Neotype designation for *Salmo spurius* Pallas, 1814 (Teleostei: Salmonidae)

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Bogutskaya, N.G. & Dorofeyeva, E.A. 2007. Neotype designation for *Salmo spurius* Pallas, 1814 (Teleostei: Salmonidae). *Zoosystematica Rossica*, **16**(1): 135-137.

The original description of *Salmo spurius* Pallas, 1814 is based on Pallas's own material and the literature sources, which include at least two species-group taxa. A specimen from the Gulf of Finland, deposited at Zoological Institute, St. Petersburg, is designated as neotype of *S. spurius*. As result of this designation, the unused name *S. spurius* becomes a junior synonym of *S. trutta trutta* Linnaeus, 1758 and does not threaten the current nomenclature of trouts from the Caspian Sea basin.

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The systematics and nomenclature of numerous trouts (marine, riverine and brook stocks) from *Salmo trutta* s.l. species complex (Salmonidae, Teleostei) are still far from being settled. Kottelat (1997) reviewed in details a number of systematic and nomenclatural hypotheses, and made a conclusion that "the classical trout" *Salmo trutta* s.l. might have to be divided into different species. *Salmo trutta* Linnaeus, 1758 will be kept for the migratory trout of Atlantic and western Arctic basins (Atlantic Ocean from the Minho drainage northwards, North Sea to Kara Sea) while several older names would be re-used, such as *Salmo lacustris* Linnaeus, 1758 for the trout of the Great European Lakes and *Salmo labrax* Pallas, 1814 for the Black Sea trout. Kottelat (1997) showed that each of these species itself involves several tentative synonyms, which may be distinct species.

Linnaeus (1758: 308) described *Salmo trutta* based on Linnaeus (1746: 116, n. 308), Artedi (1738: gen. 12, syn. 14, spec. 48) and Gronovius (1756: 2, n. 164, locality: Rhine near Basel) with the type locality as "in fluviis Europae". Artedi based his account on Willughby (1686: 193), Ray (1713: 63, locality: Northumbria) and material from Sweden. A neotype was designated (Fricke, 1999) and then withdrawn (Fricke, 2000), since the designation was considered to be not sufficiently in accordance with Articles 75b and 75d of the International Code of Zoological Nomenclature, 3rd edition. Until a neotype is validly designated, the nomenclature of *Salmo trutta* will be somewhat uncertain, but the common taxonomic practice unambiguously links *Salmo trutta* s. str. with trout from the eastern Atlantic basin.

As to the eastern Caucasian and western Asian lineages, over 12 available names exist, and at least five of them are considered by different authors (e.g. Berg, 1948; Salmanov & Dorofeyeva, 1990; Dorofeyeva, 1998; Bogutskaya & Naseka, 2004) to be valid subspecies or species. These are the followings (ZMMU, Zoological Museum of Moscow University; ZIN, Zoological Institute, St. Petersburg):

Salmo oxianus Kessler, 1874: 35, Pl. 5 (fig. 21) (Darmut, tributary of Kyzyl-Su R. in upper Amu Darya R. system, Aral Sea basin); lectotype, ZMMU P-833, designated by Salmanov & Dorofeyeva (1990: 818);

Salmo caspius Kessler, 1877: 62, Pl. 2 (fig. 15) (lower Kura R. near Bozhii Promysel Fishery, Caspian Sea basin); no lectotype or neotype designated; location of syntypes unknown;

Salmo trutta aralensis Berg, 1908: 317 (Aral Sea near Amu Darya R. mouth); holotype ZIN 14418;

Salmo trutta ezenami Berg, 1948: 253 (Eizenam [= Ezenam, Kezenoy-am] Lake, Daghestan, subterranean connection to Caspian Sea basin); syntypes ZIN 28356 (11);

Salmo trutta ciscaucasicus Dorofeyeva, 1967: 15, figs 4, 5 (Keyranchay R., Daghestan, Caspian Sea basin); holotype ZIN 26244.

Thus, three of these available names refer to trouts of the Caspian Sea. Based on literature data available, they may represent three distinct species: *Salmo ezenami* endemic to Kezenoy-am Lake, *S. caspius* migrating for spawning to the

Kura River and other rivers of south Caspian Sea and *S. trutta ciscaucasicus* entering rivers of north and western middle Caspian (to the north of the Main Caucasian Range).

However, there is one more available name, which is partially involved in the nomenclature of the Caspian trouts: *Salmo spurius* Pallas, 1814: 343. This name was almost never used as a valid one, and definitely not used so in the 20th century. It is based on the material apparently seen by Pallas and on a number of literature sources. The locality is given as rivers of Russia with an express mention of the Neva and the Terek ("In fluviis Rossiae …; Lochovina Nevensi …; etiam Terek fl. adscendit"). "Rivers of Russia" include rivers within the frontiers of the Russian Empire in 1770s-1790s (Barg et al., 1994), which means rivers of the northern Black Sea, Sea of Azov and northern Caspian Sea including the Kuban and Terek in the south, and of the eastern Baltic Sea, Barents and White seas in the north.

The literature sources include *Salmo eriox* Linnaeus (1766: 509, sp. 2), Willughby (1686: 193, the Grey, Northern England), Ray (1713: 63, the Gray), Pennant (1776: 258, the Grey), and *Salmo salaroï des* of Güldenstädt (manuscript).

Güldenstädt travelled to the Eastern Caucasus in 1770. He visited the Terek River and Tiflis (now Tbilisi), and spent a long time travelling through Kakhetia, Ossetia and Imeretia (historical provinces of the modern Georgia); he collected an extensive zoological material. *Salmo eriox* by Linnaeus is based, in its turn, on Artedi (1738: gen. 12, syn. 23, Sweden and England) and Linnaeus (1746: 346, Sweden). "The Grey" of Willughby is based on material from England since he describes "piscium Anglicorum". "The Grey" by Pennant is based on Willughby (1686: 193), Ray (1713: 63), Artedi (1738: syn. 23), Linnaeus (1766: 509) and Linnaeus (1746: 346). "Salmo cinereus aut griseus" of Artedi is based on Jonstonus (1649), Ray (1713: 63) and Willughby (1686: 193). It is obvious that the type series of *Salmo spurius* does include fishes from the basins of eastern Atlantic Ocean and northern European seas.

No specimens personally examined by Jonstonus, Artedi, Willughby, Ray or Pennant is known to be extant in any museum. Linnaeus's specimens which may refer to his *Salmo eriox* are also not known (Linnaeus, 1754, 1764; Fernholm & Wheeler, 1983; Wheeler, 1985, 1989).

Berg (1948: 242) provided the evidence that Pallas personally saw the trout in the Volga drainage (Kama R. at Sarapul in April 1773) and supposed that Pallas's data for *S. spurius* from Terek came only from Güldenstädt (Berg, 1948: 247). Respectively, he had considered the name *S. spurius* in part a synonym of *Salmo trutta caspius* Kessler, 1877 before the use of this name became limited by only South Caspian trout (Kura trout), since Middle and North Caspian trout (Terek and Volga trout) was described as a new subspecies *S. trutta ciscaucasicus*. It was later assumed (Kottelat, 1997: 143) that the type locality of *S. spurius* was "restricted" by Berg as Terek River, but according to the International Code of Zoological Nomenclature, 4th edition, such a restriction can be made only by lectotype or neotype designation. The type locality of *S. spurius* being the sum of the localities of the syntypes (Art. 73.2.3 of the Code) is, thus, localities of all specimens on which Pallas's, Linnaeus's, Willughby's, Ray's and Pennant's accounts are based. This area is inhabited by a number of allopatric *Salmo* species and subspecies, and Pallas's original description of *S. spurius* is in fact based on at least two subspecies, *S. trutta trutta* (seas of east Atlantic Ocean) and *S. trutta ciscaucasicus* (north and middle Caspian Sea basin).

Pallas had not designated a type for his *S. spurius* and no syntypes of the species personally seen by him were known (Svetovidov, 1978, 1981).

In order to definitely link the name *S. spurius* to a single subspecies and to serve the interests of stability of nomenclature of Caspian trouts, we now designate 263 mm SL specimen (ZIN 40749), from Gulf of Finland, collected in 1932, as neotype of *S. spurius* Pallas, 1814. This designation satisfies requirements of Art. 75.3 of the Code. Accordingly, the unused name *S. spurius* becomes a junior synonym of *S. trutta trutta* and does not threaten the current nomenclature of Caspian trouts.

Acknowledgements

We are pleased to thank I.M. Kerzhner for commenting on the manuscript. The study is supported by a grant from the Russian Foundation for Basic Research (no. 05-04-49218).

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Received 17 May 2007