

BRIEF COMMUNICATIONS

First record of *Barbonymus schwanenfeldii* (Bleeker) in the Iberian Peninsula

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(Received 2 November 2006, Accepted 14 November 2007)

The South-east Asian cyprinid *Barbonymus schwanenfeldii* is recorded for the first time in the Iberian Peninsula from two specimens collected in the Guadiana River Basin in 2005. Their presence is probably due to release from aquaria.

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Key words: Cyprinidae; introduced species; Portugal; tinfoil barb.

The freshwater ichthyofauna of the Iberian Peninsula is extremely rich in small- to medium-sized endemic species. While new species are still being formally described, native species face a growing threat from habitat destruction and introduction of alien species (Elvira & Almodóvar, 2001). At least two-thirds of the freshwater and migratory fish species in Portugal and Spain are threatened (Doadrio, 2001; Cabral *et al.*, 2005). In the present paper the first observation of tinfoil barb *Barbonymus schwanenfeldii* (Bleeker, 1853) is reported in Iberia from Portuguese inland waters.

During 2005, Iberia experienced severe drought conditions which led to diminishing water levels in rivers and reservoirs. To reduce fish density in the Lucefécit Reservoir, Lucefécit River (Guadiana River basin, southern Iberia, 38°38'05" N; 7°24'30" W), c. 5000 kg of fishes were collected in August by professional fishermen using gillnets (CS2005, 2005). Species captured included the native *Barbus comizo* Steindachner, 1864 (*sensu* Doadrio, 1988), *Barbus sclateri*

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Günther, 1868 and *Chondrostoma willkommii* Steindachner, 1866 and the exotic *Cyprinus carpio* L., 1758, *Lepomis gibbosus* (L., 1758), *Micropterus salmoides* (Lacepède, 1802) and *Sander lucioperca* (L., 1758). Additionally, two specimens of an unreported exotic species (139.9 and 165.9 mm in standard length L_S) were collected and deposited in the collection of the Museu Bocage, Lisbon, Portugal (MB05-2193). Both specimens are males and show undeveloped gonads. These specimens were identified as *B. schwanenfeldii* (Fig. 1), following a combination of meristic criteria given by Bleeker (1853), Günther (1868) and Kottelat (2001) (Table I), as well as the body shape and colouration patterns noted below. The two specimens have a whitish margin and a black submarginal stripe along the length of both caudal-fin lobes, which distinguish them from any other *Barbonymus* species, including the similar *Barbonymus altus* (Günther, 1868) (Kottelat, 1998, 2001). Both specimens have a highly compressed, deep body [v. fusiform shape of *Barbonymus collingwoodii* (Günther, 1868) (Kottelat *et al.*, 1993)], and are greenish on the back and silvery on the ventral parts. The dorsal fin has a black blotch on the apex and all fins, except the pectorals, have an intense red colour [v. plain greyish to yellowish grey dorsal and caudal fins, and light orange anal and pelvic fins in *Barbonymus gonionotus* (Bleeker, 1850), although the tips of the anal and pelvic fins can sometimes be reddish in this species; Taki, 1974]. Additionally, both specimens have barbels longer than the eye diameter and snout shorter than the eye diameter, which are characteristic of *B. schwanenfeldii* (Bleeker, 1853; Günther, 1868).

Barbonymus schwanenfeldii is native to the Mekong and Chao Phraya basins (Cambodia, Laos, Thailand and Vietnam), the Malay Peninsula, Borneo and Sumatra (Kottelat, 2001). It is a schooling species growing up to 340 mm standard length (L_S) (Kottelat, 2001) with an omnivorous and detritivorous habit, feeding on aquatic and terrestrial macrophytes, filamentous algae, small fishes and occasionally insects (Siaw-Yang, 1988; Rainboth, 1996). It is a highly fecund species with females producing 7900–16 000 eggs for fish weighing 220–382 g (Christensen, 1992) and a spawning frequency of three times per year in a regulated river (McAdam *et al.*, 1999). In its natural range, adult specimens (>240 mm L_S) undertake upriver spawning migrations during the rainy season; larvae (<25 mm L_S) and juveniles (25–70 mm L_S) congregate in flooded forest and grassland, and lakes, respectively (Christensen, 1992).



FIG. 1. *Barbonymus schwanenfeldii* (MB 05-2193), male, 165.9 mm standard length, (L_S) Portugal, Luçefécit Reservoir, Luçefécit River, Guadiana River basin. Recently preserved specimen. Scale bar = 10 mm.

TABLE I. Meristic characters of two *Barbonymus schwanenfeldii* specimens collected in Lucefécit Reservoir, Portugal and congeneric species [*B. altus*, *B. collingwoodii* and *B. gonionotus* in Günther (1868)]. Range values given in the original description of *B. schwanenfeldii* (Bleeker, 1853) and subsequent references shown for comparison. Discrepancy between Bleeker's (1853) and the other authors' 'transverse series' scale counts probably reflects methodological differences, as Günther (1868) examined Bleeker's (1853) original material

	<i>B. schwanenfeldii</i>						
	Present study	Bleeker (1853)	Günther (1868)	Kottelat (2001)	<i>B. altus</i>	<i>B. collingwoodii</i>	<i>B. gonionotus</i>
Lateral line scales	36	35-36	35-36	—	32	30-32	29-30
Transverse series	7.5/4	14-15	7.5-8/4	7.5/—	8/7	6/4.5	6/5
scales							
Dorsal-fin rays	IV/9	IV/8-9	11	—	11	11	11
Pectoral-fin rays	I/14	I/14	—	—	—	—	—
Pelvic-fin rays	I/8	I/8	—	—	—	—	—
Anal-fin rays	III/6	III/5-6	8	—	7	8	9
Caudal-fin rays	18-19	19	—	—	—	—	—

—, No data.

For many years, the aquarium fish trade has been utilizing numerous wild species from South-east Asia (Ng & Tan, 1997), where >2100 species are recognized (Lundberg *et al.*, 2000). *Barbonymus schwanefeldii* is commercially important in the aquarium hobby trade, as well as for commercial aquaculture, subsistence farming, and is occasionally used as bait (Lambert, 1997). Recorded introductions of *B. schwanefeldii* include the south-east of the U.S.A. (Benson *et al.*, 2001) and the Philippines (ASAP, 1996), both associated with the ornamental fish trade, and the Ivory Coast, linked to aquacultural practises (Welcomme, 1988). In the northern Mediterranean region it was introduced in Italy, where it nonetheless failed to establish (Holčík, 1991). This species is sometimes seen in the ornamental fish trade in Portugal, and release of 'outgrown' specimens seems to be the most probable source of the fish in the present study. This is consistent with the propagule pressure hypothesis, which predicts that introduced and established specimens have greater lengths than those typically found in the aquarium trade (Duggan *et al.*, 2006). Although direct evidence about the species' establishment and successful reproduction in the Guadiana River basin is lacking (both specimens were immature males), both events seem possible as the specimens were found in favourable habitats. The Lucefécit River drains to the Alqueva Reservoir, the largest artificial lake in Europe, which should be a more thermally stable environment than nearby streams. Additionally, inflowing rivers could provide breeding areas for adults and the seasonally flooded marginal areas of the reservoir could provide feeding grounds for the young. Should this generalist species become established, the potential impacts on the native fauna and flora are obvious both in terms of competition for resources and predation. An additional and often overlooked impact would be the potential introduction of new diseases and parasites, against which the natives might have no resistance to (Holčík, 1991; Salgado-Maldonado & Pineda-López, 2003; Gozlan, *et al.*, 2005). For instance, Bassleer (1997) and Bu & Seng (1997) reported the protozoan *Ichthyophthirius* sp. and several nematode species parasitizing *B. schwanefeldii*. Parasites might need only the occasional introduction rather than the successful establishment of the host species (*B. schwanefeldii* in this case) to infect native species and complete their life cycle. Careful attention should be given to new introductions, as human-mediated habitat modifications potentially open new corridors for alien species to become successfully established, and hence threaten the native species (Moyle & Light, 1996).

The authors are grateful to A. C. Gill (ASU) for his suggestions on the early version of the manuscript, to I. Harrison and to three anonymous reviewers for comments that improved the manuscript's quality. The authors also thank D. Catita (EDIA) for permission to keep representatives of the species collected during the fish collection in the Lucefécit Reservoir.

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