

**FIRST RECORD OF THE GIANT PANGASIUS, *PANGASIUS SANITWONGSEI*
(ACTINOPTERYGII: SILURIFORMES: PANGASIIDAE),
FROM CENTRAL ANATOLIA, TURKEY**

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Abstract. Occurrence of ornamental freshwater fishes in aquatic environments has been increasing in recent years. In this study, we reported incidental wild-caught adult specimens of giant catfish, *Pangasius sanitwongsei* Smith, 1931, from the Sakarya River Basin in central Anatolia. This record is new for Turkish freshwaters and indicates the need for public awareness on illegal fish release and introductions as well as for preparing a sound regulation for the aquarium trade.

Keywords: *Pangasius*, new record, ornamental fish, aquarium trade, Turkey

INTRODUCTION

Aquarium trade has been regarded as one of the important pathways for introduction of non-indigenous species (Copp et al. 2005, Rixon et al. 2005, Nunes et al. 2015). In parallel with the global trend towards the trade network expansion, frequency of occurrence of non-native ornamentals in natural habitats has been increasing. For example, four freshwater ornamental fish species have been reported within last few decades in Turkey: goldfish, *Carassius auratus* (Linnaeus, 1758) (see Innal and Erk'akan 2006), red piranha, *Pygocentrus nattereri* Kner, 1858 (see Tarkan 2006), vermiculated sailfin catfish, *Pterygoplichthys disjunctivus* (Weber, 1991), and Amazon sailfin catfish, *Pterygoplichthys pardalis* (Castelnau, 1855) (see Emiroğlu et al. 2016). Of the above-mentioned fishes only the goldfish and sailfin catfishes have been established.

Fishes representing another genus of non-native ornamental species—the *Pangasius*—often referred to as the shark catfishes, or pangas, are native to South and Southeast Asia. Even though several species of pangas are frequently imported to Turkey as popular aquarium fishes only one of them, the striped catfish, *Pangasianodon hypophthalmus* (Sauvage, 1878), has been confirmed in the current literature (Türkmen et al. 2001). The pangas have also become one of the new trends in the food market beside their ornamental purpose and several companies

have also imported its fillets in many European countries (Rehbein 2008, Little et al. 2012). For example, the farming of striped catfish, *P. hypophthalmus*, began by the end of 2008 in Vietnam as a commercial freshwater species that is now a significant component of global whitefish supplies (Anonymous, unpublished**). The so-called giant pangasius or dog-eating catfish, *Pangasius sanitwongsei* Smith, 1931, is another popular species native to the Chao Phraya and Mekong basins in Cambodia, China, Laos, Thailand, and Vietnam (Hogan et al. 2009). The species has been assessed as critically endangered since 2009 due to the several threatening factors including overfishing, river damming and increased shipping activities. The increasing popularity of pangas in both aquarium trade and food market may also lead to the records from outside of their native range. For example, two specimens of *P. hypophthalmus* were recorded in Iraq for the first time in 2011 (Khamees et al. 2013). In 2012, one specimen of *P. hypophthalmus* was recorded in Lake Kinneret from Israel (Snovskiy and Golani 2012) and one specimen of *P. sanitwongsei* in Breede River from Africa (Mäkinen et al. 2013).

In this study we reported the finding of *Pangasius sanitwongsei* which constitutes the first record for the natural freshwaters of Turkey. Pangas' culture has not yet begun in Turkey except small-scale and unsuccessful trials in Adana and Muğla (southern Turkey). Although there is

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** Anonymous 2009. Briefing document on the current status of Vietnam's fisheries sector. Report prepared by the NAFIQAD, Post Harvesting and Marketing component under the Fisheries Sector Programme Support Phase II (FSPS II) for the Eighth FSPS II National Steering Committee Meeting, Pp. 50, Hanoi, 17 June 2009. [In Vietnamese and English].

no legal frame in Turkey, regulating trials of new species for aquaculture purposes. Therefore, we hypothesized that they have been aquarium escapees most likely released by aquarium hobbyists.

MATERIAL AND METHODS

A total of four individuals of *Pangasius sanitwongsei* were captured from the Sariyar Reservoir in Central Anatolia (40.082°N, 31.652°E, Fig. 1). The reservoir is located in a deep valley and its surface area is 84 km² and the maximum depth is 90 m. All specimens were caught on 31 July 2017 by local fishermen. The individuals of *P. sanitwongsei* were captured from the littoral zone up to 5 m depth using gillnets of 45-mm mesh size by the fishermen who were fishing for carp. Three individuals were transferred to the laboratory in iceboxes. The fish specimens were identified up to the species level by examining morphological characteristics following Kottelat and Freyhof (2007) and diagnosed according to the characters given by Roberts and Vidthayanon (1991). Additional features taken into account were gill raker and vertebrae counts facilitated by X-ray photographing and finally dissecting. The material is deposited in the Hacettepe University Güler Ekmekçi Collection.

RESULTS

The largest specimen of *Pangasius sanitwongsei* was 53 cm in total length (TL) and 1300 g body weight (*W*) (Fig. 2), and the TL and *W* of all specimens ranged from 49 to 53 cm and from 1010 to 1300 g, respectively. In the first week of August anglers shared with us the photos of another panga individuals captured by a fishing rod from two streams, Yenice and Sarısu representing the same drainage. Yet, they could not be identified since the diagnostic characters were not clearly seen from the photos due to their poor quality.

Based on the species identification key provided by Roberts and Vidthayanon (1991), the specimens from the Sariyar Reservoir are most closely matched with *P. sanitwongsei* by the following characters (for a general view of the specimen see Fig. 2): gill rakers, 20–21; number of vertebrae, 48–49 (Fig. 3); obvious ray extensions (Figs. 2 and 3); two-lobbed swim bladder (Fig. 3); broader head and mouth with vomero-palatine teeth on a united single arch (Fig. 4); and the mouth width 17.0%–17.5% of standard length (mean 17.2%). The colour pattern is also in accordance with the diagnostic characteristics: head and the dorsal surface dark grey and getting lighter to pale white through the belly. Dark grey to black caudal fin and wide, dusty grey or black anal and dorsal fin margin.

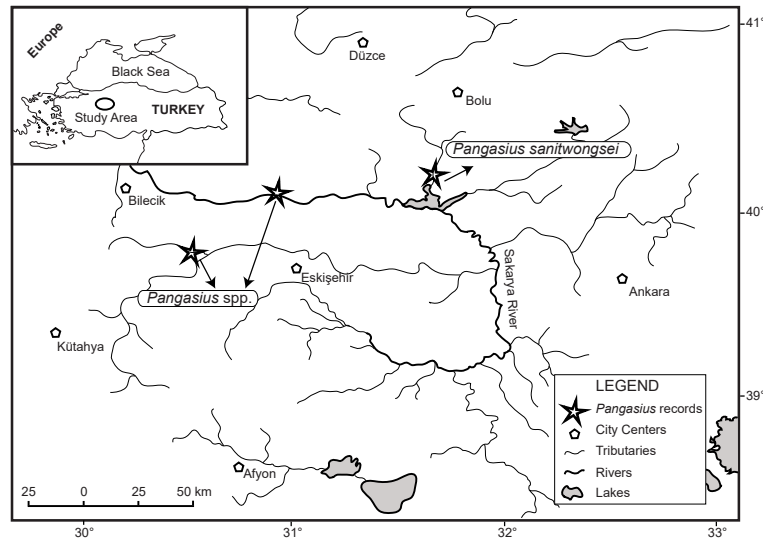


Fig. 1. Map showing the first records of *Pangasius* in Turkey



Fig. 2. *Pangasius sanitwongsei* from Sariyar Dam Lake, Turkey; 53 cm TL

DISCUSSION

Pangasius sanitwongsei can be distinguished from the majority of its congeners by having broad head and mouth and by its filamentous extensions located on the dorsal, anal, pectoral and pelvic fins. The individuals from the Sariyar Reservoir were easily identified based on these characteristics that are in accordance with the key points given for *P. sanitwongsei* by Roberts and Vidthayanon (1991), with the only exception being the vertebrae number slightly different from that key (48–49 vs. 50–52). This might be explained either by inter-population variability in vertebrae number or by rearing conditions, as it has long been known that the vertebrae number of fishes reared under artificial conditions may differ from those of their conspecifics living in natural waters (Barlow 1961). The other specimens captured from the Yenice and Sarısu streams could not be identified since we only had photos of poor quality. However, as far as they were seen, they probably belong to a *Pangasius* species other than *P. sanitwongsei* as no ray extensions could be seen. Recording more than one non-indigenous species of a genus in a river basin almost at the same time could only lead to the assumption that they come from a common or similar source. Moreover, capturing the *Pangasius* sp. specimens by anglers indicates their active foraging behaviour of those fish. The three invasive fish species such as *Clarias gariepinus* (Burchell,

1822); *Oreochromis niloticus* (Linnaeus, 1758); and *Pterygoplichthys* spp. (Emiroğlu 2011, Emiroğlu et al. 2016) have been reported to form established populations in the Sakarya River basin. The natural environment conditions in Turkey are, in general, not suitable for tropical ornamental fish except for some local, isolated warm water resources. In addition, panga species have very special and long migration pattern for reproduction (Baird et al. 2004). Captive breeding trials of *P. hypophthalmus* failed in Adana and Muğla due to the low winter temperatures. Accordingly, we presumed that the spread of *Pangasius* spp. is not at an alarming state at least in the southern part of Turkey (Suat Dikel pers. comm.), but potential invasiveness of panga should also be considered.

Pangas are ranked among the largest freshwater fishes in the world reaching up to 3 m length and 350 kg weight (Roberts and Vidthayanon 1991, Stone 2007). Many people in Turkey release such large ornamental fish species into natural habitats because upon the purchase they are not informed about the potential of the fish for reaching eventually large size. We believe that the public awareness on illegal fish release and introductions must be raised. Regulating fishery laws and legislation for aquarium trade through performing risk assessments is important. Ornamental fishes with aquaculture potential should be assessed as well in terms of their possible risks before permitted to be farmed.

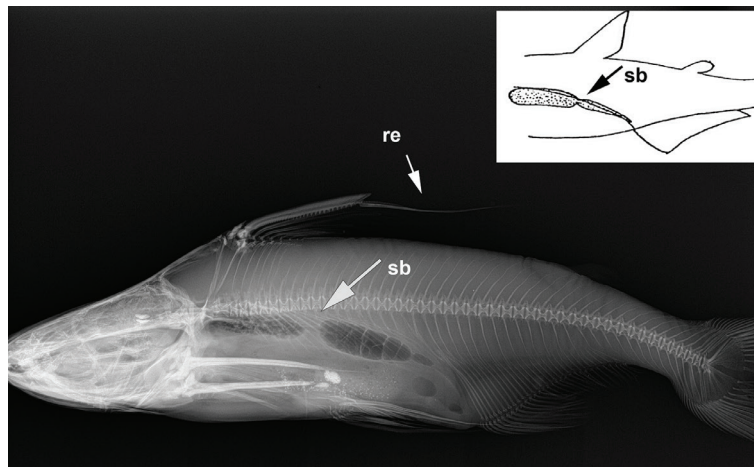


Fig. 3. Radiographic image of *Pangasius sanitwongsei* from Sariyar Dam Lake, Turkey; 53 cm TL; sb = swim bladder; re = ray extension



Fig. 4. Some diagnostic characteristics from the head region of *Pangasius sanitwongsei* from Sariyar Dam Lake; vp = vomero-palatine teeth, hv = head from the ventral side, hd = head from the dorsal side; Images were re-drawn and/or modified from Roberts and Vidthayanon (1991)

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