

New data to species composition and distribution of gudgeons (Gobioninae, Cyprinidae) in the Kuban River

Alexander M. NASEKA¹, Viktoria V. SPODAREVA¹, Jörg FREYHOF², Nina G. BOGUTSKAYA¹ and Vladimir G. POZNJAK³

¹ Zoological Institute of Russian Academy of Sciences, Universitetskaya nab. 1, 199034 St. Petersburg, Russia; e-mail: office@zin.ru

² Institute of Freshwater Ecology and Inland Fisheries, Müggelseedamm 310, 12561 Berlin, Germany; e-mail: freyhof@igb-berlin.de

³ Kalmykia State University, ul. Pushkina 11, 358000 Elista, Russia

Received 14 January 2004; Accepted 3 March 2005

Abstract. The actual distribution of gudgeons native to the River Kuban (*Gobio* sp., *Romanogobio pentatrachus*, *R. parvus*) is described based upon new taxonomic conclusions and reliable species identifications. Numerous new materials were collected during several expeditions by the authors in 2001–2003 to the Northern Caucasus, Western Transcaucasia, Volga, Kuban, Don and other rivers of the Sea of Azov and were re-examined from collections of the Zoological Institute (St. Petersburg, Russia) and the Chair of Zoology of Kalmykia State University (Elista, Russia).

Key words: Gudgeons, distribution, Kuban River

Introduction

Famous “Fish inhabiting and occurring in Aral-Caspian-Pontian ichthyological region” by Kessler (1877) contains the first list of fish species inhabiting the Kuban catchment. Later, Berg (1912) summarized data known at that period from publications of previous authors containing fragmentary information on fish of the Kuban and also analyzed new material collected in 1909–1911 that came to the Zoological Museum of the Imperial Academy of Sciences from that river. Berg (1912) was the first to indicate the occurrence of two gudgeon species in the Kuban – the common gudgeon (considered identical to *Gobio gobio lepidolaemus* Kessler, 1872, described from the Aral Sea basin), and of “long-barbel” gudgeon, mentioned earlier for this river and identified as *Gobio uranoscopus caucasicus* Kamensky, 1901, a name based on specimens from rivers Sunzha (Terek tributary) and Podkumok (Kuna tributary) in the Caspian Sea basin. Later Berg (1932) raised the taxonomic status of the latter, and it was given a new replacement name, *Gobio ciscaucasicus*.

The identification of the Kuban gudgeons as *G. gobio* and *G. ciscaucasicus* was invariable in the subsequent works of Berg (1949 and others) and accepted by all following (Aleksandrov 1927, Troitsky 1948, 1965, Sukhanova & Troitsky 1949, Tamanskaya & Troitsky 1957, Troitsky & Poznjak 1980, Troitsky & Tsunikova 1988, Moskul 1994, Bănărescu 1992). Naseka & Bogutskaya (1998) were the first to re-analyse the “long-barbel” gudgeon examined by Berg (1912) (ZISP 15309, 15212); they showed that Kuban “long-barbel” gudgeons are not identical to *G. ciscaucasicus* but were a new species, *Romanogobio pentatrachus* Naseka et Bogutskaya, 1998. Its occurrence in the Kuban was later supported by new finds (Naseka et al.

2002). This species is clearly diagnosed from the two other gudgeon species in the drainage by five (if the two last rays are counted as one) anal-fin rays, lack of the epithelial keels on dorsal scales and of connection between supraorbital and infraorbital sensory canals on the head, as well as by a set of osteological characters. The revelation of the new species has cast doubt on the presence of the *Romanogobio ciscaucasicus* in the river drainage because, pointing to the presence of the latter in Kuban, the authors obviously referred exclusively to the collection numbers given by B e r g (15309, 15312, see B e r g 1914, p. 468), which contained only specimens of *R. pentatrichus*. Thus, the Kuban drainage ought to have been excluded from the distribution of *Romanogobio ciscaucasicus*.

The revision of the additional material from the collections of the Zoological Institute, St. Petersburg, and Kalmykia State University showed that, apart from a representative of *G. gobio* s.l. group (referred as “the Kuban common gudgeon” below) and *R. pentatrichus*, there is a third species inhabiting the Kuban (N a s e k a & P o z n j a k 2000). These authors gave detailed morphological description of the “six-rayed long-barbel” gudgeon from the Kuban, compared it to *R. ciscaucasicus* from the Terek, and provided a key to species. N a s e k a & F r e y h o f (2004) recently described this species as *R. parvus*.

It should be noted that mtDNA data suggest, that *R. parvus* is closely related to *R. albipinnatus* and *R. ciscaucasicus*, whereas *R. pentatrichus* seems to be a very isolated member of European gudgeons (W i t t e et al., unpubl. data).

Since the name *Gobio ciscaucasicus* was applied to two species, *R. pentatrichus* and *R. parvus*, it is difficult to correlate the data on distribution to the species currently known and the distribution of long-barbel gudgeons requires revision. The same can be referred to *Gobio* sp. Some authors consider the distribution range of this species to include the river bed of the Kuban and Kuban limans, and the majority of its tributaries up to Malui Zelenchuk. To summarize, most publications (E m t y l et al. 1988, T r o i t s k y & T s u n i k o v a 1988, E m t y l 1997, P l o t n i k o v 2001, E m t y l & I v a n e n k o 2002) only provide very generalized data on the distribution of the Kuban common gudgeon without giving exact localities or collection sample numbers.

New materials collected during several expeditions of the authors in 2001–2003 to Kuban, Western Transcaucasia, Volga, Don and other rivers of the Sea of Azov widened a basis for comparisons and allowed the ranges of native gobionins in the River Kuban, to be revised.

Material and Methods

The study was based upon material from ichthyological collections of the Zoological Institute, St. Petersburg (ZIN), of Kalmykia State University, Elista (KGU), and the personal collection of J. Freyhof (FSJF). All fish were caught using a fine mesh beach seine or a DEKA 3000 portable electroshocker. The identification of species of gudgeons of the Kuban was done according to the identification key (N a s e k a et al. 2002). Localities are given in Fig. 1.

Results

Romanogobio pentatrichus Naseka et Bogutskaya, 1998

Much additional material on this species was collected during the 2001 field season. During the detailed research of the Kuban individuals of this species were caught in 5 out of 49 localities in

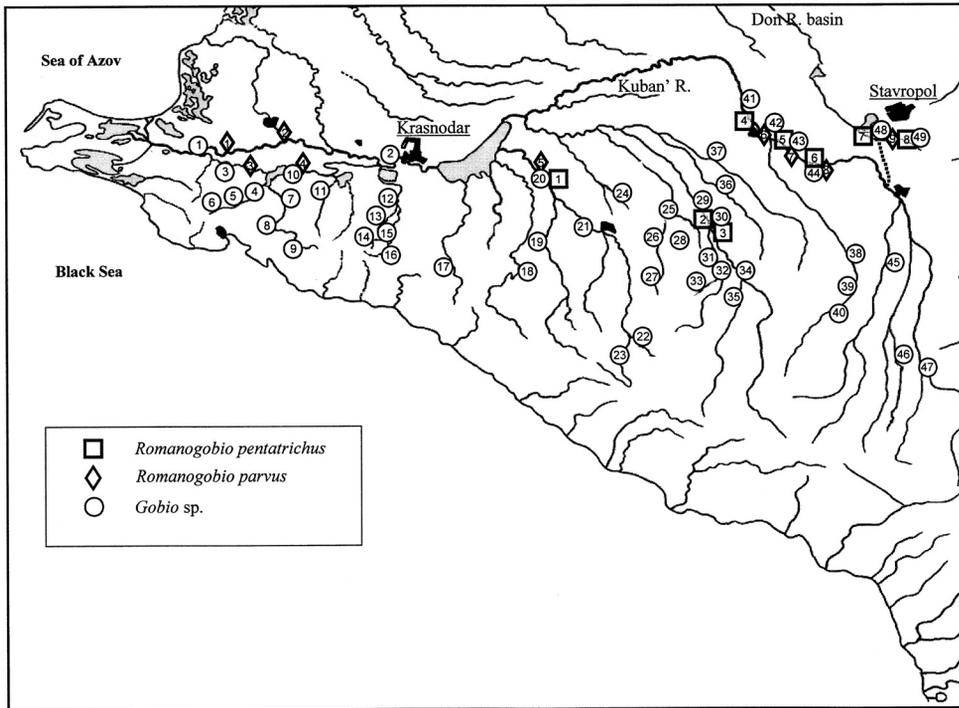


Fig. 1. The Kuban River drainage area and localities of the examined samples of *Romanogobio pentatrichus*, *R. parvus*, and *Gobio* sp.

R. pentatrichus (1909, 1992–2001): 1 – Belaya R. downstream from Belorechensk Dam; 2 – Laba R. 5 km downstream from Labinsk; 3 – ZIN 15312 (holotype), Laba R. at Labinskaya; ZIN 15309 (14 paratypes), 51152; 4 – Kuban R. at Armavir; ZIN 51151 (5 paratypes); 5 – Kuban R. at Marjino; 6 – Kuban R. at Uspenskoye; 7 – Bol’shoy Egorlyk R., Don R. system, upstream from mouth of Nevinnomyssk Canal (8.07.1999); 8 – Bol’shoy Egorlyk R., at Temnolesskaya (30.04.2000).

R. parvus (1984–2001): 1 – Lower Kuban R. at Korzhhevsky; 2 – Protoka R., Lower Kuban R. system; 3 – Adagum R.; 4 – Aushed R.; 5 – Belaya R. downstream from Belorechensk Dam; 6 – Kuban R. at Armavir; ZIN 51153 (15 paratypes), ZISP 51153; 7 – FSJF 32 (2 specs.), Kuban R. at Marjino upstream from confluence with Urup R.; 8 – Kuban R. at Uspenskoye upstream from Armavir; ZIN 52791 (holotype), ZIN 52792 (14 paratypes), FSJF (5 paratypes); 9 – Bol’shoy Egorlyk R., upstream from mouth of Nevinnomyssk Canal (8.07.1999).

Gobio sp. (1909, 1981–2001): 1 – Lower Kuban R. at Korzhhevsky; 2 – ponds at Elizavetinskaya (near Krasnodar); 3 – Adagum R.; 4 – Adagum R. at Krymsk; 5 – Saukdere R., tributary of Adagum R.; 6 – Neberdjay R., tributary of Adagum R.; 7 – Abin R. at Abinsk; 8 – Abin R. near Shapsugsakaya; 9 – Upper Abin R. at Erivanskaya; 10 – canal near Aushed R.; 11 – Khabl R. at Kholmskaya; 12 – Middle Aphips R. at Smolenskaya; 13 – Upper Aphips R. at Krepostnaya; 14 – Upper Aphips R. upstream from Krepostnaya; 15 – Beseps R., tributary of Shebsh R., Aphips R. system; 16 – Shebsh R. at Tkhamakha; 17 – Psekups R. at Phanagoriyskoe; 18 – Pshysh R. at Khadyzhensk; 19 – Pshekh R. at Apsheronk; 20 – Belaya R. downstream from Belorechensk Dam; 21 – Belaya R.; 22 – Dakh R., tributary of Belaya R., at Dakhovskaya; 23 – Upper Belaya R. at Khadzokh and Nickel biological station; 24 – Kelermes R., a tributary of Giaga R., Laba R. system; 25 – Fars R., a tributary of Laba R., at Yaroslavskaya; 26 – Kuzhora R. at Kuzhorskaya; 27 – Upper Fars R. at Novosvobodnaya; 28 – Psephir R. at Khamketinskaya; 29 – Laba R., 5 km downstream from Labinsk; 30 – stream Nevodka, tributary of Laba R. at Labinsk; 31 – Khodz’ R., a tributary of Laba R., at Khodz’; 32 – Khodz’ R. at Pervomayskiy; 33 – Gubs R., a tributary of Khodz’ R., at Gubskaya; 34 – Laba R. at Kaladjinskaya; 35 – Malaya Laba R. at Shedok; 36 – stream Chamlyk, a tributary of Kuban R., at the bridge on the road Labinsk-Armavir; 37 – stream Sinyukha, a tributary of Chamlyk R., at Novoalekseevskaya villillage; 38 – Urup R. at Otradnaya; 39 – Urup R. at the road bridge upstream from San’kov; 40 – side arm of Urup R. at Udobnaya; 41 – Kuban R.; 42 – Kuban R. at Armavir; 43 – Kuban R. at Mar’ino.; 44 – Kuban R. at Uspenskoye; 45 – Bol’shoy Zelenchuk R. at Zelenchuk-Mostovoy; 46 – Kardonik R., a tributary of Kuban R.; 47 – Teberda R. at Karachaevsk; 48 – Bol’shoy Egorlyk R. upstream from mouth of Nevinnomyssk Canal; 49 – Bol’shoy Egorlyk R. upstream from Temnolesskaya.

the Kuban River drainage – in the middle part of the main course of the Kuban River between Armavir and Uspenskaya station. The species was only found in Middle Kuban between Armavir and Uspenskoie, in Laba at Labinsk and in Belaya downstream from Belorechensk (Fig. 1). This may indicate that the species possesses a relatively restricted range. In all the localities, it is sympatric (and syntopic) with *R. parvus* and the Kuban common gudgeon *Gobio* sp.

Besides, *R. pentatrichus* was recorded in the Don River drainage area, in the Egorlyk River where it penetrated through the Nevinnomyssk Canal (P o z n j a k & S p o d a r e v a 2001). *R. pentatrichus* commonly inhabit sandy-rocky sites with considerable current.

Romanogobio parvus Naseka et Freyhof, 2004

Romanogobio parvus possesses a somewhat larger range than *R. pentatrichus* (Fig. 1). The authors have obtained specimens of this gudgeon from the lower Kuban River (Protoka River and lower part of the Kuban near Korzhevsky hamlet), which confirms its previous presence in the lower part of the river. It was collected also in tributaries Adagum, Aushed, Belaya (1980s). However, in the recent years it was not recorded from these localities. It should be noted that its abundance in different areas varies greatly. The maximum number of specimens was caught in the middle current of the Kuban between Armavir and Uspenskaya (as a rule, sympatrically with *R. pentatrichus*). In collections of the previous years from different localities *R. parvus* is represented by single specimens. It is interesting to note that in recent (2001) collections of gudgeons from the Egorlyk (the Don River system) *R. parvus* was found together with *R. pentatrichus*. Thus we can now speak of invasion of these Kuban gudgeons into the Don River drainage area. Like *Romanogobio pentatrichus*, *R. parvus* seem to be a stenotopic inhabitant of the large, fast to moderately flowing main rivers, inhabiting sandy-rocky sites.

Gobio sp.

The common gudgeon from River Kuban was compared with many other samples from all over the range of *Gobio gobio* sensu lato including all adjacent river systems. Preliminary morphological examination revealed exclusively high heterogeneity of external morphological and osteological characters within *G. gobio* s. l. complex that will require a thorough revision of the taxonomic status of many subspecies or “forms”. The Kuban common gudgeon, which was commonly included into *G. gobio lepidolaemus* Kessler, 1872 because of its scaled throat and short barbel, is different from the latter by some meristic characters and scale pattern as well as from the common gudgeons from the neighboring areas (Western Transcaucasia and the Don system). The Kuban common gudgeon is morphologically heterogenous and, probably, one more species is involved.

Numerous collections of this gudgeon at nearly all stations of the expedition confirm the data of previous authors on its considerable predominance over other gudgeons. The *Gobio* sp. possesses the greatest distribution range among gudgeons of Kuban. It is widely spread in nearly all tributaries and the main course of the Kuban. It was found (from west to east) in the Adagum, Abin, Khabl, Ubin, Aphips, Psekups, Pshish, Pshekhha, Belaya, Laba, Urup, Bolshoy Zelenchuk, Malyi Zelenchuk. We suppose that the *Gobio* sp. found in the Bolshoi Egorlyk River is the same species as that inhabiting the Kuban.

Localities inhabited by *Gobio* sp. differ greatly in their characteristics and include an extremely wide range of biotopes. Therefore it is complicated to define unequivocally the habitat

preferences of this species. In some tributaries it was found in the upper parts, occupying so-called “trout sections” (e.g. in rivers Bolshoi Zelenchuk and Belaya) and in lower parts of the Kuban and tributaries it occurs in localities with slowly running waters and high summer temperatures.

In conclusion it should be stated that the opinion about wide distribution of *Gobio* sp. is in fact confirmed by material of this work. It can be stated with certainty that *R. pentatrichus* is endemic in the Kuban River, occupying a quite restricted area in the Kuban drainage. *R. parvus* has a somewhat wider distribution than *R. pentatrichus*, but is low in numbers, and at present its range is restricted to the boundaries of distribution of *R. pentatrichus*. The recent finding of the three Kuban gudgeon species in Bolshoi Egorlyk (Don River drainage) and their dispersal in the area of the river close to the outlet of the Nevinnomyssk Canal points to their recent appearance in this drainage as invasive species.

A c k n o w l e d g e m e n t s

The study is partly supported by the Russian Foundation for Basic Research, grants 02-04-49993 and 05-04-49219, the Russian Ministry of Industry, Technologies and Science (NSh-1668.2003.4), and a field grant from the Institute of Freshwater Ecology and Inland Fisheries (Berlin).

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