anonymous (1930h); Anonymous (1931a); Anonymous (1931c); Anonymous (1931g); Fink (1932a); Fink (1932b); Maldini (1933); Čurčić (1933); Trojanović (1934); Anonymous (1935e); Bek (1935); Jedlička (1935); Samobor (1935); Anonymous (1937b); Maldini (1937); Anonymous (1948d); Taler (1945a); Anonymous (1946a); Anonymous (1947a); Anonymous (1947c); Anonymous (1948b); Fijan (1948a); Taler (1948f); Fijan (1950); Hafner-Lahorski (1950a); Taler (1951e); Anonymous (1952c); Marjanović (1954); Pešić (1955); Plančić (1955); Fijan (1956); Grce (1956); Asaj and Šalić (1957); Grce (1957); Jagodić (1957); Anonymous (1959); Grce (1959); Smalatić (1961); Livojević (1962b); Livojević (1962a); Morović (1962); Hadžić (1964b); Morović (1964a); Sabioncello et al. (1964); Hadžić (1965); Salihćehajić (1965); Stepanek (1965); Bikić (1966); Habeković (1967); Hadžić (1967); Morović (1967); Sabioncello (1967); Zobundžija (1968); Anonymous (1969b); Sabioncello et al. (1969); Vuković and Ivanović (1971); Munjko (1972); Ristić (1972b); Vrebac (1972); Herga (1968); Pogrmilović (1972); Fodolović (1973); Mišković (1973); Fijan (1976a); Čanadjija (1977); Munjko (1978); Klašterka (1979); Mikuska (1979); Bojčić et al. (1982); Veljović (1982); Mikuska (1983a); Mikuska (1983b); Delić (1984); Mikuska (1984); Pompe-Gotal (1984); Ržaničanin et al. (1984b); Treer et al. (1984); Tvrtković (1985); Veljović (1985); Delić (1987); Habeković (1987); Lelek (1987); Treer (1987); Turk et al. (1987); Delić (1989); Treer (1989); Treer et al. (1989); Habeković et al. (1990); Kažić et al. (1990); Homen et al. (1991); Popović (1991); Treer et al. (1991); Mrakovčić (1992); Delić (1993);

Pažur (1993); Crivelli (1995); Mrakovčić et al. (1995); Zrnčić (1995); Mihaljević et al. (1996); Mrakovčić et al. (1996b); Habeković et al. (1997); Leiner (1998a); Majer (1998); Povž et al. (1998); Treer et al. (1998); Zanella et al. (2000); Mustafić (2001); Mrakovčić et al. (2002); Delić et al. (2003a); Leiner (2003); Mateš (2004); Piria et al. (2004); Jakirčević (2005); Mustafić (2005); Pažur (2005); Petrinec et al. (2005); Ćaleta (2007); Kottelat and Freyhof (2007); Prpa et al. (2007); Sallai and Mrakovčić (2007); Sallai and Kontos (2008); Sevcik and Eros (2008); Suić et al. (2008); Treer et al. (2008a); Delić et al. (2009); Dumbović et al. (2009); Sofradžija (2009); Treer et al. (2009); Bučar et al. (2010); Jelić et al. (2010); Jelkić et al. (2010); Ozimec et al. (2010); Labak (2011); Matulić et al. (2011); Treer et al. (2011); Jelić et al. (2012); Glamuzina et al. (2013); Jelkić and Opačak (2013); Marr et al. (2013); Šanda et al. (2013); Zrnčić et al. (2013); Delić et al. (2014a); Nedić et al. (2014a); Nedić et al. (2014b); Riđanović et al. (2014); Jelić et al. (2016); Piria et al. (2016b); Piria et al. (2016c); Mustafić et al. (2017); Pofuk et al. (2017); Simonović et al. (2017b); Nedić et al. (2018)

**Remarks:** non-native in the Adriatic Basin

## FAMILY: CLARIIDAE Bonaparte, 1846

CLARIAS Scopoli, 1777

UI5 *Clarias gariepinus* Burchell, 1822

**English name:** North African catfish

**Croatian name:** afrički som

**Range in Croatia:** Danube drainage - introduced locally

**Literature:** Piria et al. (2018)

**Remarks:** non-native species; introduced to the Draganić fish farm for aquaculture purposes (Recirculation Aquaculture Systems) without a self-sustaining population

## 2.5.1. FAMILY: ICTALURIDAE Gill, 1861

AMEIURUS Rafinesque, 1820

87. *Ameiurus melas* (Rafinesque, 1820)

**Names under which the taxon was mentioned:** *Ameiurus nebulosus* (Lesueur, 1819); *Ictalurus melas* (Rafinesque, 1820); *Ictalurus nebulosus* (Lesueur, 1819); *Ictalurus punctatus* (Rafinesque, 1818)

**English name:** Black bullhead

**Croatian name:** crni somić

**Range in Croatia:** Danube drainage - middle and lower course of the rivers and backwaters; Adriatic Basin – rivers, reservoirs and lakes

**Literature:** Veljović (1982); Harka (1992); Habeković (1993); Crivelli (1995); Majer (1998); Schneider (1998); Mateš (2004); Bošnir et al. (2005); Jakirčević (2005); Mustafić (2005); Mrakovčić et al. (2006); Ćaleta (2007);

Duplić (2008); Sallai and Kontos (2008); Delić et al. (2009); Jelić et al. (2009); Jelić et al. (2010); Ozimec et al. (2010); Mrakovčić and Ćaleta (2011); Jelić et al. (2012); Glamuzina et al. (2013); Marr et al. (2013); Povž and Gregori (2014); Piria et al. (2017); Nedić et al. (2018); Piria et al. (2018)

**Remarks:** non-native species; older reports of *A. nebulosus* are misidentified and belong to *A. melas* or *A. melas* recently replaced *A. nebulosus* in freshwaters of Croatia

#### 88. *Ameiurus nebulosus* (Lesueur, 1819)

**Names under which the taxon was mentioned:** *Ictalurus nebulosus* (Lesueur, 1819)

**English name:** Brown bullhead

**Croatian name:** smedj somić

**Range in Croatia:** Adriatic Basin - Neretva River drainage

**Literature:** Anonymous (1906d); Anonymous (1907d); Anonymous (1907b); Anonymous (1907c); Anonymous (1910a); Hirc (1911); Anonymous (1925); Rössler (1928); Anonymous (1931c); Ivančić (1946); Karaman (1952); Sabioncello (1967); Sabioncello (1971b); Vuković and Ivanović (1971); Čanadjija (1977); Klašterka (1979); Mikuska (1979); Bojčić et al. (1982); Mikuska (1983b); Mikuska (1983a); Delić (1984); Mikuska (1984); Vrenk (1984); Bojčić (1987); Delić (1989); Fijan et al. (1989); Habeković et al. (1990); Martinović et al. (1992); Delić (1993); Zrnčić (1995); Mrakovčić et al. (1996b); Delić et al. (1997); Kerovec (1998); Leiner (1998a); Leiner (1998b); Schneider (1998); Zanella et al. (2000); Mustafić (2001); Mrakovčić et al. (2002); Bakota et al. (2003); Bošnir et al. (2003); Delić et al. (2003a); Jugović (2004); Pažur (2005); Mrakovčić et al. (2006); Bošnir et al. (2007); Dulčić et al. (2007); Prpa et al. (2007); Sallai and Mrakovčić (2007); Sallai and Kontos (2008); Sevcik and Erös (2008); Treer et al. (2008a); Treer et al. (2009); Sofradžija (2009); Bukvić et al. (2010); Vardić Smržlić (2010); Jelić et al. (2012); Glamuzina et al. (2013); Jelkić and Opačak (2013); Nedić et al. (2014a); Nedić et al. (2014b); Riđanović et al. (2014); Povž and Gregori (2014); Povž and Gregori (2014); Piria et al. (2016b); Nedić et al. (2018); Piria et al. (2018)

**Remarks:** non-native species; older reports of *A. nebulosus* are misidentified and belong to *A. melas* or *A. melas* recently replaced *A. nebulosus* in freshwaters of Croatia

#### ICTALURUS Rafinesque, 1820

##### UI6 *Ictalurus punctatus* (Rafinesque, 1818)

**English name:** Channel catfish

**Croatian name:** kanalski somić

**Range in Croatia:** Danube drainage - introduced locally to fishponds

**Literature:** Sabioncello (1971b); Fijan et al. (1989)

**Remarks:** non-native species; introduced to the Našice fishpond, though breeding was unsuccessful

#### 2.6. ORDER: ESOCIFORMES

##### 2.6.1. FAMILY: ESOCIDAE Rafinesque, 1815

*ESOX* Linnaeus, 1758

89. *Esox lucius* Linnaeus, 1758

**English name:** Northern pike

**Croatian name:** štuka

**Range in Croatia:** Danube drainage - middle and lower course of rivers and lakes; Adriatic Basin - introduced to Vransko Lake near Biograd, Vransko Lake on Cres Island, Ponikve Lake on Krk Island, Mirna, Gacka, Lika, Cetina and Neretva Rivers

**Literature:** Fortis (1771); Taube (1777); Heckel and Kner (1858); Steindachner (1866b); Šloser (1870); Jurinac (1880); Sebišanović (1880); Borne (1881); Sebišanović (1881); Faber (1883); Mojsisovics (1883); Jurinac (1884); Mojsisovics (1884); Glowacki (1885); Anonymous (1886); Kesterčanek (1886); Seeley (1886); Jurinac (1887); Hefele (1889); Sebišanović (1889c); Sebišanović (1889a); Sebišanović (1890); Brusina (1892); Franke (1892); Anonymous (1893a); Anonymous (1893d); Brusina (1893); Dudan (1893); Kišpatić (1893); Anonymous (1894a); Anonymous (1894c); Anonymous (1894f); Anonymous (1895); Anonymous (1896a); Glowacki (1896); Hirc (1896); Brusina (1897); Hirc (1897); Anonymous (1898a); Hirc (1898); Hirc (1900a); Hirc (1900b); Langhoffer (1904); Ivakić (1905); Anonymous (1907a); Brusina (1907); RHZZM (1908); Trgovčević (1908); Anonymous (1909a); Anonymous (1910b); Čurčić (1910); Franić (1910); Kempf (1910); Car (1911); Vutskits (1918); Plančić (1920); Karaman (1923b); Plančić (1923a); Plančić (1923b); Anonymous (1925); Hirc (1925); Bajić (1927); Rössler (1928); Wettstein (1928); Anonymous (1929a); Anonymous (1930b); Anonymous (1930c); Anonymous (1930f); Anonymous (1930g); Anonymous (1931b); Anonymous (1931c); Anonymous (1931g); Kaitner (1931); Fink (1932a); Kaitner (1932); Krajačić (1932); Rössler (1932); Trgovčević (1932); Čurčić (1933); Trojanović (1934); Bek (1935); Hafner-Lahorski (1935c); Jedlička (1935); Samobor (1935); Anonymous (1936b); Gridelli (1936); Maldini (1936a); Anonymous (1937b); Maldini (1937); Maldini (1938b); Taler (1945a); Anonymous (1946a); Kapac (1948); Taler (1948c); Taler (1948e); Franić (1949); Hafner-Lahorski (1950a); Taler (1950b); Taler (1951g); Uzelac (1952a); Plančić et al. (1953); Taler (1953a); Taler (1953d); Taler (1953c); Taler (1953a); Marjanović (1954); Pešić (1955); Basioli (1957b); Jagodić (1957); Smlatić (1961); Winterhalter (1964); Hadžić (1964a); Sabioncello (1967); Pažur (1968a); Zobundžija (1968); Sabioncello et al. (1969); Vrebac (1970); Vuković and Ivanović (1971); Munjko (1972); Vrebac (1972); Štefanac (1973); Munjko (1978); Klašterka (1979); Mikuska (1979); Pažur (1979);

Sofradžija and Hadžiselimović (1981); Bojčić et al. (1982); Veljović (1982); Vuković (1982); Mikuska (1983a); Mikuska (1983b); Delić (1984); Mikuska (1984); Mikuska and Mamić (1984); Ocvirk (1984); Pompe-Gotal, (1984); Vrenk (1984); Delić (1985); Leiner (1985); Mikuska (1985); Ocvirk (1985); Tvrković (1985); Veljović (1985); Habeković et al. (1986); Lelek (1987); Delić (1989); Treer (1989); Habeković et al. (1990); Habeković and Popović (1991); Homen et al. (1991); Popović (1991); Mrakovčić (1992); Ocvirk (1992); Delić (1993); Host (1993); Leiner and Povž (1993); Pažur (1993); Leiner and Povž (1994); Leiner et al. (1995); Povž (1995); Mihaljević et al. (1996); Mrakovčić et al. (1996b); Biber (1997); Habeković and Pažur (1998); Leiner (1998a); Majer (1998); Povž et al. (1998); Treer et al. (1998); Holčík and Delić (2000); Topić Popović et al. (2000); Zanella et al. (2000); Mustafić (2001); Simonović (2001); Mrakovčić et al. (2002); Bakota et al. (2003); Delić et al. (2003a); Leiner (2003); Jugović (2004); Piria et al. (2004); Bašić (2005); Jakirčević (2005); Mustafić (2005); Pažur (2005); Petrinec et al. (2005); Suić (2005); Mrakovčić et al. (2006); Ćaleta (2007); Ivelić et al. (2007); Knežević (2007); Kottelat and Freyhof (2007); Prpa et al. (2007); Sallai and Mrakovčić (2007); Sallai and Kontos (2008); Sevcsik and Erös (2008); Suić et al. (2008); Treer et al. (2008a); Delić et al. (2009); Dumbović et al. (2009); Jelić et al. (2009); Kerestessy et al. (2009); Treer et al. (2009); Tvrković et al. (2009); Sofradžija (2009); Bučar et al. (2010); Buj (2010c); Jelić et al. (2010); Jelkić et al. (2010); Ozimec et al. (2010); Vardić Smržlić (2010); Labak (2011); Matulić et al. (2011); Mrakovčić and Ćaleta (2011); Jelić et al. (2012); Marčić et al. (2012); Marr et al. (2013); Šanda et al. (2013); Valić et al. (2013); Zrnčić et al. (2013); Delić et al. (2014a); Nedić et al. (2014a); Nedić et al. (2014b); Riđanović et al. (2014); Babić (2016); Jelić et al. (2016); Piria et al. (2016b); Piria et al. (2016c); Mustafić et al. (2017); Pofuk et al. (2017); Simonović et al. (2017b); Nedić et al. (2018); Piria et al. (2018); Zuliani et al. (2019)

**Remarks:** non-native in the Adriatic Basin

## 2.6.2. FAMILY: UMBRIDAE Bonaparte, 1845

UMBRA Walbaum, 1792

90. *Umbra krameri* Walbaum, 1792

**Names under which the taxon was mentioned:** *Umbra canina* Károli, 1882

**English name:** European mudminnow

**Croatian name:** crnka

**Range in Croatia:** Danube drainage - lower course and backwaters of the Mura, Drava and Danube Rivers, Žutica Forest and upper course of the Odra River in the Sava River system

**Literature:** Heckel and Kner (1858); Mojsisovics (1887); Kišpatić (1893); Mojsisovics (1897); Brusina (1899); Langhoffer (1904); RHZZM (1908); Maldini (1936b);

Taler (1951b); Anonymous (1953a); Pavletić (1954); Pešić (1955); Sabioncello (1967); Vuković and Ivanović (1971); Mikuska (1979); Mikuska (1983b); Povž (1984); Mrakovčić and Kerovec (1990); Leiner (1995); Povž (1995); Wanzenböck (1995); Mrakovčić et al. (1996b); Delić et al. (1997); Zanella et al. (2000); Mustafić (2001); Leiner (2003); Pažur (2005); Sallai and Kontos (2005); Mrakovčić et al. (2006); Sallai and Mrakovčić (2007); Sallai and Kontos (2008); Freyhof (2012); Jelić et al. (2012); Marić et al. (2017)

## 2.7. ORDER: SALMONIFORMES

### 2.7.1. FAMILY: SALMONIDAE Schinz, 1822

COREGONUS Lacepède, 1803

91. *Coregonus lavaretus* (Linnaeus, 1758)

**Names under which the taxon was mentioned:** *Coregonus lavaretus maraena* (Bloch, 1779)

**English name:** European whitefish

**Croatian name:** velika ozimica

**Range in Croatia:** Danube drainage - Drava River; Adriatic Basin- introduced to reservoirs on the Cetina River

**Literature:** Habeković (1978a); Vrenk (1984); Jevtić (1991); Habeković (1993); Crivelli (1995); Mrakovčić et al. (1996b); Kerovec (1998); Pažur (2005); Tvrković et al. (2009); Schneider (1998); Mrakovčić et al. (2006); Mrakovčić and Ćaleta (2011); Jelić et al. (2012); Povž and Gregori (2014); Piria et al. (2016b); Piria et al. (2018)

**Remarks:** non-native species; individual specimens reported in the Drava River

92. *Coregonus peled* (Gmelin, 1789)

**Names under which the taxon was mentioned:** *Coregonus oxyrinchus* (Linnaeus, 1758)

**English name:** Northern whitefish

**Croatian name:** sjeverna ozimica

**Range in Croatia:** Adriatic Basin - introduced to reservoirs on the Cetina River

**Literature:** Plančić (1938); Habeković (1978a); Vuković and Kosorić (1978); Habeković et al. (1981); Bojčić et al. (1982); Habeković (1982); Vrenk (1984); Treer (1985); Habeković and Čolo-Ančić (1986); Kažić et al. (1990); Jevtić (1991); Habeković (1993); Teskeredžić et al. (1993); Habeković (1994a); Crivelli (1995); Kerovec (1998); Schneider (1998); Mrakovčić et al. (2006); Tvrković et al. (2009); Mrakovčić and Ćaleta (2011); Piria et al. (2016b); Piria et al. (2018)

**Remarks:** non-native species

HUCHO Günther, 1866	ONCORHYNCHUS Suckley, 1860
93. <i>Hucho hucho</i> (Linnaeus, 1758)	UI7 <i>Oncorhynchus kisutch</i> (Walbaum, 1792)
<b>Names under which the taxon was mentioned:</b> <i>Salmo hucho</i> Linnaeus, 1758; <i>Salvenius hucho</i> ; <i>Epitomynis hucho</i> Schulze, 1890	<b>English name:</b> Coho Salmon <b>Croatian name:</b> srebrni losos
<b>English name:</b> Huchen	<b>Range in Croatia:</b> Danube drainage - introduced to the Vitunjčica and Dobra Rivers; Adriatic Basin - introduced in cage farming in the Adriatic Sea
<b>Croatian name:</b> mladica	<b>Literature:</b> Teskeredžić and Edwards (1987); Teskeredžić et al. (1989); Mateš (2004); Piria et al. (2018)
<b>Range in Croatia:</b> Danube drainage - upper course of the Kupa, Sava, Drava and Una Rivers	<b>Remarks:</b> non-native species; no self-sustaining populations established
<b>Literature:</b> Seljan (1843); Bonaparte (1846); Jurinac (1880); Sebišanović (1880); Jurinac (1884); Glowacki (1885); Anonymous (1886); Kesterčanek (1886); Seeley (1886); Šoštarić (1888); Hefele (1889); Sebišanović (1889a); Sebišanović (1890); Brusina (1892); Franke (1892); Anonymous (1893a); Brusina (1893); Dudan (1893); Kišpatić (1893); Flögel (1894); Hawlitschek (1895); Glowacki (1896); Hirc (1896); Hirc (1897); Mojsisovics (1897); Hirc (1898); Steuer (1899); Anonymous (1900b); Horvat (1900d); Horvat (1901); Medić (1901b); Hirc (1902c); Anonymous (1903b); Langhoffer (1904); Brusina (1907); Anonymous (1909b); Čurčić (1910); Vutskits (1918); Karaman (1923b); Plančić (1923a); Anonymous (1925); Bergleitner (1925); Kaitner (1926c); Anonymous (1927d); Anonymous (1927i); Bajić (1927); Anonymous (1928d); Bergleitner (1928); Anonymous (1930a); Anonymous (1930b); Anonymous (1930f); Rössler (1930); Anonymous (1931c); Kraus (1932); Mršić (1932a); Thaller (1932); Koritnik (1934); Anonymous (1935g); Plančić (1935a); Taler (1935b); Anonymous (1936a); Anonymous (1936c); Maldini (1936b); Thaler (1936); Anonymous (1937a); Anonymous (1937b); Hirtz (1937); Maldini (1938c); Taler (1944); Taler (1945b); Taler (1945a); Anonymous (1946a); Hafner-Lahorski (1947c); Knop (1947c); Hafner-Lahorski (1948a); Taler (1948d); Anonymous (1949); Taler (1950c); Taler (1951b); Taler (1953a); Taler (1953g); Anonymous (1955c); Kosorić (1955); Smlatić (1961); Sabioncello (1967); Pažur (1968b); Pažur (1969a); Anonymous (1969a); Sabioncello et al. (1970); Vuković and Ivanović (1971); Pažur (1975); Klašterka (1979); Sofradžija and Hadžiselimović (1981); Bojić et al. (1982); Pažur et al. (1982); Vrenk (1984); Schulz (1985); Tvrtković (1985); Lelek (1987); Skalin (1990); Pažur (1993); Teskeredžić et al. (1993); Mrakovčić et al. (1996b); Honsig-Erlenburg et al. (1997); Majer (1998); Povž et al. (1998); Mustafić (2001); Georgiev (2003); Mateš (2004); Jakirčević (2005); Pažur (2005); Mrakovčić et al. (2006); Sallai and Mrakovčić (2007); Duplić (2008); Mateš (2008); Sallai and Kontos (2008); Valić et al. (2008); Dumbović et al. (2009); Sofradžija (2009); Bučar et al. (2010); Buj (2010c); Perović and Tvrtković (2010); Popović (2010); Freyhof (2012); Jelić et al. (2012); Witkowski et al. (2013); Treer et al. (2014); Ćaleta et al. (2015); Piria et al. (2016b); Pofuk et al. (2017)	
<b>Remarks:</b> endemic to the Danube drainage	UI8 <i>Oncorhynchus masou</i> (Brevoort, 1856)
	<b>Names under which the taxon was mentioned:</b> <i>Oncorhynchus masou rhodurus</i> Jordan & McGregor, 1925
	<b>English name:</b> Masu salmon <b>Croatian name:</b> japanski losos
	<b>Range in Croatia:</b> Danube drainage - introduced to the Gračani fishpond; Adriatic Basin - introduced to the Krka River estuary
	<b>Literature:</b> Teskeredžić and Teskeredžić (1990); Skaramuca et al. (1997)
	<b>Remarks:</b> non-native species; no self-sustaining populations established
	94. <i>Oncorhynchus mykiss</i> (Walbaum, 1792)
	<b>Names under which the taxon was mentioned:</b> <i>Parasalmo gairdneri</i> (Richardson 1836); <i>Salmo gairdneri</i> Richardson, 1836; <i>Salmo giardneri irideus</i> Gibbons, 1855; <i>Salmo irideus</i> Gibbons, 1855; <i>Trutta iridea</i> (Gibbons, 1855)
	<b>English name:</b> Rainbow trout <b>Croatian name:</b> kalifornijska pastrva
	<b>Range in Croatia:</b> Danube drainage and Adriatic Basin (except Istria) - introduced to upper course of rivers
	<b>Literature:</b> Anonymous (1893b); Kišpatić (1893); Anonymous (1894b); Anonymous (1894f); Anonymous (1896c); Anonymous (1902); Kaitner (1926b); Anonymous (1927g); Anonymous (1928a); Anonymous (1929c); Anonymous (1930e); Anonymous (1931b); Thaller (1932); Anonymous (1935j); Mršić (1935c); Mršić (1935d); Mršić (1935a); Plančić (1935b); Taler (1935b); Taler (1935a); Gridelli (1936); Mršić (1938); Plančić (1938); Taler (1938); Anonymous (1946b); Bergleitner (1946); Taler (1946b); Taler (1946c); Taler (1948a); Taler (1948e); Anonymous (1949); Taler (1950b); Taler (1950c); Taler (1951c); Plančić et al. (1953); Taler (1954b); Anonymous (1955a); Bogdanović (1958); Taler (1958); Pilicar (1959); Bogdanović (1961); Knežević (1963a); Knežević (1963b); Anonymous (1965a); Vraneš (1966); Sabioncello (1967); Anonymus (1968); Pažur (1969c); Pažur (1969a); Pažur (1969b); Pažur

(1970); Sabioncello et al. (1970); MacCrimmon (1971); Vuković and Ivanović (1971); Štefanac (1973); Pažur (1975); Habeković (1978b); Klašterka (1979); Mikuska (1979); Hrženjak and Ehrlich (1981); Bojčić et al. (1982); Habeković (1982); Mikuska (1983a); Mikuska (1983b); Teskeredžić (1983); Bristol et al. (1984); Ocvirk (1984); Teskeredžić (1984); Vrenk (1984); Al-Sabti (1985); Leiner (1985); Treer (1985); Teskeredžić et al. (1986); Teskeredžić and Pfeifer (1986); Kuhar and Huber (1989); Malnar (1989); Teskeredžić et al. (1989); Fašaić et al. (1990); Kažić et al. (1990); Mrakovčić and Mišetić (1990a); Habeković (1993); Leiner and Povž (1993); Teskeredžić et al. (1993); Habeković (1994a); Mrakovčić et al. (1995); Maitland and Crivelli (1996); Mrakovčić et al. (1996b); Honsig-Erlenburg et al. (1997); Skaramuca et al. (1997); Bonacci et al. (1998); Kerovec (1998); Povž et al. (1998); Schneider (1998); Leiner (1999); Mustafić (2001); Zupančič and Bogutskaya (2002); Schöffmann (2003); Mateš (2004); Jakirčević (2005); Mustafić (2005); Pažur (2005); Suić (2005); Šprem et al. (2005b); Treer et al. (2005); Mrakovčić et al. (2006); Knežević (2007); Prpa et al. (2007); Sallai and Mrakovčić (2007); Snoj et al. (2007); Valić et al. (2007); Duplić (2008); Kapetanović et al. (2008); Muhamedagić et al. (2008); Sallai and Kontos (2008); Valić et al. (2008); Treer et al. (2009); Tvrtković et al. (2009); Bučar et al. (2010); Bukvić et al. (2010); Pavličević et al. (2010); Vardić Smrzlić (2010); Mrakovčić and Ćaleta (2011); Glamuzina et al. (2011); Labak (2011); Jelić et al. (2012); Marčić et al. (2012); Marr et al. (2013); Vardić et al. (2013); Duplić (2014); Povž and Gregori (2014); Tomljanović (2014); Vukosav et al. (2014) (Ozimec (2015); Stanković et al. (2015); Jelić et al. (2016); Piria et al. (2016b); Pofuk et al. (2017); Piria et al. (2018)

**Remarks:** non-native species

SALMO Linnaeus, 1758

? *Salmo dentex* (Heckel, 1852)

**Names under which the taxon was mentioned:** *Salar dentex* Heckel, 1852; *Salmo trutta dentex* (Heckel, 1852); *Trutta dentex*

**English name:** Dentex trout

**Croatian name:** zubatak

**Range in Croatia:** Adriatic Basin – Cetina and Neretva Rivers

**Literature:** Heckel (1852); Heckel and Kner (1858); Canestrini (1866); Brusina (1872); Canestrini (1874); Brusina (1878); Giglioli (1880); Steindachner (1882b); Faber (1883); Katurić (1883); Kolombatović (1886a); Kolombatović (1886b); Seeley (1886); Katurić (1887); Kolombatović (1888); Katurić (1896a); Katurić (1896c); Brusina (1907); Katurić 1907); Car (1911); Čurčić (1915); Anonymous (1930e); Thaller (1932); Karaman (1932); Karaman (1936); Karaman (1938); Kovačević (1952); Taler (1953a); Jedlička (1954); Stepanek (1956); Pešić (1961); Vuković (1963); Karaman (1966); Stepanek (1966);

Sabioncello (1967); Behnke (1968); Vuković and Ivanović (1971); Klašterka (1979); Bojčić et al. (1982); Tvrtković (1985); Economidis and Bănărescu (1991); Teskeredžić et al. (1993); Mrakovčić et al. (1995); Crivelli (1996); Kottelat (1997); Leiner (1998b); Kerovec (1998); Tvrtković (1998); Tutman et al. (2002); Mateš (2004); Razpet (2004); Pažur (2005); Mrakovčić et al. (2006); Kotellat (2007); Kottelat and Freyhof (2007); Mateš (2008); Muhamedagić et al. (2008); Tutman et al. (2008a); Valić et al. (2008); Glamuzina (2009); Sofradžija (2009); Tvrtković et al. (2009); Delling (2010); Glamuzina et al. (2010a); Glamuzina et al. (2010b); Pavličević et al. (2010); Georgiev (2011); Glamuzina et al. (2011); Mrakovčić and Ćaleta (2011); Glamuzina et al. (2013); Bianco (2014a); Ćaleta et al. (2015)

**Remarks:** the taxonomic status of this species is uncertain; no genetically distinct unit that would confirm to *S. dentex* has been found, therefore the name may be a synonym or corresponds to a morphotype of *S. fariooides* or *S. trutta*; reports for the Cetina River have not been confirmed and are likely the result of misidentification; endemic to the Adriatic Basin

### 95. *Salmo fariooides* Karaman, 1938

**Names under which the taxon was mentioned:** *Salmo fario* Linnaeus, 1758; *Salmo trutta* Linnaeus, 1758; *Salmo trutta fariooides*; *Salmo zrmanjensis*, Karaman 1938; *Salmo visovacensis* Taler, 1950a; *Trutta fario* (Linnaeus, 1758)

**English name:** Adriatic trout

**Croatian name:** primorska pastrva

**Range in Croatia:** Adriatic Basin - rivers and lakes

**Literature:** Grisogono (1780); Lanza (1842); Kolombatović (1893); Kolombatović (1895); Katurić (1896a); Kolombatović (1907); Čurčić (1915); Heintz (1915); Karaman (1927); Karaman (1936); Karaman (1938); Morović (1948); Pušić (1948); Taler (1950a); Taler (1950c); Basioli (1952); Kovačević (1952); Taler (1953a); Jedlička (1954); Stojnić (1965); Anonymous (1967); Sabioncello (1967); Behnke (1968); Marko et al. (1968); Sabioncello et al. (1970); Vuković and Ivanović (1971); Bojčić et al. (1982); Klašterka (1979); Mrakovčić and Mišetić (1990a); Leiner and Povž (1993); Teskeredžić et al. (1993); Mrakovčić et al. (1995); Mrakovčić et al. (1996a); Kottelat (1997); Leiner (1998b); Schneider (1998); Habeković and Mišetić (2000); Mikavica et al. (2001); Georgiev (2003); Schöffmann (2003); Mateš (2004); Razpet (2004); Mrakovčić et al. (2006); Vardić (2006); Kotellat (2007); Kottelat and Freyhof (2007); Kapetanović et al. (2008); Valić et al. (2008); Zupančič (2008); Glamuzina (2009); Bukvić et al. (2010); Glamuzina et al. (2010a); Glamuzina et al. (2010b); Pavličević et al. (2010); Georgiev (2011); Glamuzina et al. (2011); Glamuzina et al. (2013); Miočić-Stošić and Kovačević (2013); Bianco (2014a); Bianco (2014b); Ćaleta et al. (2015)

**Remarks:** Due to the unresolved taxonomy of the genus

*Salmo*, it is not clear whether this is a distinct species or whether this name corresponds to the Adriatic lineage of *S. trutta*. Based on the most recent reports, the authors find *S. fariooides* to be a valid name for reproductively isolated species.

#### 96. *Salmo labrax* Pallas, 1814

##### Names under which the taxon was mentioned:

**English name:** Black Sea salmon

**Croatian name:** dunavska pastrva

**Range in Croatia:** Danube drainage - upper course of rivers

**Literature:** Holčík and Delić (2000); Delić et al. (2003a); Kottelat and Freyhof (2007); Bučar et al. (2010)

**Remarks:** Taxonomic status of this species is uncertain, although it is recognized as a separate taxonomic unit by majority of authors. However, the same unit has been described both as a separate species, *S. labrax* (e.g. Kottelat & Freyhof, 2007) and as genetically distinct lineage inside *S. trutta*, named Danubian lineage (e.g. Bernatchez 2001, Bernatchez et al. 1992). Comprehensive taxonomic investigation is required to resolve taxonomic position of trout populations in Danube drainage in Croatia and elsewhere.

#### 97. *Salmo marmoratus* Cuvier, 1829

**Names under which the taxon was mentioned:** *Salar genivittatus marmorata* Siebold, 1863; *Salmo trotta*, Linnaeus, 1758; *Trutta genivittata* (Heckel-Kner 1858); *Trutta adriatica* Kolombatović, 1890

**English name:** Marble trout

**Croatian name:** glavatica

**Range in Croatia:** Adriatic Basin - Neretva River drainage

**Literature:** Grisogono (1780); Lanza (1842); Heckel and Kner (1858); Kolombatović (1886a); Kolombatović (1886b); Kolombatović 1890); Kosić (1891); Kolombatović (1894); Katurić (1896a); Katurić (1896f); Kosić (1898); Kolombatović (1907); Brusina (1908); Čurčić (1915); Heintz (1915); Jedlička (1926a); Jedlička (1926b); Taler (1926); Karaman (1927); Jedlička (1928); Anonymous (1929e); Thaller (1929); Anonymous (1930c); Anonymous (1930g); Anonymous (1930d); Anonymous (1930e); Ninni (1930); Karaman (1936); Karaman (1938); Čurčić (1939d); Taler (1945b); Morović (1948); Pušić (1948); Taler (1950c); Basioli (1952); Kovačević (1952); Taler (1953a); Jedlička (1954); Stepanek (1956); Pešić (1961); Stojnić (1965); Stepanek (1966); Anonymous (1967); Sabioncello (1967); Behnke (1968); Marko et al. (1968); Kosorić (1969); Sabioncello et al. (1970); Vuković and Ivanović (1971); Klašterka (1979); Bojčić et al. (1982); Al-Sabti (1985); Mrakovčić and Mišetić (1990a); Leiner and Povž (1993); Teskeredžić et al. (1993); Bianco (1995a); Crivelli (1995);

Mrakovčić et al. (1995); Jardas (1996); Mrakovčić et al. (1996a); Kottelat (1997); Leiner (1998b); Mrakovčić (1998); Schneider (1998); Tvrtković (1998); Habeković and Mišetić (2000); Mikavica et al. (2001); Georgiev (2003); Schöffmann (2003); Mateš (2004); Razpet (2004); Pažur (2005); Mrakovčić et al. (2006); Vardić (2006); Kotellat (2007); Kottelat and Freyhof (2007); Kapetanović et al. (2008); Valić et al. (2008); Glamuzina (2009); Bukvić et al. (2010); Glamuzina et al. (2010a); Glamuzina et al. (2010b); Pavličević et al. (2010); Glamuzina et al. (2011); Glamuzina et al. (2013); Miočić-Stošić and Kovačević (2013); Bianco (2014a); Ćaleta et al. (2015); Piria et al. (2016b)

**Remarks:** Presence of this species in the Adriatic basin in Croatia is still uncertain, since no previous phylogenetic research was able to detect this species, even using specimens morphologically identified as *S. marmoratus*.

#### 98. *Salmo obtusirostris* (Heckel, 1852)

**Names under which the taxon was mentioned:** *Obtusirostris salonitana*; *Salmothymus obtusirostris* (Heckel, 1852); *Salmothymus obtusirostris krkensis* (Karaman, 1927); *Salmothymus obtusirostris obtusirostris*; *Salmothymus obtusirostris oxyrhynchus* (Steindachner, 1882); *Salmothymus obtusirostris salonitana* (Karaman, 1927); *Thymallus microlepis* Steindachner, 1874; *Trotta carpionata*; *Trutta obtusirostris*; *Trutta obtusirostris krkensis* Karaman, 1927; *Trutta obtusirostris oxyrhynchus* Steindachner, 1882; *Trutta obtusirostris salonitana* Karaman, 1927

**English name:** Softmouth trout

**Croatian name:** mekousna

**Range in Croatia:** Adriatic Basin - upper course of the Jadro, Krka, Vrljika and Neretva Rivers

**Literature:** Grisogono (1780); Heckel (1852); Heckel and Kner (1858); Canestrini (1866); Canestrini (1874); Steindachner (1874); Steindachner (1875); Brusina (1878); Brusina (1880); Giglioli (1880); Kolombatović (1881); Steindachner (1882b); Faber (1883); Katurić (1883); Kolombatović (1886a); Kolombatović (1886b); Seeley (1886); Kolombatović (1888); Kolombatović (1895); Katurić (1896a); Petermann (1899); Kosić (1903); Brusina (1907); Katurić 1907); Kolombatović (1907); Car (1911); Čurčić (1915); Heintz (1915); Jedlička (1925); Karaman (1927); Jedlička (1928); Anonymous (1930g); Anonymous (1930e); Jelačin (1931); Rössler (1931); Karaman (1932); Mršić (1932b); Thaller (1932); Mršić (1935b); Mršić (1935c); Karaman (1938); Mršić (1938); Čurčić (1939b) (Čurčić (1939c); Morović (1948); Taler (1950c); Taler (1951a); Taler (1951b); Kovačević (1952); Taler (1952b); Taler (1952c); Uzelac (1952b); Anonymous (1953a); Čurčić (1953); Škovrlj (1953a); Škovrlj (1953b); Taler (1953a); Taler (1953f); Jedlička (1954); Taler (1954a); Taler (1954c); Taler (1954d); Stepanek (1956); Basioli (1958b); Stevanović (1960); Pešić (1961); Stevanović

(1961); Vuković (1963); Karaman (1966); Sabioncello (1967); Behnke (1968); Pažur (1969a); Sabioncello et al. (1970); Čanković et al. (1971); Vuković and Ivanović (1971); Klašterka (1979); Sofradžija and Hadžiselimović (1981); Bojčić et al. (1982); Tvrtković (1985); Malnar (1989); Mrakovčić (1990); Mrakovčić and Kerovec (1990a); Mrakovčić and Mišetić (1990a); Mrakovčić and Mišetić (1990b); Povž et al. (1990); Schöffmann (1991); Schöffmann (2004); Teskeredžić et al. (1993); Mrakovčić et al. (1995); Crivelli (1996); Maitland and Crivelli (1996); Kottelat (1997); Bonacci et al. (1998); Leiner (1998b); Mrakovčić (1998); Schneider (1998); Tvrtković (1998); Habeković and Pažur (2000); Mikavica et al. (2001); Odak et al. (2002); Snoj et al. (2002); Georgiev (2003); Odak et al. (2003); Schöffmann (2003); Treer et al. (2003b); Mateš (2004); Odak (2004); Razpet (2004); Treer et al. (2004); Pažur (2005); Treer et al. (2005); Mrakovčić et al. (2006); Tvrtković and Veen (2006); Kottelat and Freyhof (2007); Prpa et al. (2007); Snoj et al. (2007); Sušnik et al. (2007); Tomljanović et al. (2007); Duplić (2008); Jelić et al. (2008); Muhamedagić et al. (2008); Snoj et al. (2008); Treer et al. (2008a); Treer et al. (2008b); Valić et al. (2008); Glamuzina (2009); Treer et al. (2009); Glamuzina et al. (2010a); Glamuzina et al. (2010b); Pavličević et al. (2010); Popović (2010); Glamuzina et al. (2011); Cigrovski Mustafić (2012); Freyhof (2012); Tomljanović et al. (2012a); Glamuzina et al. (2013); Duplić (2014); Esteve et al. (2014); Pustovrh (2014); Tomljanović (2014); Ćaleta et al. (2015); Mustafić and Mrakovčić (2017); Nejedli et al. (2018); Piria et al. (2018)

**Remarks:** reports for the Zrmanja and Cetina Rivers, and Vrgorac have not been confirmed and are likely the result of misidentification; endemic to the Adriatic Basin

#### UI9      *Salmo salar* Linnaeus, 1758

**English name:** Atlantic salmon

**Croatian name:** atlantski losos

**Range in Croatia:** Danube drainage – one specimen from the Sava River; Adriatic Basin - mouth of the Neretva and Krka Rivers

**Literature:** Lanza (1842); Kažić et al. (1990); Piria et al. (2018)

**Remarks:** non-native species; it is not known whether these are individually introduced individuals or the result of misidentification; no self-sustaining populations established

#### 99. *Salmo trutta* Linnaeus, 1758

**Names under which the taxon was mentioned:** *Salar ausonii* Valenciennes, 1848; *Salmo fario* Linnaeus, 1758; *Salmo labrax* Pallas, 1814; *Salmo lacustris* Linnaeus, 1758; *Trutta fario* (Linnaeus, 1758); *Trutta likana* Karaman, 1933

**English name:** Brown trout

**Croatian name:** potočna pastrva

**Range in Croatia:** Danube drainage - upper course of rivers; Adriatic Basin - rivers and lakes

**Literature:** Taube (1777); Piller and Mitterpacher (1783); Hietzinger (1817); Seljan (1843); Schlosser (1852); Heckel and Kner (1858); Farkaš Vukotinović (1859); Steindachner (1866a); Steindachner (1866b); Šloser (1870); Brusina (1878); Jurinac (1880); Borne (1881); Kolombatović (1881); Steindachner (1882b); Faber (1883); Jurinac (1884); Kolombatović (1884); Glowacki (1885); Kesterčanek (1886); Kolombatović (1888); Zlatović (1890); Hirc (1891); Kosić (1891); Anonymous (1892); Brusina (1892); Franke (1892); Anonymous (1893b); Anonymous (1893c); Brusina (1893); Dudan (1893); Kišpatić (1893); Anonymous (1894b); Anonymous (1894f); Flögel (1894); Anonymous (1896b); Anonymous (1896c); Buchwald (1896); Glowacki (1896); Hirc (1896); Anonymous (1897b); Anonymous (1897c); Dvoržak (1897); Hirc (1897); Franić (1898); Hirc (1898); Anonymous (1899a); Drnić (1899); Hirc (1899b); Hirc (1899c); Hirc (1899e); Franić (1900); Hirc (1900a); Hirc (1900b); Horvat (1900b); Bönel (1901); Talpaš (1901); Anonymous (1903a); Langhoffer (1904); Anonymous (1905c); Trgovčević (1905b); Anonymous (1906a); Anonymous (1906c); Anonymous (1907c); Brusina (1907); Brusina (1908); RHZZM (1908); Trgovčević (1908); Anonymous (1909a); Ribić (1909); Franić (1910); Kempf (1910); Hirc (1911); Lang (1911); Anonymous (1925); Bergleitner (1925); Hirc (1925); Jedlička (1925); Telar (1925); Grloči (1926); Anonymous (1927c); Anonymous (1927f); Anonymous (1928a); Anonymous (1928d); Anonymous (1928f); Anonymous (1928g); Kaitner (1928); Wettstein (1928); Anonymous (1929c); Anonymous (1929d); Bergleitner (1929); Kaitner (1929b); Rössler (1929a); Rössler (1929b); Anonymous (1930c); Anonymous (1930g); Anonymous (1930e); Bergleitner (1930); Jedlička (1930); Rössler (1930); Trgovčević (1930); Anonymous (1931c); Anonymous (1931d); Anonymous (1931f); Anonymous (1930g); Anonymous (1931h); Rössler (1931); Taler (1931); Karaman (1932); Krajačić (1932); Kraus (1932); Mršić (1932b); Mršić (1932a); Rössler (1932); Thaller (1932); Trgovčević (1932); Anonymous (1933); Koritnik (1934); Anonymous (1935a); Anonymous (1935b); Anonymous (1935c); Anonymous (1935f); Anonymous (1935h); Anonymous (1935i); Anonymous (1935j); Hafner-Lahorski (1935a); Hafner-Lahorski (1935b); Hafner-Lahorski (1935c); Mršić (1935b); Mršić (1935c); Mršić (1935a); Plančić (1935a); Plančić (1935b); Popović (1935); Taler (1935a); Taler (1935b); Maldini (1936b); Anonymous (1937b); Lovrić (1938); Maldini (1938c); Plančić (1938); Taler (1938); Anonymous (1939); Horvat (1941); Taler (1944); Anonymous (1945); Anonymous (1946b); Bergleitner (1946); Plančić (1946); Taler (1946c); Hafner-Lahorski (1947a); Hafner-Lahorski (1947b); Anonymous (1948a); Anonymous (1948b); Taler (1948a); Taler (1948c); Taler (1948d); Taler (1948e); Anonymous (1949); Glavan (1949); Taler (1949b); Plančić

(1950); Taler (1950a); Taler (1950b); Taler (1950c); Taler (1951c); Taler (1951d); Taler (1951e); Taler (1951g); Anonymous (1952a); Anonymous (1952b); Knežević (1952); Plančić (1952c); Taler (1952a); Taler (1952d); Čurčić (1953); Hafner-Lahorski (1953a); Plančić et al. (1953); Taler (1953a); Taler (1953b); Taler (1953e); Bogdanović (1954); Jedlička (1954); Kosorić (1955); Plančić (1956b); Plančić (1956c); Aganović (1957); Bogdanović (1957); Jagodić (1957); Anonymous (1958a); Bogdanović (1958); Kosorić (1958); Taler (1958); Bogdanović (1959); Stevanović (1960); Vučetić (1960); Bogdanović (1961); Smlatić (1961); Stevanović (1961); Knežević (1963b); Pažur (1964); Anonymous (1965b); Sabioncello (1967); Anonymus (1968); Behnke (1968); Pažur (1969c); Pažur (1969a); Pažur (1969b); Pažur (1970); Sabioncello et al. (1970); Vuković and Ivanović (1971); Štefanac (1973); Štefanac (1974); Pažur (1975); Aganović (1979); Klašterka (1979); Pažur (1979); Homen and Fašaić (1981); Hrženjak and Ehrlich (1981); Bojčić et al. (1982); Popović and Fašaić (1982); Štefanac and Bunjević (1982); Bristol et al. (1984); Delić (1984); Ocvirk (1984); Vrenk (1984); Al-Sabti (1985); Debeljak and Fašaić (1985); Leiner (1985); Tvrtković (1985); Štefanac (1986); Lelek (1987); Kuhar and Huber (1989); Mrakovčić et al. (1989); Fašaić et al. (1990); Habeković et al. (1992); Harka (1992); Mrakovčić (1992); Habeković (1993); Teskeredžić et al. (1993); Habeković (1994a); Kolar-Dimitrijević (1994); Crivelli (1995); Pažur (1995); Mrakovčić et al. (1996b); Habeković et al. (1997); Honsig-Erlenburg et al. (1997); Kottelat (1997); Skaramuca et al. (1997); Kerovec (1998); Majer (1998); Povž et al. (1998); Leiner (1999); Mustafić (2001); Trožić-Borovac (2002); Georgiev (2003); Jugović (2004); Mateš (2004); Odak (2004); Razpet (2004); Horvat (2005); Jakirčević (2005); Mustafić (2005); Pažur (2005); Suić (2005); Šprem et al. (2005b); Mrakovčić et al. (2006); Vardić (2006); Dulčić et al. (2007); Jadan et al. (2007); Knežević (2007); Kottelat and Freyhof (2007); Prpa et al. (2007); Sallai and Mrakovčić (2007); Sušnik et al. (2007); Valić et al. (2007); Jadan (2008); Jardas et al. (2008); Mateš (2008); Muhamedagić et al. (2008); Sallai and Kontos (2008); Treer et al. (2008a); Valić et al. (2008); Dumbović et al. (2009); Jelić et al. (2009); Treer et al. (2009); Tvrtković et al. (2009); Sofradžija (2009); Buj (2010c); Glamuzina et al. (2010a); Šafarek (2010); Valić (2010); Vardić Smržlić (2010); Babajko (2011); Glamuzina et al. (2011); Mrakovčić and Ćaleta (2011); Randić (2011); Cigrovski Mustafić (2012); Jelić et al. (2012); Marčić et al. (2012); Marčić (2013); Marr et al. (2013); Muhamedagić and Habibović (2013); Vardić et al. (2013); Pustovrh (2014); Vukosav et al. (2014) (Jadan et al. (2015); Piria et al. (2016b); Piria et al. (2016c); Pofuk et al. (2017); Simonović et al. (2017a); Škraba et al. (2017); Barišić et al. (2018); Dragun et al. (2018); Piria et al. (2018); Mijošek et al. (2019))

**Remarks:** the genus *Salmo* is currently the subject of intensive study and the taxonomic position of individual populations is yet to be elucidated, given the early

description of a large number of species in the Dinaric region of Croatia (*S. visovacensis*, *S. zrmanjensis* and *S. likana*). The taxonomic status of the species *S. trutta* and its origin in Croatia is not fully resolved. Some authors (e.g. Kottelat & Freyhof, 2007) consider this species to be non-native in this part of Europe while recent papers (e.g. Schenekar et al. 2014) proved *S. trutta* to be native for some parts of the Danube basin. No self-sustaining populations have been established in Istria.

#### SALVELINUS Richardson, 1836

##### 100. *Salvelinus alpinus* (Linnaeus, 1758)

**English name:** Arctic charr

**Croatian name:** jezerska zlatovčica

**Range in Croatia:** Danube drainage - introduced to the Plitvice Lakes; Adriatic Basin - Ruda River and reservoirs in the Cetina River drainage

**Literature:** Pažur (1970); Bristol et al. (1984); Habeković (1993); Kerovec (1998); Schneider (1998); Leiner (1999); Mateš (2004); Pažur (2005); Mrakovčić et al. (2006); Teskeredžić (2006); Tvrtković et al. (2009); Mrakovčić and Ćaleta (2011); Piria et al. (2016b); Pofuk et al. (2017); Piria et al. (2018)

**Remarks:** non-native species

#### UI10 *Salvelinus fontinalis* (Mitchill, 1814)

**English name:** Brook trout

**Croatian name:** potočna zlatovčica

**Literature:** Pešić (1961); Majer (1998); Mrakovčić et al. (2006); Vardić et al. (2007); Sallai (2008); Sallai and Kontos (2008); Jelić et al. (2012); Marr et al. (2013); Piria et al. (2016b); Pofuk et al. (2017); Piria et al. (2018)

**Remarks:** non-native species, no self-sustaining populations established. Not certain that it inhabits Croatian waters.

#### THYMALLUS Cuvier, 1829

##### 101. *Thymallus thymallus* (Linnaeus, 1758)

**Names under which the taxon was mentioned:** *Thymallus vexillifer* Fitzinger, 1832; *Thymallus vexillifer* Perty, 1832; *Thymallus vexillifer* Agassiz, 1839-40; *Thymallus vulgaris* Nilsson, 1832

**English name:** Grayling

**Croatian name:** lipljen

**Range in Croatia:** Danube drainage - upper course of the Una and Kupa River systems; Adriatic Basin - introduced to the Gacka, Cetina, Ruda and Neretva Rivers

**Literature:** Canestrini (1866); Steindachner (1866b); Canestrini (1874); Sebišanović (1880); Borne (1881); Faber (1883); Anonymous (1886); Kesterčanek (1886); Seeley

(1886); Mojsisovics (1889); Franke (1892); Brusina (1893); Dusan (1893); Kišpatić (1893); Glowacki (1896); Hirc (1896); Hirc (1897); Hirc (1898); Hirc (1898); Hirc (1899a); Hirc (1900a); Horvat (1900d); Medić (1901b); Anonymous (1904); Langhoffer (1904); Brusina (1907); RHZZM (1908); Vutskits (1918); Anonymous (1925); Bergleitner (1925); Anonymous (1927a); Anonymous (1928d); Bergleitner (1928); Anonymous (1930); Rössler (1930); Berg (1932a); Mršić (1932a); Koritnik (1934); Taler (1935b); Gridelli (1936); Maldini (1936b); Anonymous (1937b); Lovrić (1938); Bergleitner (1940); Taler (1944); Taler (1945b); Taler (1945a); Taler (1951b); Plančić (1952b); Taler (1953a); Kosorić (1955); Jagodić (1957); Sabioncello (1962); Smlatić (1961); Sabioncello (1967); Pažur (1969a); Sabioncello et al. (1970); Vuković and Ivanović (1971); Koritnik (1973); Štefanac (1973); Klašterka (1979); Sofradžija and Hadžiselimović (1981); Bojčić et al. (1982); Ocvirk (1984); Vrenk (1984); Leiner (1985); Tvrković (1985); Lelek (1987); Habeković (1993); Teskeredžić et al. (1993); Habeković (1994a); Crivelli (1995); Mrakovčić et al. (1995); Mrakovčić et al. (1996b); Honsig-Erlenburg et al. (1997); Kerovec (1998); Majer (1998); Povž et al. (1998); Schneider (1998); Habeković and Mišetić (2000); Mikavica et al. (2001); Mustafić (2001); Delić et al. (2003a); Georgiev (2003); Jakirčević (2005); Mustafić (2005); Pažur (2005); Šprem et al. (2005a); Šprem et al. (2005b); Mrakovčić et al. (2006); Kottelat and Freyhof (2007); Prpa et al. (2007); Sallai and Mrakovčić (2007); Mateš (2008); Muhamedagić et al. (2008); Sallai and Kontos (2008); Treer et al. (2008a); Valić et al. (2008); Treer et al. (2009); Tvrković et al. (2009); Sofradžija (2009); Bučar et al. (2010); Mrakovčić and Ćaleta (2011); Piria et al. (2016b); Pofuk et al. (2017); Nedić et al. (2018); Piria et al. (2018)

**Remarks:** non-native in the Adriatic Basin, in Istria there are no self-sustaining populations

## 2.8. ORDER: GADIFORMES

### 2.8.1. FAMILY: LOTIDAE Bonaparte, 1835

LOTA Oken, 1817

102. *Lota lota* (Linnaeus, 1758)

**Names under which the taxon was mentioned:** *Lota vulgaris* Fitzinger, 1832

**English name:** Burbot

**Croatian name:** manjić

**Range in Croatia:** Danube drainage - middle and lower course of rivers

**Literature:** Heckel and Kner (1858); Jurinac (1880); Sebišanović (1880); Sebišanović (1881); Mojsisovics (1883); Jurinac (1884); Mojsisovics (1884); Glowacki (1885); Anonymous (1886); Kesterčanek (1886); Jurinac (1887); Hefele (1889); Sebišanović (1890); Brusina (1892); Brusina (1893); Dusan (1893); Kišpatić (1893); Glowacki (1896); Hirc (1896); Medić (1896); Hirc (1897); Medić

(1901b); RHZZM (1908); Čurčić (1910); Kempf (1910); Lang (1911); Vutskits (1918); Plančić (1920); Plančić (1923a); Anonymous (1931c); Čurčić (1933); Maldini (1936a); Pešić (1955); Sabioncello (1967); Vuković and Ivanović (1971); Klašterka (1979); Mikuska (1979); Bojčić et al. (1982); Veljović (1982); Mikuska (1983a); Mikuska (1983b); Tvrković (1985); Veljović (1985); Habeković et al. (1986); Bojčić (1987); Lelek (1987); Mrakovčić (1992); Delić (1993); Mrakovčić et al. (1996b); Mustafić (2001); Mrakovčić et al. (2002); Delić et al. (2003a); Jugović (2004); Jakirčević (2005); Mustafić (2005); Pažur (2005); Sallai and Kontos (2005); Mrakovčić et al. (2006); Ćaleta (2007); Kottelat and Freyhof (2007); Sallai and Mrakovčić (2007); Mateš (2008); Sallai and Kontos (2008); Sevcik and Erös (2008); Delić et al. (2009); Dumbović et al. (2009); Sofradžija (2009); Bučar et al. (2010); Buj (2010c); Jelkić et al. (2010); Ozimec et al. (2010); Jelić et al. (2012); Šanda et al. (2013); Zrnčić et al. (2013); Delić et al. (2014a); Piria et al. (2016a); Simonović et al. (2017b)

## 2.9. ORDER: GOBIIFORMES

### FAMILY: ODONTOBUTIDAE Hoese & Gill, 1993

PERCCOTTUS Dybowski, 1877

UI11 *Percottus glenii* Dybowski, 1877

**English name:** Rotan

**Croatian name:** rotan

**Range in Croatia:** Danube drainage - channel of the Sava River near Slavonski Brod

**Literature:** Ćaleta et al. (2011b); Piria et al. (2016b); Piria et al. (2018)

**Remarks:** non-native, invasive species; one recorded individual, no self-sustaining populations established

### 2.9.1. FAMILY: GOBIIDAE Cuvier, 1816

BABKA Iljin, 1927

103. *Babka gymnotrachelus* (Kessler, 1857)

**Names under which the taxon was mentioned:** *Gobius gymnotrachelus* Kessler, 1857; *Neogobius gymnotrachelus* (Kessler, 1857)

**English name:** Racer goby

**Croatian name:** glavočić trkač

**Range in Croatia:** Danube drainage

**Literature:** Mojsisovics (1887); Polačik et al. (2008); Mustafić (2013); Šanda et al. (2013); Piria et al. (2016b); Nedić et al. (2018)

**Remarks:** non-native, invasive species

KNIPOWITSCHIA Iljin, 1927

104. *Knipowitschia mrakovcici* Miller, 2009

**Names under which the taxon was mentioned:**

*Knipowitschia panizzae* (Verga, 1841); *Knipowitschia* sp.

**English name:** Visovac goby

**Croatian name:** visovački glavočić

**Range in Croatia:** Adriatic Basin - Krka River drainage

**Literature:** Grisogono (1780); Miller (1990); Mrakovčić and Mišetić (1990a); Mrakovčić et al. (1995); Crivelli (1996); Maitland and Crivelli (1996); Mrakovčić et al. (2006); Valić (2006); Kottelat and Freyhof (2007); Duplic (2008); Jelić et al. (2008); Miller (2009); Freyhof (2011); Freyhof (2012); Vanhove et al. (2012); Ćaleta et al. (2015); Thacker et al. (2019)

**Remarks:** stenoendemic to the Krka River drainage and endemic to the Adriatic Basin and Croatia, species status is questioned in some recent papers

105. *Knipowitschia panizzae* (Verga, 1841)

**Names under which the taxon was mentioned:**

*Padogobius pannizai* (Verga, 1841)

**English name:** Adriatic dwarf goby

**Croatian name:** glavočić vodenjak

**Range in Croatia:** Adriatic Basin - river mouths along the coast

**Literature:** Morović (1962); Sabioncello et al. (1964); Habeković (1967); Vuković and Ivanović (1971); Bojčić et al. (1982); Povž et al. (1990); Jardas (1996); Leiner (1998b); Kovačić and Pallaoro (2003); Miller (2004d); Zerunian (2004); Matić-Skoko et al. (2005); Mustafić (2005); Dulčić et al. (2007); Kottelat and Freyhof (2007); Kovačić (2008); Tvrtković et al. (2009); Sofradžija (2009); Tvrtković et al. (2009); Šanda and Kovačić (2009); Lipej and Dulčić (2010); Glamuzina et al. (2013); Ćaleta et al. (2015); Piria et al. (2016b); Vukić et al. (2016); Mustafić et al. (2017); Vukić et al. (2017); Thacker et al. (2019)

**Remarks:** endemic to the Adriatic Basin and the Adriatic Sea, reports of *K. caucasica* for Adriatic basin are result of misidentification and belong to *K. panizzae*

106. *Knipowitschia radovici* Kovačić, 2005

**English name:** Norin goby

**Croatian name:** norinski glavočić

**Range in Croatia:** Adriatic Basin – lower part of the Neretva River drainage

**Literature:** Kovačić (2005a); Mrakovčić et al. (2006); Kottelat and Freyhof (2007); Duplic (2008); Jelić et al. (2008); Glamuzina et al. (2010b); Freyhof (2011); Freyhof (2012); Vanhove et al. (2012); Glamuzina et al. (2013); Ćaleta et al. (2015); Thacker et al. (2019)

**Remarks:** endemic to the Neretva River drainage, endemic to the Adriatic Basin, species status is questioned in some recent papers

NEOGOBius Iljin, 1927

107. *Neogobius fluviatilis* (Pallas, 1814)

**Names under which the taxon was mentioned:** *Gobius fluviatilis* Pallas, 1814

**English name:** Monkey goby

**Croatian name:** riječni glavočić

**Range in Croatia:** Danube drainage - introduced to the Drava, Danube and Sava Rivers and their tributaries drainage

**Literature:** Vuković and Ivanović (1971); Lelek (1987); Mrakovčić et al. (2002); Mustafić (2005); Mrakovčić et al. (2006); Ćaleta (2007); Sallai and Mrakovčić (2007); Polačik et al. (2008); Sallai and Kontos (2008); Dumbović et al. (2009); Sofradžija (2009); Piria et al. (2011b); Jelić et al. (2012); Djikanović et al. (2013); Nedić et al. (2014a); Nedić et al. (2014b); Delić et al. (2014a); Riđanović et al. (2014); Jakšić (2016); Jakšić et al. (2016); Jakovlić et al. (2015); Piria et al. (2016a); Piria et al. (2016b); Simonović et al. (2017b); Piria et al. (2018)

**Remarks:** non-native, invasive species

108. *Neogobius melanostomus* (Pallas, 1814)

**Names under which the taxon was mentioned:** *Gobius melanostomus* Pallas, 1814

**English name:** Round goby

**Croatian name:** glavočić okrugljak

**Range in Croatia:** Danube drainage - introduced to the Drava, Danube and Sava Rivers and their tributaries

**Literature:** Mojsisovics (1887); Mustafić (2005); Mrakovčić et al. (2006); Kottelat and Freyhof (2007); Polačik et al. (2008); Piria et al. (2011c); Šanda et al. (2013); Jakšić (2016); Jakšić et al. (2016); Jakovlić et al. (2015); Piria et al. (2016a); Piria et al. (2016b); Simonović et al. (2017b)

**Remarks:** non-native, invasive species

NINNIGOBIUS Whitley, 1951

109. *Ninnigobius canestrinii* (Ninni, 1883)

**Names under which the taxon was mentioned:** *Gobius canestrini* Ninni, 1883; *Pomatoschistus canestrinii* (Ninni, 1883); *Pomatoschistus marmoratus* (Risso, 1810)

**English name:** Canestrini's goby

**Croatian name:** glavočić crnotrus

**Range in Croatia:** Adriatic Basin - river mouths along the coast

**Literature:** Ninni (1883); Kolombatović (1884);

Kolombatović (1886a); Kolombatović (1888); Carus (1889-1893); Kolombatović (1891); Kolombatović (1907); RHZZM (1908); Taler (1953a); Sabioncello (1967); Vuković and Ivanović (1971); Bojčić et al. (1982); Jardas (1996); Holčík and Mrakovčić (1997); Kottelat (1997); Leiner (1998b); Nocita and Vanni (1997); Mrakovčić et al. (2000a); Miller (2004b); Zerunian (2004); Kovačić (2005b); Matić-Skoko et al. (2005); Mustafić (2005); Mrakovčić et al. (2006); Kottelat and Freyhof (2007); Jelić et al. (2008); Kovačić (2008); Miller and Šanda (2008); Tvrtković et al. (2009); Sofradžija (2009); Šanda and Kovačić (2009); Tutman et al. (2010); Freyhof (2011); Mrakovčić and Ćaleta (2011); Vanhove et al. (2012); Glamuzina et al. (2013); Bianco (2014a); Bianco (2014b); Ćaleta et al. (2015); Jelić et al. (2016); Piria et al. (2016b)

**Remarks:** endemic to the Adriatic Basin and to the Adriatic Sea

#### ORSINIGOBIUS Gandolfi, Marconato & Torricelli, 1986

110. *Orsinigobius croaticus* Mrakovčić, Kerovec, Mišetić & Schneider, 1994

**Names under which the taxon was mentioned:** *Gobius punctatissimus* Canestrini, 1864; *Knipowitschia punctatissima* (Canestrini, 1864); *Knipowitschia punctatissima croatica* Mrakovčić, Kerovec, Mišetić & Schneider, 1996; *Knipowitschia croatica* Mrakovčić, Kerovec, Mišetić & Schneider, 1996; *Padogobius panizzai* (Verga, 1841)

**English name:** Neretva dwarf goby

**Croatian name:** vrgoracka gobica

**Range in Croatia:** Adriatic Basin – Neretva River, Baćinska Lakes and Matica River near Vrgorac

**Literature:** Kolombatović (1895); Kolombatović (1907); Taler (1953a); Mrakovčić et al. (1994a); Mrakovčić et al. (1994b); Crivelli (1996); Mrakovčić et al. (1996a); Holčík and Mrakovčić (1997); Leiner (1998b); Schneider (1998); Tvrtković (1998); Mrakovčić et al. (2000a); Tutman et al. (2002); Tvrtković and Franičević (2002); Miller (2004c); Miller (2004e); Zerunian (2004); Mrakovčić et al. (2006); Kottelat and Freyhof (2007); Duplić (2008); Jelić et al. (2008); Valić et al. (2008); Šanda and Kovačić (2009); Popović (2010); Mrakovčić and Ćaleta (2011); Zanella et al. (2011); Freyhof (2012); Vanhove et al. (2012); Glamuzina et al. (2013); Ćaleta et al. (2015); Mustafić and Mrakovčić (2017); Thacker et al. (2019)

**Remarks:** endemic to the Neretva River drainage and to the Adriatic Basin

#### PADOGOBIUS Berg, 1932

111. *Padogobius bonelli* (Bonaparte, 1846)

**Names under which the taxon was mentioned:** *Padogobius martensi* (Günther, 1861); *Padogobius panizzae* Berg, 1931

**English name:** Padanian goby

**Croatian name:** slatkovodni glavočić

**Range in Croatia:** Adriatic Basin - Mirna, Raša and Zrmanja River drainages, Vransko Lake near Biograd, introduced to the Ričica River in the Lika region

**Literature:** Anonymous (1967); Leiner (1985); Bianco and Miller (1990); Leiner and Povž (1993); Leiner (1994); Leiner and Povž (1994); Leiner et al. (1995); Mrakovčić et al. (1995); Crivelli (1996); Mrakovčić et al. (1996a); Schneider (1998); Mrakovčić et al. (2000b); Miller (2004f); Zerunian (2004); Mrakovčić et al. (2006); Kottelat and Freyhof (2007); Šanda and Kovačić (2009); Freyhof (2011); Miočić-Stošić and Kovačević (2013); Bianco (2014a); Bianco (2014b); Ćaleta et al. (2015); Jelić et al. (2016); Piria et al. (2016b)

**Remarks:** non-native in the Ričica River system in the Lika region; reports for the Krka River have not been confirmed; endemic to the Adriatic Basin

#### PONTICOLA Iljin, 1927

112. *Ponticola kessleri* (Günther 1861)

**Names under which the taxon was mentioned:** *Gobius kessleri* Günther, 1861; *Neogobius kessleri* (Günther, 1861)

**English name:** Bighead goby

**Croatian name:** keslerov galvočić

**Range in Croatia:** Danube drainage - introduced to Drava, Danube and Sava Rivers

**Literature:** Vuković and Ivanović (1971); Mustafić (2005); Mrakovčić et al. (2006); Kottelat and Freyhof (2007); Polačik et al. (2008); Sofradžija (2009); Jelić et al. (2012); Šanda et al. (2013); Jakšić (2016); Jakšić et al. (2016); Jakovlić et al. (2015); Piria et al. (2016a); Piria et al. (2016b); Piria et al. (2018)

**Remarks:** non-native, invasive species

#### PROTERORHINUS Smitt, 1900

113. *Proterorhinus semilunaris* (Heckel, 1839)

**Names under which the taxon was mentioned:** *Proterorhinus marmoratus* (Pallas, 1814)

**English name:** Western tubenose goby

**Croatian name:** mramorasti glavočić

**Range in Croatia:** Danube drainage - Drava, Danube and Sava Rivers

**Literature:** Karaman (1952); Sabioncello (1967); Vuković and Ivanović (1971); Mikuska (1979); Mikuska (1983a); Mikuska (1983b); Mrakovčić et al. (1996b); Majer (1998); Miller (2004a); Mustafić (2005); Sallai and Kontos (2005); Mrakovčić et al. (2006); Sallai and Mrakovčić (2007); Sallai and Kontos (2008); Sofradžija (2009); Jelić et al. (2012); Piria et al. (2018)

2.10. ORDER: PLEURONECTIFORMES

**2.10.1. FAMILY: PLEURONECTIDAE Rafinesque, 1815**

PLATICHTHYS Girard, 1856

114. *Platichthys flesus* Linnaeus, 1758

**English name:** European flounder

**Croatian name:** iverak

**Range in Croatia:** Adriatic Basin - river mouths, lagoons and lakes connected to the sea along the coast

**Literature:** Kosić (1903); Lorini (1921); Morović (1947); Morović (1948); Taler (1953a); Basioli (1957a); Basioli (1958a); Marčić Brusina (1963); Morović (1963); Morović (1976); Morović (1978); Bojčić et al. (1982); Jardas (1996); Leiner (1998b); Mikavica et al. (2001); Kottelat and Freyhof (2007); Jardas et al. (2008); Sofradžija (2009); Lipej and Dulčić (2010); Tutman et al. (2010); Glamuzina et al. (2013)

**Remarks:** euryhaline species that occasionally enters freshwater

ORDER: CICHLIFORMES

**FAMILY: CICHLIDAE Bonaparte, 1835**

OREOCHROMIS Günther, 1889

UI12    *Oreochromis niloticus* (Linnaeus, 1758)

**English name:** Nile tilapia

**Croatian name:** nilska tilapia

**Range in Croatia:** Danube drainage - Lonjsko Field

**Literature:** Duplić and Boršić (2010); Povž and Gregori (2014); Piria et al. (2018)

**Remarks:** non-native species; individual reports without the establishment of self-sustaining populations

2.11. ORDER: CYPRINODONTIFORMES

**2.11.1. FAMILY: CYPRINODONTIDAE Wagner, 1828**

APHANIUS Nardo, 1827

115. *Aphanius fasciatus* (Valenciennes, 1821)

**Names under which the taxon was mentioned:** *Cyprinodon calaritanus* (Cuvier, 1829); *Lebias calaritana* (Cuvier, 1829)

**English name:** Mediterranean toothcarp

**Croatian name:** obrvan

**Range in Croatia:** Adriatic Basin - mostly saline habitats along the Adriatic coast

**Literature:** Bonaparte (1846); Canestrini (1866); Kolombatović (1886a); Kolombatović (1886b); Kolombatović (1893); Car (1900); Langhoffer (1904); Brusina (1907); Vuković and Ivanović (1971); Bojčić et al. (1982); Crivelli (1996); Jardas (1996); Pallaoro (1998);

Matić-Skoko et al. (2005); Dulčić and Glamuzina (2006); Mrakovčić et al. (2006); Kottelat and Freyhof (2007); Jardas et al. (2008); Lipej and Dulčić (2010); Glamuzina et al. (2013); Buj et al. (2015b); Landeka et al. (2015); Marčić et al. (2015); Piria et al. (2016b); Mustafić et al. (2017)

**2.11.2. FAMILY: POECILIIDAE Bonaparte, 1835**

GAMBUSIA Poey, 1854

116. *Gambusia holbrooki* Girard, 1859

**Names under which the taxon was mentioned:** *Gambusia affinis* (Baird & Girard 1853); *Gambusia affinis holbrooki* (Girard, 1859)

**English name:** Eastern mosquitofish

**Croatian name:** gambuzija

**Range in Croatia:** Danube drainage - introduced to the Savica Lakes in the Sava River system in Zagreb; Adriatic Basin - introduced to rivers, lakes and ponds

**Literature:** Gioseffi (1926); Anonymous (1927e); Sella (1927); Sella (1928); Sella (1929); Anonymous (1934); Gridelli (1936); Dojmi (1938); Nežić (1938); Plančić (1948); Tutman (1948); Morović (1964a); Sabioncello et al. (1964); Anonymous (1965b); Habeković (1967); Sabioncello (1967); Morović (1970); Vuković and Ivanović (1971); Morović (1976); Bojčić et al. (1982); Leiner (1984); Treer et al. (1984); Leiner (1985); Tvrtković (1985); Treer (1989); Fašaić et al. (1990); Mrakovčić and Mišetić (1990a); Habeković (1993); Leiner and Povž (1993); Leiner and Povž (1994); Crivelli (1995); Leiner et al. (1995); Mrakovčić et al. (1995); Maitland and Crivelli (1996); Mrakovčić et al. (1996a); Holčik and Mrakovčić (1997); Bonacci et al. (1998); Kerovec (1998); Leiner (1998b); Schneider (1998); Mrakovčić et al. (2000a); Mikavica et al. (2001); Bakić (2006); Dulčić and Glamuzina (2006); Mrakovčić et al. (2006); Dulčić et al. (2007); Duplić (2008); Jakšić et al. (2008); Marguš (2008); Tvrtković et al. (2009); Bakić (2011); Mrakovčić and Ćaleta (2011); Treer et al. (2011); Glamuzina et al. (2013); Lucu and Marsoni (2013); Marr et al. (2013); Miočić-Stošić and Kovačević (2013); Radošević (2013); Landeka et al. (2015); Piria et al. (2016b); Mustafić et al. (2017); Pofuk et al. (2017); Piria et al. (2018)

**Remarks:** non-native species; reports of *G. affinis* in Istria have not been confirmed

2.12. ORDER: MUGILIFORMES

**2.12.1. FAMILY: MUGILIDAE Jarocki, 1822**

CHELON Artedi, 1793

117. *Chelon labrosus* (Risso, 1827)

**Names under which the taxon was mentioned:** *Mugil chelo* Cuvier, 1829; *Crenimugil labrasus* (Risso, 1827); *Mugil labrosus* Risso, 1827

**English name:** Thicklip Grey Mullet

**Croatian name:** cipal putnik

**Range in Croatia:** Adriatic Basin - river mouths, lagoons and lakes connected to the sea along the coast

**Literature:** Kolombatović (1881); Kišpatić (1893); Katurić 1907); Šoljan (1931); Morović (1956a); Morović (1956b); Morović (1962); Morović (1963); Morović (1964b); Sabioncello et al. (1964); Habeković (1967); Sabioncello (1967); Morović (1976); Bojčić et al. (1982); Treer (1989); Jardas (1996); Leiner (1998b); Dulčić and Glamuzina (2006); Kottelat and Freyhof (2007); Sofradžija (2009); Glamuzina and Bartulović (2010); Lipej and Dulčić (2010); Tutman et al. (2010); Glamuzina et al. (2013)

**Remarks:** euryhaline species that occasionally enters freshwater

LIZA Jordan & Swain, 1884

118. *Liza aurata* (Risso, 1810)

**Names under which the taxon was mentioned:** *Mugil auratus* Risso, 1810

**English name:** Golden Grey Mullet

**Croatian name:** cipal zlatac (zlatac)

**Range in Croatia:** Adriatic Basin - river mouths, lagoons and lakes connected to the sea along the coast

**Literature:** Kišpatić (1893); Morović (1948); Basioli (1952); Morović (1956a); Morović (1956b); Morović (1956c); Basioli (1957a); Basioli (1958a); Morović (1962); Morović (1963); Morović (1964a); Morović (1964b); Sabioncello et al. (1964); Habeković (1967); Morović (1967); Morović (1976); Sofradžija and Hadžiselimović (1981); Bojčić et al. (1982); Treer (1989); Jardas (1996); Kraljević and Dulčić (1996); Leiner (1998b); Mustafić (2005); Dulčić and Glamuzina (2006); Kottelat and Freyhof (2007); Valić et al. (2007); Sofradžija (2009); Tvrtković et al. (2009); Bartulović et al. (2010); Glamuzina and Bartulović (2010); Lipej and Dulčić (2010); Tutman et al. (2010); Mrakovčić and Ćaleta (2011); Šiljeg (2012); Glamuzina et al. (2013)

**Remarks:** euryhaline species that occasionally enters freshwater

119. *Liza ramada* (Risso, 1827)

**Names under which the taxon was mentioned:** *Mugil capito* Cuvier, 1829; *Mugil ramada* Risso, 1827

**English name:** Thin-lipped grey mullet

**Croatian name:** cipal balavac

**Range in Croatia:** Adriatic Basin - river mouths, lagoons and lakes connected to the sea along the coast

**Literature:** Carrara (1846); Kišpatić (1893); Car (1911); Morović (1956a); Morović (1956b); Morović (1962); Morović (1963); Morović (1964a); Morović (1964b); Sabioncello et al. (1964); Habeković (1967); Morović

(1967); Morović (1976); Bojčić et al. (1982); Bojčić (1987); Treer (1989); Jardas (1996); Leiner (1998b); Mrakovčić et al. (2000a); Dulčić and Glamuzina (2006); Bartulović et al. (2007); Kottelat and Freyhof (2007); Sofradžija (2009); Glamuzina and Bartulović (2010); Lipej and Dulčić (2010); Tutman et al. (2010); Šiljeg (2012); Glamuzina et al. (2013)

**Remarks:** euryhaline species that occasionally enters freshwater

120. *Liza saliens* (Risso, 1810)

**Names under which the taxon was mentioned:** *Mugil saliens* Risso, 1810

**English name:** Leaping mullet

**Croatian name:** cipal dugaš

**Range in Croatia:** Adriatic Basin - river mouths, lagoons and lakes connected to the sea along the coast

**Literature:** Carrara (1846); Kišpatić (1893); Morović (1948); Basioli (1952); Morović (1956a); Morović (1956b); Basioli (1957a); Basioli (1958a); Morović (1962); Morović (1963); Morović (1964b); Sabioncello et al. (1964); Habeković (1967); Morović (1976); Sofradžija and Hadžiselimović (1981); Bojčić et al. (1982); Treer (1989); Leiner (1998b); Jardas (1996); Dulčić and Glamuzina (2006); Kottelat and Freyhof (2007); Sofradžija (2009); Glamuzina and Bartulović (2010); Lipej and Dulčić (2010); Tutman et al. (2010); Glamuzina et al. (2013)

**Remarks:** euryhaline species that occasionally enters freshwater

MUGIL Linnaeus, 1758

121. *Mugil cephalus* Linnaeus, 1758

**English name:** Flathead mullet

**Croatian name:** cipal bataš (glavaš)

**Range in Croatia:** Adriatic Basin - river mouths, lagoons and lakes connected to the sea along the coast

**Literature:** Lanza (1842); Carrara (1846); Kišpatić (1893); Šoljan (1931); Morović (1947); Morović (1948); Fijan (1951a); Basioli (1952); Morović (1956a); Morović (1956b); Morović (1956c); Basioli (1957b); Basioli (1958a); Morović (1962); Morović (1963); Anonymous (1964); Morović (1964a); Morović (1964b); Sabioncello et al. (1964); Habeković (1967); Morović (1967); Morović (1976); Morović (1978); Sofradžija and Hadžiselimović (1981); Bojčić et al. (1982); Bojčić (1987); Treer (1989); Jardas (1996); Tvrtković (1998); Leiner (1998b); Mrakovčić et al. (2000a); Mikavica et al. (2001); Treer et al. (2003c); Dulčić and Glamuzina (2006); Kottelat and Freyhof (2007); Muhamedagić et al. (2008); Sofradžija (2009); Bartulović et al. (2010); Bukvić et al. (2010); Dulčić and Glamuzina (2010); Glamuzina (2010); Glamuzina and Bartulović (2010); Lipej and Dulčić (2010); Marević (2010); Tutman et al. (2010); Glamuzina et al. (2013)

<p><b>Remarks:</b> euryhaline species that occasionally enters freshwater</p> <p>OEDALECHILUS Fowler, 1903 122. <i>Oedalechilus labeo</i> Cuvier, 1829</p> <p><b>Names under which the taxon was mentioned:</b> <i>Mugil labeo</i> Cuvier, 1829</p> <p><b>English name:</b> Boxlip mullet</p> <p><b>Croatian name:</b> cipal plutava</p> <p><b>Range in Croatia:</b> Adriatic Basin - river mouths, lagoons and lakes connected to the sea along the coast</p> <p><b>Literature:</b> Kosić (1899); Kišpatić (1893); Morović (1956a); Morović (1956a); Morović (1956b); Bojčić et al. (1982); Jardas (1996); Lipej and Dulčić (2010); Tutman et al. (2010)</p> <p><b>Remarks:</b> euryhaline species that occasionally enters freshwater</p>	<p><b>Remarks:</b> introduced to Ričica River (Lika region) from the Zrmanja River</p> <p><b>2.14. ORDER: SCORPAENIFORMES</b></p> <p><b>2.14.1. FAMILY: COTTIDAE Bonaparte, 1831</b></p> <p>COTTUS Linnaeus, 1758 124. <i>Cottus gobio</i> Linnaeus, 1758</p> <p><b>Names under which the taxon was mentioned:</b> <i>Cottus poecilopus</i> Heckel, 1838; <i>Cottus ferrugineus</i> Bonaparte, 1846; <i>Cottus ferrugineus</i> Heckel &amp; Kner, 1858; <i>Cottus gobio ferugineus</i></p> <p><b>English name:</b> Bullhead</p> <p><b>Croatian name:</b> peš</p> <p><b>Range in Croatia:</b> Danube drainage - upper course of tributaries; Adriatic Basin - Zrmanja, Krka and Neretva River drainages</p> <p><b>Literature:</b> Piller and Mitterpacher (1783); Carrara (1846); Heckel and Kner (1858); Steindachner (1866a); Brusina (1874); Brusina (1878); Jurinac (1880); Jurinac (1884); Glowacki (1885); Jurinac (1886a); Kolombatović (1886a); Seeley (1886); Mojsisovics (1887); Kolombatović (1888); Brusina (1889); Brusina (1892); Kišpatić (1893); Glowacki (1896); Hirc (1896); Hirc (1897); Hirc (1898); Hirc (1899c); Hirc (1900a); Langhoffer (1904); Brusina (1907); Katurić (1907); Kolombatović (1907); RHZZM (1908); Lang (1911); Vutskits (1918); Karaman (1923b); Anonymous (1925); Bergleitner (1925); Karaman (1928); Rössler (1930); Rössler (1931); Fink (1932b); Rössler (1932); Koritnik (1934); Maldini (1935c); Taler (1935a); Taler (1935b); Maldini (1938b); Taler (1953a); Kosorić (1955); Stepanek (1956); Smlatić (1961); Anonymous (1967); Sabioncello (1967); Sabioncello et al. (1969); Pažur (1970); Vuković and Ivanović (1971); Klašterka (1979); Sofradžija and Hadžiselimović (1981); Bojčić et al. (1982); Tvrković (1985); Habeković et al. (1986); Lelek (1987); Mrakovčić (1992); Mrakovčić et al. (1995); Mrakovčić et al. (1996b); Honsig-Erlenburg et al. (1997); Kottelat (1997); Leiner (1998b); Leiner (1998a); Majer (1998); Povž et al. (1998); Schneider (1998); Mikavica et al. (2001); Mustafić (2001); Delić et al. (2003a); Šlechtová et al. (2004); Zerunian (2004); Freyhof et al. (2005b); Mustafić (2005); Sallai and Kontos (2005); Mrakovčić et al. (2006); Kottelat and Freyhof (2007); Prpa et al. (2007); Sallai and Mrakovčić (2007); Jelić et al. (2008); Muhamedagić et al. (2008); Sallai and Kontos (2008); Sevcik and Erös (2008); Treer et al. (2008a); Dumbović et al. (2009); Jelić et al. (2009); Sofradžija (2009); Treer et al. (2009); Bučar et al. (2010); Buj (2010c); Jelkić et al. (2010); Perović and Tvrković (2010); Babajko (2011); Ištak (2011); Jelić et al. (2012); Jelić (2012); Miočić-Stošić and Kovačević (2013); Bianco (2014a); Piria et al. (2016c)</p> <p><b>Remarks:</b> the population from the Zrmanje River was described as <i>C. ferrugineus</i>, though molecular studies</p>
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(Šlechtová et al. 2004) have indicated its similarity to *C. gobio*, and therefore *C. ferrugineus* is not listed as a separate species.

## 2.15. ORDER: PERCIFORMES

### 2.15.1. FAMILY: MORONIDAE Jordan & Evermann, 1896

DICENATRARCHUS Gill, 1860

125. *Dicentrarchus labrax* Linnaeus, 1758

**English name:** European sea bass

**Croatian name:** lubin, brancin

**Range in Croatia:** Adriatic Basin - river mouths, lagoons and lakes connected to the sea along the coast

**Literature:** Grisogono (1780); Lanza (1842); Anonymous (1906a); Lorini (1921); Šoljan (1931); Morović (1947); Morović (1948); Šoljan (1948); Basioli (1952); Kovačević (1952); Plančić (1952c); Taler (1953a); Basioli (1957a); Basioli (1958a); Grce (1959); Basioli (1960); Morović (1962); Marčić Brusina (1963); Morović (1963); Vuković (1963); Sabioncello et al. (1964); Habeković (1967); Vuković and Ivanović (1971); Morović (1976); Bojić et al. (1982); Jardas (1996); Treer et al. (1989); Leiner (1998b); Schneider (1998); Kottelat and Freyhof (2007); Sofradžija (2009); Lipej and Dulčić (2010); Tutman et al. (2010); Glamuzina et al. (2013)

**Remarks:** euryhaline species that occasionally enters freshwater

MORONE Mitchell, 1814

UI13 *Morone saxatilis* x *Morone chrysops*

Hybrid of a striped bass (*Morone saxatilis*) female and a white bass (*M. chrysops*) male

**English name:** Palmetto bass

**Croatian name:** palmetto grgeč

**Range in Croatia:** Danube drainage - introduced to the Danube River

**Literature:** Safner et al. (2013); Piria et al. (2016b); Piria et al. (2018)

**Remarks:** non-native species; one individual recorded in the Danube River

### 2.15.2. FAMILY: CENTRARCHIDAE Regan, 1913

LEPOMIS Rafinesque, 1819

126. *Lepomis gibbosus* (Linnaeus, 1758)

**Names under which the taxon was mentioned:** *Eupomotis gibbosus* (Linnaeus, 1758)

**English name:** Pumpkinseed

**Croatian name:** sunčanica

**Range in Croatia:** Danube drainage and Adriatic Basin - introduced to rivers, lakes and reservoirs

**Literature:** Kempf (1910); Plančić (1920); Anonymous (1925); Anonymous (1946a); Taler (1947); Taler (1951e); Karaman (1952); Taler (1953a); Plančić (1955); Grce (1956); Grce (1957); Grce (1959); Vučetić (1960); Livojević (1962a); Livojević (1962b); Morović (1962); Morović (1964a); Sabioncello et al. (1964); Morović (1967); Sabioncello (1967); Pažur (1968a); Zobundžija (1968); Vuković and Ivanović (1971); Čanadjija (1977); Klašterka (1979); Mikuska (1979); Bojić et al. (1982); Veljović (1982); Mikuska (1983a); Mikuska (1983b); Mikuska and Mamić (1984); Ocvirk (1984); Mikuska (1985); Veljović (1985); Habeković et al. (1986); Delić (1989); Treer (1989); Habeković et al. (1990); Habeković and Popović (1991); Homen et al. (1991); Mrakovčić (1992); Delić (1993); Habeković (1993); Mrakovčić et al. (1995); Povž (1995); Zrnčić (1995); Mihaljević et al. (1996); Mrakovčić et al. (1996b); Habeković et al. (1997); Kerovec (1998); Leiner (1998a); Leiner (1998b); Majer (1998); Schneider (1998); Treer et al. (1998); Zanella et al. (2000); Jakovlić and Treer (2001); Mustafić (2001); Mrakovčić et al. (2002); Bakota et al. (2003); Mateš (2004); Jakirčević (2005); Mustafić (2005); Pažur (2005); Suić (2005); Mrakovčić et al. (2006); Ćaleta (2007); Knežević (2007); Kottelat and Freyhof (2007); Prpa et al. (2007); Sallai and Mrakovčić (2007); Duplić (2008); Marguš (2008); Sallai and Kontos (2008); Sevcik and Erös (2008); Treer et al. (2008a); Delić et al. (2009); Dumbović et al. (2009); Jelić et al. (2009); Kerestessy et al. (2009); Sofradžija (2009); Treer et al. (2009); Bučar et al. (2010); Buj (2010c); Bukvić et al. (2010); Jelić et al. (2010); Ozimec et al. (2010); Vardić Smržlić (2010); Mrakovčić and Ćaleta (2011); Jelić et al. (2012); Marčić et al. (2012); Glamuzina et al. (2013); Jelkić and Opačak (2013); Marr et al. (2013); Miočić-Stošić and Kovačević (2013); Delić et al. (2014a); Povž and Gregori (2014); Jelić et al. (2016); Piria et al. (2016a); Piria et al. (2016b); Jelić and Krivek (2017); Mustafić et al. (2017); Piria et al. (2017); Pofuk et al. (2017); Simonović et al. (2017b); Piria et al. (2018)

**Remarks:** non-native, invasive species

MICROPTERUS Lacepède, 1802

127. *Micropterus salmoides* (Lacepède 1802)

**Names under which the taxon was mentioned:** *Grystes salmoides* (Lacepède, 1802)

**English name:** Largemouth bass

**Croatian name:** pastrvski grgeč

**Range in Croatia:** Danube drainage - introduced to rivers, channels, ponds and backwaters; Adriatic Basin - Neretva River drainage

**Literature:** Anonymous (1907a); Hasenay (1933); Fijan (1950); Karaman (1952); Sabioncello (1967); Pogrnilović (1972); Tóth and Biro (1982); Bojić (1987); Mrakovčić

(1992); Mrakovčić et al. (1996b); Majer (1998); Mustafić (2001); Mrakovčić et al. (2002); Pažur (2005); Mrakovčić et al. (2006); Sallai and Mrakovčić (2007); Sallai and Kontos (2008); Ozimec et al. (2010); Jelić et al. (2012); Povž and Gregorić (2014); Piria et al. (2016b); Dulčić et al. (2017); Piria et al. (2018)

**Remarks:** non-native, invasive species

### 2.15.3. FAMILY: PERCIDAE Rafinesque, 1815

GYMNOCEPHALUS Bloch, 1793

128. *Gymnocephalus baloni* Holcik & Hensel, 1974

**English name:** Balon's ruffe

**Croatian name:** Balonov balavac

**Range in Croatia:** Danube drainage - Mura, Drava, Danube and Sava Rivers

**Literature:** Lelek (1987); Mrakovčić (1992); Mrakovčić et al. (1996b); Povž et al. (1997); Majer (1998); Mustafić (2001); Mustafić (2005); Sallai and Kontos (2005); Mrakovčić et al. (2006); Kottelat and Freyhof (2007); Sallai and Mrakovčić (2007); Sallai and Kontos (2008); Kerestessy et al. (2009); Popović (2010); Jelić et al. (2012)

129. *Gymnocephalus cernua* (Linnaeus, 1758)

**Names under which the taxon was mentioned:** *Acerina rosica*; *Acerina cernua* (Linnaeus, 1758); *Acerina vulgaris* Cuvier, 1829; *Gymnocephalus cernuus* (Linnaeus, 1758); *Perca cernua* Linnaeus, 1758

**English name:** Ruffe

**Croatian name:** obični balavac

**Range in Croatia:** Danube drainage - lower course of rivers; Adriatic Basin - introduced to the Lika River system

**Literature:** Heckel and Kner (1858); Jurinac (1880); Sebišanović (1880); Jurinac (1881); Sebišanović (1881); Mojsisovics (1883); Jurinac (1884); Mojsisovics (1884); Glowacki (1885); Anonymous (1886); Kesterčanek (1886); Mojsisovics (1887); Sebišanović (1889b); Sebišanović (1890); Brusina (1892); Brusina (1893); Dudan (1893); Kišpatić (1893); Glowacki (1896); Hirc (1897); Brusina (1898); Hirc (1899e); Langhoffer (1904); Anonymous (1906d); RHZZM (1908); Čurčić (1910); Vutskits (1918); Uzelac (1952a); Sabioncello (1953); Sabioncello (1967); Zobundžija (1968); Sabioncello et al. (1969); Vuković and Ivanović (1971); Klašterka (1979); Mikuska (1979); Sofradžija and Hadžiselimović (1981); Bojčić et al. (1982); Veljović (1982); Mikuska (1983a); Mikuska (1983b); Mikuska and Mamić (1984); Mikuska (1985); Veljović (1985); Habeković et al. (1986); Lelek (1987); Delić (1989); Habeković et al. (1990); Homen et al. (1991); Mrakovčić (1992); Delić (1993); Mrakovčić et al. (1996b); Leiner (1998a); Majer (1998); Treer et al. (1998); Zanella et al. (2000); Jakovlić and Treer (2001); Mustafić (2001);

Mrakovčić et al. (2002); Jugović (2004); Jakirčević (2005); Mustafić (2005); Pažur (2005); Ćaleta (2007); Kottelat and Freyhof (2007); Prpa et al. (2007); Sallai and Mrakovčić (2007); Sallai and Kontos (2008); Treer et al. (2008a); Dumbović et al. (2009); Jelić et al. (2009); Kerestessy et al. (2009); Sofradžija (2009); Treer et al. (2009); Jelić et al. (2010); Ozimec et al. (2010); Jelić et al. (2012); Jelkić and Opačak (2013); Delić et al. (2014a); Piria et al. (2016a); Jelić et al. (2016b); Pofuk et al. (2017); Simonović et al. (2017b)

**Remarks:** non-native in the Adriatic Basin

130. *Gymnocephalus schraetser* (Linnaeus, 1758)

**Names under which the taxon was mentioned:** *Acerina schraetser* (Linnaeus, 1758)

**English name:** Striped ruffe

**Croatian name:** prugasti balavac

**Range in Croatia:** Danube drainage - Drava, Danube and Sava Rivers

**Literature:** Heckel and Kner (1858); Jurinac (1880); Sebišanović (1880); Sebišanović (1881); Jurinac (1884); Glowacki (1885); Seeley (1886); Mojsisovics (1887); Sebišanović (1890); Brusina (1893); Kišpatić (1893); Glowacki (1896); Hirc (1899e); Langhoffer (1904); Čurčić (1910); Vutskits (1918); Karaman (1923b); Maldini (1935a); Sabioncello (1953); Sabioncello (1967); Vuković and Ivanović (1971); Klašterka (1979); Mikuska (1979); Bojčić et al. (1982); Habeković et al. (1986); Lelek (1987); Delić (1989); Homen et al. (1991); Mrakovčić (1992); Delić (1993); Mrakovčić et al. (1996b); Majer (1998); Mustafić (2001); Jakirčević (2005); Mustafić (2005); Pažur (2005); Sallai and Kontos (2005); Mrakovčić et al. (2006); Ćaleta (2007); Kottelat and Freyhof (2007); Sallai and Mrakovčić (2007); Sallai and Kontos (2008); Valić et al. (2008); Sofradžija (2009); Ozimec et al. (2010); Popović (2010); Jelić et al. (2012); Ćaleta et al. (2015); Piria et al. (2016b)

**Remarks:** endemic to the Danube drainage

PERCA Linnaeus, 1758

131. *Perca fluviatilis* Linnaeus, 1758

**English name:** Perch

**Croatian name:** grgeč

**Range in Croatia:** Danube drainage - middle and lower course of the rivers and lakes; Adriatic Basin - introduced to the Lika River system, Gacka River, Prološko Blato and waters of the Istrian Peninsula

**Literature:** Bonaparte (1832-1841); Šloser (1870); Brusina (1878); Jurinac (1880); Sebišanović (1880); Sebišanović (1881); Jurinac (1884); Mojsisovics (1884); Mojsisovics (1887); Hefele (1889); Sebišanović (1889b); Sebišanović (1889c); Sebišanović (1890); Brusina (1892); Franke (1892); Anonymous (1893d); Brusina (1893); Dudan

(1893); Anonymous (1894c); Glowacki (1896); Hirc (1897); Hirc (1899e); Hirc (1902d); Ivakić (1905); RHZZM (1908); Čurčić (1910); Hirc (1911); Kulčar (1911); Vutskits (1918); Plančić (1920); Anonymous (1925); Anonymous (1931c); Trojanović (1934); Jedlička (1935); Samobor (1935); Maldini (1936b); Maldini (1938c); Sabioncello (1953); Kosorić (1955); Jagodić (1957); Sabioncello (1967); Zobundžija (1968); Sabioncello et al. (1969); Vuković and Ivanović (1971); Herga (1968); Klašterka (1979); Mikuska (1979); Sofradžija and Hadžiselimović (1981); Bojčić et al. (1982); Veljović (1982); Mikuska (1983a); Mikuska (1983b); Delić (1984); Mikuska (1984); Mikuska and Mamić (1984); Vrenk (1984); Mikuska (1985); Tvrktović (1985); Veljović (1985); Habeković et al. (1986); Delić (1989); Habeković et al. (1990); Habeković and Popović (1991); Mrakovčić (1992); Delić (1993); Povž (1995); Zrnčić (1995); Mihaljević et al. (1996); Mrakovčić et al. (1996b); Habeković et al. (1997); Leiner (1998a); Majer (1998); Povž et al. (1998); Zanella et al. (2000); Jakovlić and Treer (2001); Mustafić (2001); Mrakovčić et al. (2002); Bakota et al. (2003); Delić et al. (2003a); Leiner (2003); Jugović (2004); Jakirčević (2005); Mustafić (2005); Pažur (2005); Suić (2005); Ćaleta (2007); Ivelić et al. (2007); Knežević (2007); Kottelat and Freyhof (2007); Prpa et al. (2007); Sallai and Mrakovčić (2007); Sallai and Kontos (2008); Sevcik and Erös (2008); Treer et al. (2008a); Dumbović et al. (2009); Jelić et al. (2009); Kerestessy et al. (2009); Piria et al. (2009); Sofradžija (2009); Treer et al. (2009); Bučar et al. (2010); Buj (2010c); Jelić et al. (2010); Jelkić et al. (2010); Ozimec et al. (2010); Vardić Smrzlić (2010); Labak (2011); Matulić et al. (2011); Jelić et al. (2012); Marčić et al. (2012); Jelkić and Opačak (2013); Marr et al. (2013); Delić et al. (2014a); Nedić et al. (2014a); Nedić et al. (2014b); Riđanović et al. (2014); Piria et al. (2016a); Jelić et al. (2016); Pofuk et al. (2017); Simonović et al. (2017b); Nedić et al. (2018)

**Remarks:** non-native in the Adriatic Basin

SANDER Oken, 1817

132. *Sander lucioperca* (Linnaeus, 1758)

**Names under which the taxon was mentioned:** *Lucioperca lucioperca* (Linnaeus, 1758); *Lucioperca sandra* Cuvier, 1828; *Stizostedion lucioperca* (Linnaeus, 1758)

**English name:** Pike-perch

**Croatian name:** smuđ

**Range in Croatia:** Danube drainage - middle and lower course of the rivers and lakes; Adriatic Basin - introduced to the Butoniga and Tribalj reservoirs and Neretva River drainage

**Literature:** Heckel and Kner (1858); Brusina (1878); Jurinac (1880); Sebišanović (1880); Sebišanović (1881); Mojsisovics (1883); Jurinac (1884); Glowacki (1885); Anonymous (1886); Kesterčanek (1886); Seeley (1886); Jurinac (1887); Šoštarić (1888); Hefele (1889); Sebišanović

(1890); Brusina (1892); Franke (1892); Anonymous (1893d); Anonymous (1893d); Brusina (1893); Dudan (1893); Kišpatić (1893); Anonymous (1894c); Anonymous (1894d); Anonymous (1894g); Flögel (1894); Anonymous (1896a); Glowacki (1896); Anonymous (1897b); Mojsisovics (1897); Hirc (1899e); Steuer (1899); Aue (1900); Horvat (1900a); Horvat (1901); Medić (1901b); Langhoffer (1904); Anonymous (1905a); Anonymous (1905b); Ivakić (1905); Anonymous (1906b); Anonymous (1906d); Anonymous (1906e); Anonymous (1907a); Anonymous (1907b); Anonymous (1909b); Čurčić (1910); Vutskits (1918); Plančić (1920); Plančić (1923a); Rössler (1928); Anonymous (1931c); Fink (1932a); Thaller (1932); Tadić (1933); Trojanović (1934); Bek (1935); Plančić (1935a); Samobor (1935); Anonymous (1936a); Maldini (1936a); Maldini (1937); Maldini (1938c); Anonymous (1946a); Anonymous (1947c); Hafner-Lahorski (1948b); Anonymous (1949); Fijan (1950); Hafner-Lahorski (1950a); Plančić (1952e); Sabioncello (1953); Marjanović (1954); Anonymous (1955b); Plančić (1955); Jagodić (1957); Salihčehajić (1965); Sabioncello (1967); Herga (1968); Zobundžija (1968); Anonymous (1969b); Tóth and Mikuska (1971); Vuković and Ivanović (1971); Munjko (1972); Pogrmilović (1972); Fijan (1976b); Klašterka (1979); Mikuska (1979); Sofradžija and Hadžiselimović (1981); Bojčić et al. (1982); Veljović (1982); Mikuska (1983a); Mikuska (1983b); Delić (1984); Mikuska (1984); Mikuska (1985); Tvrktović (1985); Veljović (1985); Habeković et al. (1986); Lelek (1987); Turk et al. (1987); Delić (1989); Mišetić et al. (1989); Treer (1989); Homen et al. (1991); Popović (1991); Martinović et al. (1992); Mrakovčić (1992); Delić (1993); Pažur (1993); Kolar-Dimitrijević (1994); Crivelli (1995); Zrnčić (1995); Krpo-Ćetković and Stamenković (1996); Mihaljević et al. (1996); Mrakovčić et al. (1996b); Leiner (1998a); Majer (1998); Holčík and Delić (2000); Zanella et al. (2000); Mustafić (2001); Mrakovčić et al. (2002); Delić et al. (2003a); Leiner (2003); Jugović (2004); Piria et al. (2004); Jakirčević (2005); Mustafić (2005); Pažur (2005); Mrakovčić et al. (2006); Ćaleta (2007); Ivelić et al. (2007); Kottelat and Freyhof (2007); Sallai and Mrakovčić (2007); Sallai and Kontos (2008); Sevcik and Erös (2008); Suić et al. (2008); Jelić et al. (2009); Kerestessy et al. (2009); Sofradžija (2009); Jelić et al. (2010); Ozimec et al. (2010); Matulić et al. (2011); Jelić et al. (2012); Glamuzina et al. (2013); Jelkić and Opačak (2013); Marr et al. (2013); Zrnčić et al. (2013); Delić et al. (2014a); Nedić et al. (2014a); Nedić et al. (2014b); Riđanović et al. (2014); Pavličević et al. (2016); Piria et al. (2016b); Mustafić et al. (2017); Pofuk et al. (2017); Nedić et al. (2018); Piria et al. (2018)

**Remarks:** non-native in the Adriatic Basin

133. *Sander volgensis* (Gmelin, 1789)

**Names under which the taxon was mentioned:** *Lucioperca volgensis* (Gmelin, 1789); *Stizostedion volgense* (Gmelin, 1789)

**English name:** Volga pikeperch

**Croatian name:** smuđ kamenjak

**Range in Croatia:** Danube drainage - Drava, Danube and Sava Rivers

**Literature:** Seeley (1886); Mojsisovics (1887); Hefele (1889); Brusina (1893); Kišpatić (1893); Glowacki (1896); Medić (1896); Hirc (1897); Medić (1901b); RHZZM (1908); Čurčić (1910); Vutskits (1918); Maldini (1936a); Anonymous (1947c); Sabioncello (1953); Pešić (1955); Sabioncello (1967); Vuković and Ivanović (1971); Klašterka (1979); Mikuska (1979); Bojić et al. (1982); Mikuska (1983a); Mikuska (1983b); Vrenk (1984); Lelek (1987); Homen et al. (1991); Harka (1992); Jakirčević (2005); Mustafić (2005); Pažur (2005); Mrakovčić et al. (2006); Kottelat and Freyhof (2007); Sallai and Mrakovčić (2007); Sallai and Kontos (2008); Sofradžija (2009); Ozimec et al. (2010); Jelić et al. (2012)

ZINGEL Cloquet, 1817

134. *Zingel streber* (Siebold, 1863)

**Names under which the taxon was mentioned:** *Aspro streber* Siebold, 1863; *Aspro vulgaris* Cuvier, 1828

**English name:** Streber

**Croatian name:** mali vretenac

**Range in Croatia:** Danube drainage - fast flowing parts of rivers

**Literature:** Heckel and Kner (1858); Jurinac (1880); Sebišanović (1880); Sebišanović (1881); Jurinac (1884); Glowacki (1885); Anonymous (1886); Kesterčanek (1886); Seeley (1886); Hefele (1889); Sebišanović (1890); Brusina (1893); Kišpatić (1893); Glowacki (1896); Hirc (1897); Mojsisovics (1897); Hirc (1899e); Medić (1901b); Langhoffer (1904); Čurčić (1910); Vutskits (1918); Maldini (1935b); Sabioncello (1953); Sabioncello (1967); Vuković and Ivanović (1971); Klašterka (1979); Mikuska (1979); Bojić et al. (1982); Veljović (1982); Mikuska (1983b); Popović and Fašaić (1986); Lelek (1987); Mrakovčić (1992); Mrakovčić et al. (1996b); Habeković et al. (1997); Majer (1998); Povž et al. (1998); Mustafić (2001); Jakirčević (2005); Mustafić (2005); Pažur (2005); Sallai and Kontos (2005); Mrakovčić et al. (2006); Kottelat and Freyhof (2007); Sallai and Mrakovčić (2007); Sallai and Kontos (2008); Dumbović et al. (2009); Sofradžija (2009); Ozimec et al. (2010); Popović (2010); Ištak (2011); Jelić et al. (2012); Delić et al. (2014a); Piria et al. (2016a)

135. *Zingel zingel* (Linnaeus, 1766)

**Names under which the taxon was mentioned:** *Aspro zingel* (Linnaeus, 1758)

**English name:** Zingel

**Croatian name:** veliki vretenac

**Range in Croatia:** Danube drainage - middle and lower

course of the large rivers

**Literature:** Bonaparte (1846); Heckel and Kner (1858); Jurinac (1880); Sebišanović (1881); Jurinac (1884); Glowacki (1885); Seeley (1886); Sebišanović (1890); Brusina (1892); Brusina (1893); Dusan (1893); Kišpatić (1893); Glowacki (1896); Hirc (1897); Mojsisovics (1897); Hirc (1899e); Medić (1901b); RHZZM (1908); Čurčić (1910); Vutskits (1918); Anonymous (1931c); Maldini (1935b); Sabioncello (1953); Sabioncello (1967); Vuković and Ivanović (1971); Klašterka (1979); Mikuska (1979); Bojić et al. (1982); Veljović (1982); Mikuska (1983a); Mikuska (1983b); Lelek (1987); Harka (1992); Mrakovčić et al. (1996b); Majer (1998); Mustafić (2001); Mustafić (2005); Pažur (2005); Sallai and Kontos (2005); Mrakovčić et al. (2006); Ćaleta (2007); Kottelat and Freyhof (2007); Sallai and Mrakovčić (2007); Sallai and Kontos (2008); Sevcik and Erös (2008); Kerestessy et al. (2009); Ozimec et al. (2010); Jelić et al. (2012); Piria et al. (2016a); Nedić et al. (2018)

#### 2.15.4. FAMILY: SPARIDAE Rafinesque, 1818

SPARUS Linnaeus, 1758

136. *Sparus aurata* Linnaeus, 1758

**English name:** Silver seabream

**Croatian name:** komarča, orada

**Range in Croatia:** Adriatic Basin - river mouths, lagoons and lakes connected to the sea along the coast

**Literature:** Lorini (1921); Šoljan (1931); Morović (1947); Morović (1948); Basioli (1952); Kovačević (1952); Plančić (1952c); Taler (1953a); Basioli (1957a); Basioli (1958a); Basioli (1960); Morović (1961); Morović (1962); Marčić Brusina (1963); Morović (1963); Vuković (1963); Sabioncello et al. (1964); Habeković (1967); Vuković and Ivanović (1971); Morović (1976); Bojić et al. (1982); Treer et al. (1989); Jardas (1996); Leiner (1998b); Schneider (1998); Sofradžija (2009); Dulčić and Glamuzina (2010); Lipej and Dulčić (2010); Tutman et al. (2010); Glamuzina et al. (2013)

**Remarks:** euryhaline species that occasionally enters freshwater

#### 2.15.5. FAMILY: GASTEROSTEIDAE Bonaparte, 1831

GASTEROSTEUS Linnaeus, 1758

137. *Gasterosteus aculeatus* Linnaeus, 1758

**Names under which the taxon was mentioned:** *Gasterosteus brachycentrus* Cuvier, 1829; *Gasterosteus gymnurus* Cuvier, 1829

**English name:** Three-spined stickleback

**Croatian name:** koljuška

**Range in Croatia:** Danube drainage - introduced to Mura

and Drava Rivers; Adriatic Basin - Mirna, Krka and Neretva River drainages, Baćinska Lakes, Vransko Lake near Biograd and Bokanjačko Blato Lake

**Literature:** Carrara (1846); Canestrini (1865); Canestrini (1866); Brusina (1878); Giglioli (1880); Seeley (1886); Katurić (1887); Mojsisovics (1887); Kolombatović (1888); Katurić (1896c); Katurić (1896d); Katurić 1907; Karaman (1928); Gridelli (1936); Taler (1953a); Pešić (1961); Vuković (1963); Vuković and Prolić (1966); Sabioncello (1967); Vuković and Kosorić (1967); Vuković and Ivanović (1971); Herga (1974); Morović (1976); Sofradžija and Hadžiselimović (1981); Bojić et al. (1982); Leiner (1985); Lelek (1987); Fašaić et al. (1990); Mrakovčić and Mišetić (1990a); Leiner and Povž (1993); Mrakovčić et al. (1995); Jardas (1996); Maitland and Crivelli (1996); Holčík and Mrakovčić (1997); Leiner (1998b); Tvrtković (1998); Mrakovčić et al. (2000a); Mikavica et al. (2001); Paepke (2002); Mrakovčić et al. (2006); Kottelat and Freyhof (2007); Cano et al. (2008); Mäkinen and Merilä (2008); Muhamedagić et al. (2008); Sevcik and Erös (2008); Zanella (2009); Zanella et al. (2009a); Lipej and Dulčić (2010); Csípkés et al. (2012); DeFaveri et al. (2012); Glamuzina et al. (2013); Landeka et al. (2015); Lisjak et al. (2015); Zanella et al. (2015); Piria et al. (2016b); Mustafić et al. (2017); Piria et al. (2018)

**Remarks:** non-native in Danube River drainage; though some report the existence of two species in Croatia, *G. aculeatus* and *G. gymnurus*, recent genetic analyses have indicated that this is the species *G. aculeatus*

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## PREGLED POSTOJEĆIH HRVATSKIH SLATKOVODNIH RIBA I PAKLARA

### Popis i rasprostranjenost s komentarima

#### Sažetak

Prvje put izrađen popis hrvatskih slatkvodnih riba. Temelji se na 1360 povijesnih i novijih literaturnih podataka. Na temelju pregleda literature, u Hrvatskoj je, do danas, zabilježeno 137 vrsta riba iz 30 porodica i 75 rodova. Popis je organiziran sistematski i u njemu se navode podaci o rasprostranjenosti slatkvodne ihtiofaune te jesu li vrste endemične, unesene ili prenesene (translocirane).

Ključne riječi: dunavski slijev, jadranski slijev, ednemičnost, unosi, prijenosi (translokacije).

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