

THREATENED FISHES OF THE WORLD: *Salmo obtusirostris salonitana* (KARAMAN, 1926) (SALMONIDAE)

T. Tomljanović, T. Treer, I. Aničić, R. Safner, N. Šprem¹

Summary

Soft-muzzled trout is an endemic vulnerable species protected in Croatia. It is endangered by river regulation, industrial pollution and above all by a very restricted distribution and hybridization with foreign trout. Urgent habitat protection with bans on further regulation of the watercourse is suggested. Captive breeding of the fish and translocation to a new habitat should be initiated. Stocking with foreign trout should also be banned.

Key words: Soft-muzzled trout, *Salmo obtusirostris salonitana*, conservation

COMMON NAMES

Solinska mekousna pastrva (Cro); Soft-muzzled trout, Adriatic trout (Eng) (Fig 1).

CONSERVATION STATUS

IUCN Red List: endangered (Crivelli, 2006); Croatia: listed as vulnerable by the Red Book of Freshwater Fish of Croatia (Mrakovčić et al., 2006).

IDENTIFICATION

D IV/11, A IV/9, V II/8, P I/12, C 19, L1. scales 100 (20/17)105. Pyloric caeca 61-81. Maximum weight of the species was up to 4 kg, usually up to 2 kg (Vuković and Ivanović, 1971). The largest registered specimens of this subspecies in the River Jadro and Žrnovnica were 29 cm SL (350 g) and 33.5 cm SL (425 g), respectively. Maximum SL obtained by Von Bertalanffy growth function were 34.99 cm and 48.68 cm, respectively (Treer et al., 2003; 2008). The front of a rounded head is short and fleshy. Teeth are small, a little out of soft lips. The upper jaw is short and wide and reaches only to the middle of the eye. The back is grayish-yellow, without any dots. Black dots are visible

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only on the front side of the body and it has a red stripe along its body. Traces of dark and red spots, which are not present on other fins, can be seen on spinal fins (Vuković and Ivanović, 1971).



Fig 1: Salmo obtusirostris salonitana (photo by Tea Tomljanović)

Slika 1: Salmo obtusirostris salonitana (fotografirala Tea Tomljanović)

DISTRIBUTION

This subspecies occurs only in two short rivers in Croatia - the Jadro and Žrnovnica (Treer et al., 2003). Its existence in the River Vrljika (Mrakovčić et al., 2006) is denied by Snoj et al. (2008).

ABUNDANCE

Previously quite abundant, the population has been reduced in recent years (Mrakovčić et al., 2006).

HABITAT AND ECOLOGY

Inhabits peaceful flows of cold, clear and oxygen-rich rivers. It feeds on *Gammarus* sp., small snails and insects (Vuković and Ivanović, 1971).

REPRODUCTION

Spawning is in March, in the upper part of the rivers, above the gravelly bottom (Vuković and Ivanović, 1971). Spawning begins in the third year and full spawn in the fourth year of life (Treer et al., 2003).

THREATS

It is endangered by river regulation, industrial pollution and above all by a very restricted distribution (Mrakovčić et al., 2006). Hybridization with foreign trout is noticed (Snoj et al., 2007).

CONSERVATION ACTION

This subspecies is protected by law in Croatia, meaning that capture is strictly regulated.

CONSERVATION RECOMMENDATIONS

Urgent habitat protection with bans on further regulation of the watercourse is suggested. Water quality enhancement is strongly recommended. Stocking with foreign trout should also be banned. Captive breeding of the fish and education of local people should be initiated. Translocation to a new habitat, such as the River Ljuta near Dubrovnik.

REMARKS

Earlier considered as a distinct genus *Salmothymus* (Vuković and Ivanović, 1971). According to Kottelat and Freyhof (2007) all subspecies of *Salmo obtusirostris* from different drainages are tentatively considered as one species. Sušnik et al. (2007) clearly identified differences between soft-muzzled subspecies from the River Jadro and Neretva .

Sažetak

UGROŽENE RIBE SVIJETA: *Salmo obtusirostris salonitana* (KARAMAN, 1926) (SALMONIDAE)

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Mekousna pastrva je endemska osjetljiva riblja vrsta, zakonom zaštićena u Republici Hrvatskoj. Ugrožena je zbog regulacije vodotokova rijeka, industrijskih onečišćenja, no iznad svega zbog ograničenog areala rasprostranjenosti te križanja s potočnom pastrvom. U radu se predlaže zaštita staništa mekousne pastrve, zabrana daljnje regulacije vodotoka, zatim uzgoj i translokacija u novo stanište. Ukazuje se i na zabranu poribljavanja s potočnom pastrvom.

Ključne riječi: Mekousna pastrva, *Salmo obtusirostris salonitana*, zaštita

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REFERENCES

- Crivelli, A. J. (2006): *Salmo obtusirostris*. In: IUCN 2009. IUCN Red List of Threatened Species. Version 2009.2. <www.iucnredlist.org>.
- Kottelat, M., Freyhof, J. (2007): Handbook of European Freshwater Fishes. Kottelat, Cornol, Switzerland and Freyhof, Berlin, Germany, pp. 423.
- Mrakovčić, M., Brigić, A., Buj, I., Čaleta, M., Mustafić, P., Zanella, P. (2006): Red Book of Freshwater Fish of Croatia. Ministry of Culture, State Institute for Nature Protection, Republic of Croatia, Zagreb, pp. 142. (in Croatian with English Introduction).
- Snoj, A., Bogut, I., Sušnik, S. (2008): Evidence of a genetically distinct population of Vrljika softmouth trout *Salmo obtusirostris* Heckel evolved by vicariance. *Journal of Fish Biology*, 72, 8, 1945-1959.
- Snoj, A., Razpet, A., Tomljanović, T., Treer, T., Sušnik, S. (2007): Genetic composition of the Jadro Softmouth trout following translocation into a new habitat. *Conservation Genetic*, 8, 5, 1213-1217.
- Sušnik, S., Weiss, S., Odak, T., Delling, B., Treer, T., Snoj, A. (2007): Reticulate evolution: ancient introgression of Adriatic brown trout mtDNA in softmouth trout *Salmo obtusirostris* (Teleostei: Salmonidae) *Biological Journal of Linnean Society*, 90, 139-152.
- Treer, T., Aničić, I., Safner, R., Odak, T., Piria, M. (2003): Note on the growth of endemic soft-muzzled trout *Salmothymus obtusirostris* translocated into a Dalmatian river. *Biologia*, Bratislava, Section Zoology, 58, 5, 999-1001.
- Treer, T., Aničić, I., Safner, R., Odak, T., Piria, M. (2008): Growth and condition of endemic trout *Salmothymus obtusirostris* in Jadro, a Dalmatian river. Pages 1771-1776 in J. L. Nielsen, J. J. Dodson, K. Friedland, T. R. Hamon, J. Musick, and E. Verspoor, editors. *Reconciling fisheries with conservation: proceedings of the Fourth World Fisheries Congress*. American Fisheries Society, Symposium 49, Bethesda, Maryland.
- Vuković, T., Ivanović, B. (1971): Slatkovodne ribe Jugoslavije. (Freshwater Fishes of Jugoslavija). Zemaljski muzej BiH, Sarajevo, pp. 130. (in Serbian).

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