

Rapid Communication

Occurrence of suckermouth armored catfish (Siluriformes, Loricariidae, *Pterygoplichthys*) in inland waters of Israel

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Abstract

Specimens of the South American suckermouth armored catfish genus *Pterygoplichthys* were recently (2011–2012) collected in inland waters of Israel, namely, Lake Kinneret (Sea of Galilee) and Nahal Amal ("Amal Stream"). Based mainly on color patterns, at least two different species, *P. disjunctivus* and *P. pardalis*, are included but there is a possibility that the wild populations are hybrids. These collections represent the first records of this genus in Israel. The source of these non-native catfish has not been confirmed; however, the presence of these species is likely the result of either aquarium release or escape from a fish hatchery that operated previously on the shores of Nahal Amal.

Key words: *Pterygoplichthys disjunctivus*; *Pterygoplichthys pardalis*; alien; freshwater; Israel

Introduction

In their comprehensive study of fish introduction to the freshwater system of Israel, Golani and Mires (2000) stated that nearly 40 non-indigenous fish species have been recorded in the Israeli natural freshwater environment, most of which have failed to establish sustainable populations.

The present paper reports the collection of specimens of two species of South American Suckermouth armored catfish of the genus *Pterygoplichthys* (Family: Loricariidae) from the inland freshwater system of Israel.

Materials and methods

On 4 April 2011 a catfish specimen 219 mm SL (285 mm TL), weighing 263.6 g, identified as *Pterygoplichthys disjunctivus* (Weber, 1991) (Figure 1) was collected in Nahal Amal (Amal Stream) (32°30'05"N; 35°27'38"E) using a 30 m long experimental beach seine. At the point of collection the Nahal Amal (Amal Stream) is 30

m wide with a slow current and a constant temperature of 24–26°C throughout the year; salinity is 2 psu. Water depth is 50–70 cm with a very deep muddy substrate. On 30 May 2012 another catfish species specimen, *Pterygoplichthys pardalis* (Castelnau, 1855), a 164 mm SL (232 mm TL), weighing 95.6 g, (Figure 2) was collected at the same site using the same collecting net. Both specimens were deposited at the Hebrew University Fish Collection (HUJ) and received the catalogue numbers HUI 20054 and HUI 20156, respectively.

On 16 January 2013, another specimen of *P. pardalis* 241 mm SL (312 mm TL), weighing 268.0 g, was captured along the southern coast of Lake Kinneret (Sea of Galilee) (32°42'21"N; 35°35'16"E) (salinity 0.5 psu) using a commercial trammel net of 82 mm mesh size, in a substrate densely covered with vegetation. It was kept alive for a week in an aquarium and later found dead and partially damaged. This specimen was also deposited at the Hebrew University Fish Collection and received the catalogue number HUI 20166.

Figure 1. Lateral and ventral view of *Pterygoplichthys* cf. *disjunctivus*, 219 mm SL, (HUJ 20054) from Nahal Amal, Israel. Photograph by D. Golani.



Figure 2. Lateral and ventral view of *Pterygoplichthys pardalis* 164 mm SL, (HUJ 20156) from Nahal Amal, Israel. Photograph by D. Golani.



Description of *Pterygoplichthys disjunctivus*
(based on HUJ 20054)

Body length 219 mm SL, 285 mm TL. Head length 58.5 mm. Body elongated with depressed armored head (26.7); body depth at dorsal fin origin (20.6), both expressed as percent of SL. Dorsal fin with 14 rays, the first minute, the second massive and the largest (24.5) the last is shortest (16.0). Short adipose fin (5.5), anal fin

with five rays, pectoral fin with six rays, the first largest and massive (35.4); ventral fin with six rays, the first massive (27.7), all percent of SL. Caudal fin emarginated with lower lobe longer and pointed. Eye moderate (19.3), wide interorbital (58.8), snout (68.2), inferior mouth with a sucking disk, with a single narrow buccal papilla and a single barbel (28.0) on each side. Wide distance between the barbels (55.5), all expressed as percent of head length. Body covered with 25 rows of armored plates.

Color: Dorsal surface of head grey with dark spotting, becoming reticulated from the eye margin to the vertical of 3–4 dorsal rays and alternating brown and dark brown chevron-shaped lines. Fins brown-grey with light grey dots. Ventral surface with white and brown reticulations.

Description of *Pterygoplichthys pardalis* (based on HUI 20156)

Body length 164 mm SL, 232 mm TL. Head length 39.5 mm. Body elongated with depressed head; height at origin of dorsal fin (20.6); armored head (29.1), both expressed as percent of SL. Dorsal fin with 14 rays, the first very small, the second is massive and the largest (24.5), the last shortest (16.0). Short adipose fin (5.5); anal fin with five rays; pectoral fin with six rays, the first largest and massive (33.5), all as percent of SL. Caudal fin with elongated upper and lower lobes. Eye moderate (22.3), wide interorbital (58.0), snout (70.4). Inferior mouth with a sucking disk with a single round and slightly wide buccal papilla and a single small barbel (20.0) on each side with a wide distance between them (46.8), all expressed as percent of head length. Body covered with 25 rows of armored plates.

Color: Head grey. Snout reticulated with large dark spots behind the eye, rest of body with slanted light-brown marks. Fins grey with light grey spots. Anterior rays of all fins and upper and lower rays of caudal fin with distinct alternating grey and off-white marks. Ventral surface with large dots. Several dots between the origin of pectoral and ventral fins join together to form elongated marks.

Discussion

The taxonomy of suckermouth catfishes is very complicated and identification to the specific level is complicated, due to intra-specific variation and possible natural and artificial hybridization (Hoover et al. 2004; Wu et al. 2011; Nico et al. 2012). The identification of the specimens in the present study followed Weber (1992), Armbruster and Page (2006), Chavez et al. (2006) and Wu et al. (2011). All showed that the main distinguishing characters differentiating *Pterygoplichthys disjunctivus* from *P. pardalis* is that the former has reticulate dark pattern on the ventral surface while the later has a spotted pattern. It is worth noting that our specimen HUI

20054 has a ventral surface pattern that closely resembles that of *P. disjunctivus* as shown by Wu et al. (2011), Figure 1, K and L. In this same Figure 1, B resembles the pattern of HUI 20156, which we have identified as *P. pardalis*. However, Armbruster and Page (2006) noted that adult *P. disjunctivus* do not have geometric patterns on the head while our specimen does, suggesting that it is a hybrid or a specific variation.

Suckermouth armored catfishes are native to South America and very popular aquarium fishes. They are known by many common names such as Pleco, Sailfishes, Janitor and Suckermouth Armored catfishes (Froese and Pauly 2013). Most are detritivores and herbivores; captive fish commonly clean aquariums by feeding on algae growing on the glass walls or rocks.

Species of the genus *Pterygoplichthys* are often confused with *Hypostomus* spp. (mainly *Hypostomus plecostomus*) from which they can be easily distinguished by having 11-14 dorsal rays vs. 7 rays in *Hypostomus* spp.

Pterygoplichthys spp. are native to South America. Due to their hardiness and popularity in the aquarium trade, armored catfishes have been introduced in many countries around the world, such as the U.S., the Philippines, Taiwan and Turkey (Hoover et al. 2004; Chavez et al. 2006; Yalçın Özdilen 2007; Nico et al. 2012; Wu et al. 2011). Hoover et al. (2004) and Nico et al. (2009) mention several harmful effects of *Pterygoplichthys* spp. in the U.S. that may threaten the receiving habitat, such as alteration of food availability for native species and changing the substrate structure by plowing the mud while foraging and excavation of spawning burrows.

In Israel *Pterygoplichthys* spp. are a very popular aquarium species. Their occurrence in Lake Kinneret is most likely the result of aquarium release or escapees. In addition to the specimen reported in the present study, the authors were informed of another four specimens collected in the Lake, two of which were observed by us but could not be obtained for this study. The Nahal Amal specimens probably originated as escapees from a fish hatchery located on the stream's shore that ceased operating in 2006. It should be noted that there is currently no direct connection between the two collections sites, namely, Nahal Amal and Lake Kinneret. Since the 1960's, the water of Nahal Amal has been collected and used for local irrigation and prevented from flowing further and therefore there is no connection between Nahal Amal and

the Jordan River or Lake Kinneret. Future collections in Nahal Amal may reveal whether the collected specimens described in this paper are in fact escapees from the hatchery; alternatively, the future collection of other younger specimens would indicate that a small population has been established at this site.

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