

**FIRST RECORD OF THE LEOPARD PLECO, *PTERYGOPLICHTHYS GIBBICEPS*
(ACTINOPTERYGII, LORICARIIDAE) IN THE BRDA RIVER IN THE CENTRE
OF BYDGOSZCZ (NORTHERN POLAND)**

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Abstract. The presently reported finding of leopard pleco, *Pterygoplichthys gibbiceps* (Kner, 1854) (Loricariidae), in open waters of the Brda River in the centre of Bydgoszcz, constitutes the first record of a south-American loricariid fish species in Poland. The specimen found is described and illustrated. The finding is discussed in association with other alien species sightings in Poland. The described leopard pleco is possibly the next example of an emerging alien fish species in inland Polish waters.

Keywords: fish, leopard pleco, exotic species, alien species, inland waters, Poland

The leopard pleco, *Pterygoplichthys gibbiceps* (Kner, 1854), is a demersal species that belongs to Loricariidae, the largest (684 species and 92 genera) family of the order Siluriformes (cf. Nelson 2006). This species naturally inhabits inland waters of South America, mainly in the middle stretch and the upstream section of the Orinoco and Amazon rivers that flow through Venezuela, Brazil, and Peru (Armbruster and Page 1993, Weber 2003). The main food source of the nocturnal Leopard pleco are algae. Its favourite water temperature range is 23–27°C, acceptable pH value is between 6 and 8, and water hardness from 5 to 19 dH. This species has high market value as an aquarium fish and can be found in aquaria worldwide.

On 11 September 2006, Mr. Adam Mendelewski, a local angler on the Brda River, captured a specimen of an unknown fish from the river near the Siedlecka Street (Bydgoszcz) and brought it to the attention of the Polish Anglers Association. The fish was caught 1.9–2.1 m below the water surface and 7 m from the shore. The water temperature that day was 7°C and a *Dendrobena* (composting worm) was used as a natural bait. The specimen weighing 732 g was identified as a representative of genus *Pterygoplichthys* Gill 1858 (= *Glyptopterichthys*) using taxonomic keys of Weber (1992) and Page et al. (1996) (Fig.1). Histological analyses revealed immature male

gonads. The digestive tract was filled with fragments of undigested leaves. According to Weber (1991, 1992) species of *Pterygoplichthys* are large loricariids that have large dorsal fins with nine or more (usually 10+) dorsal-fin rays. In the laboratory of the Division of Fish Systematics morphological measurements were made to the nearest 0.1 with the use of digital calliper. The colour pattern was generally dark brown with either darker spots or lighter spots or vermiculations. Abdomen almost completely covered in small plates (Fig. 2). Tail forked with the lower lobe longer than the upper. Five rows of plates on the abdomen side. The *Pterygoplichthys gibbiceps* group (*Glyptopterichthys* sensu Weber 1991, 1992 excluding *P. punctatus*) is easily recognized by having a large supraoccipital crest (Armbruster 2004) (Fig. 1).

Loricariids are commonly used for removing algae from the glass walls of fish tanks worldwide. Some of them escape on their own, but in some cases they are also deliberately released by people to local bodies of water. One of such cases was reported by Chavez et al. (2006) from the Philippines. According to Pimentel et al. (2005), 138 alien fish species have been introduced into open waters in the USA. In Poland, the increasing number of alien species sightings attracts attention of scientists, but recently also institutions responsible for the environment-

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Fig. 1. Leopard pleco, *Pterigoplichthys gibbiceps*, lateral view



Fig. 2. Leopard pleco, *Pterigoplichthys gibbiceps*, ventral view

related issues. The official report from a large-scale (country-wide) inventory of fisheries usage (and potential) of inland waters (Anonymous 2001, p. 22) stated: "...the revealed cases of introducing alien fish species into Polish inland waters are highly disturbing. At present, as determined by this inventory, in addition to 79 native fish species there are additional 23 alien fish species that

have been introduced. During this full-scale investigation inspectors revealed individual farms rearing alien species without necessary permissions from the Ministry of Agriculture and Rural Development..."

The above-mentioned 23 alien species are in general freshwater ones, described in the book "Freshwater Fishes of Poland" (Brylińska 2000). Some 30% of all Polish

freshwater fishes are introduced species. This situation, in Polish open waters, dynamically changes, because of the increasing number of intentional introductions and the increasing number of escapees from exotic species farms.

In the mid 20th century fishes like grass carp, *Ctenopharyngodon idella* (Valenciennes, 1844); silver carp, *Hypophthalmichthys molitrix* (Valenciennes, 1844); and bighead carp, *Aristichthys nobilis* (Richardson, 1845), were unintentionally introduced into Polish waters. The development and amelioration of culture technology in the 1990s resulted in several cases of acipenseriform fishes caught in open waters: Siberian sturgeon, *Acipenser baerii* Brandt, 1869; Russian sturgeon, *Acipenser gueldenstaedtii* Brandt et Ratzeburg, 1833; starry sturgeon, *Acipenser stellatus* Pallas, 1771; and Mississippi paddlefish, *Polyodon spathula* (Walbaum, 1792) (cf. Keszka and Stepanowska 1997, Krzykowski et al. 2001, Keszka and Heese 2003). Also other non-acipenseriform species, such as stone moroko, *Pseudorasbora parva* (Temminck et Schlegel, 1846), appeared in Polish inland waters (Witkowski 1991). It is very likely that the eastern mudminnow, *Umbra pygmaea* (DeKay, 1842), and the exotic pirapitinga, *Piaractus brachypomus* (Cuvier, 1818) have been introduced by aquarists (Witkowski et al. 1995, Kostrzewa 1998, Więcaszek et al. 2007). The presently reported leopard pleco was probably released into the Brda River by aquarists as well. Another source of the introductions may be escapees from exotic fish farms. In Poland, the most convenient sites for such farms are the cooling water discharge outlets of power plants (Mr. Tomasz Jąkałski, personal communication). It is obvious that fish are more likely to escape from a cage culture than from a pond. It is estimated, however, that only few out of numerous alien fish species reported from Poland, can be considered invasive, because only some of them are capable of having a fertile offspring and of settling new places. Highly spectacular are cases of species that came from foreign river estuaries. A good example can be the Chinese sleeper, *Perccottus glenii* Dybowski, 1877, that has been continuously present in Polish waters since 1990 (Kostrzewa et al. 2004).

There has been an increase of the number of new alien fish species during the last 40 years, caused by rising human populations, migration, and environmental changes. Moreover, the globalization of the economy and the worldwide exchange of goods have also influenced exotic fish introductions to open waters in many countries (Bryan 1996). Research projects focused on invasive species are extremely important not only in the faunistic point of view but also in terms of potential threats for ecosystems, brought by alien fish species. A good example was a new species of an Amazon monogenean (*Mymarothecium viatorum*) described from the gills of a pirapitinga, *P. brachypomus* (an alien species to Polish waters), caught in the warm-water discharge canal of the Pomorzany Power Plant in Szczecin (Boeger et al. 2002). Parasites of ornamental fishes, known for their wider host specificity, may acquire new host species, among free-liv-

ing native fishes, in a newly invaded territory (body of water) (King and Cable 2007). Also, a relatively harmless parasite, upon transferring to a new territory may prove disastrous for the same fish species, without innate immunity to this particular pathogen. A good example is *Gyrodactylus salaris* (Monogenea) transferred from the Baltic Sea and whipping out entire populations of naïve Atlantic salmon from Norwegian rivers (Bakke et al. 2004). Another spectacular example can be the Asian nematode *Anguillicola crassus* infecting European eel (Taraschewski et al. 1998)

Introduced fishes must be considered competitors with regard to the utilisation of the habitat and food resources as well as to the potential risk of interference with the gene pool of the native species (Gessner et al. 1999).

The presently described leopard pleco specimen has been deposited at the Museum of Natural History, Wrocław University (MNHUW-FC 083 793). Moreover, a DNA sample was isolated from the muscle tissue in order to perform further genetic analyses.

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