Journal of Sustainability Science and Management 2007 Volume 2 (2): 96-100

ECOLOGICAL NOTES ON THE BALITORID LOACH, *Acanthocobitis zonalternans* (BLYTH) (PISCES: CYPRINIFORMES) IN PENINSULAR MALAYSIA: A POTENTIAL ORNAMENTAL FISH

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Abstract : The balitorid loach, *Acanthocobitis zonalternans* (Blyth) is reported from Peninsular Malaysia for the first time, recently. The species can be found at several localities in Kedah where specimens were previously collected represent the southernmost limit of its geographic range. This small, peaceful, bottom dwelling fish species is highly suitable to be utilised as ornamental fish but little is known about it environmental biology and ecology. This paper gives the general descriptions of the species and some notes on its habitats which might be useful for the breading and aquaculture program.

KEYWORDS: . *Acanthocobitis zonalternants,* Balitoridae, ornamental fish, Peninsular Malaysia

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Introduction

The freshwater fishes in the Southeast Asia region are highly diverse with a high degree of endemism. Despite rich in biodiversity of aquatic fauna, the number of freshwater fish species which are traded is surprisingly small (Ng and Tan, 1997). Lim and Ng (2002) listed about 278 species of freshwater fishes which live natively in Peninsular Malaysia. Probably, more than 50% are suitable for aquarium fish trade. In their study, Ng et al. (1994) listed 27 species that is highly possible to be utilised as ornamental fishes collected from a peat swamps of North Selangor from the total 47 species recorded.

For many years, ornamental fish trades has been utilising numerous wild species caught and collected by locals. However, proper documentation is lacking. In Southeast Asia, Singapore with its well-developed infrastructure and logistic support for export of aquarium fish has become a major hub in this business. Thus, it is not surprising that ornamental fish trade is a big business there (see Ng and Tan, 1997). For the whole of Southeast Asia, it is estimated about S$100-200 million, probably more worth of money generated from aquarium fish trade. But this value is far underestimated. Sidthi and Amonrat (2001) estimated that the value of the whole ornamental fish trade and its accessories is approximately US$1 billion.

Ng and Tan (1997) classified ornamental fish that are traded into three categories – I to III. Category I are the 'bread-and-butter' species, those which are very popular in the trade and are caught and exported in large numbers. Category II are wild-caught species which are traded occasionally and/or in small numbers at that time (*c.* 1997) but with a good potential for their

increased popularity and export. Category III, species are those which meet the 'high-end market' demands and expensive species such as arowana (*Sclopages formosus*). Fishes in category II consists of a large number of species and many more are yet to be introduced or utilised as ornamental fish.

To date, there are about 17 species of balitorid loaches which are known to inhabit river basins and water bodies throughout Peninsular Malaysia. They are from the genera *Barbucca, Homaloptera, Nemacheilus, Neohomaloptera, Schistura, Tuberoschistura, Sundoreonectes* and *Vaillantella* (see Lim and Tan, 2002). Most of the species within the Balitoridae family are popular as ornamental fish such as *Homaloptera parclitela* (previously reported as *H. orthogoniata* for the Malay Peninsular species), *Nemachielus selangoricus* and *N. masyae*. Most of the fish species are relatively small, inhabit various types of freshwater habitat in Peninsular Malaysia. However, the rest of the species are equally beautiful and interesting. Among the species is *Acanthocobitis zonalternans* (Family Balitoridae) which was recently discovered in Peninsular Malaysia. The paper aims to introduce the species which has potential as ornamental fish. Hence, the ecological note of the species is given.

METHODOLOGY

Specimens were collected with rectangle-frame push nets and kick-net (for sampling aquatic insects), and fixed in 10% formalin solution before transfer to 70% ethanol for long-term preservation. The specimens were presently deposited at the University Malaysia Terengganu Ichthyological Collections (UMTIC) in Kuala Terengganu under the care of the author and at The Raffles Museum of Biodiversity Research, Department of Biological Sciences, National University of Singapore (ZRC).

RESULTS AND DISCUSSION

The genus *Acanthocobitis* is just recently recorded for the first time in Peninsular Malaysia, represented by examples of *Acanthocobitis zonalternans* (Blyth) (Figure 1) which was obtained from four locations in the north-western state of Kedah (Ahmad and Lim, 2005.). This species is known from Southern Thailand, including Phuket Island, and ranges north through Myanmar, and into Manipur State in India. In peninsular Thailand, it is found in basins draining into both the Andaman Sea and the Gulf of Thailand (Kottelat, 1990: 39). The present records represent the southernmost limit of its known geographic distribution. This species has a great potential to be utilised as ornamental fish but its reproductive biology is not well known. Collections of the wild population for ornamental purposes will be minimised if breeding program of this fish is established locally.

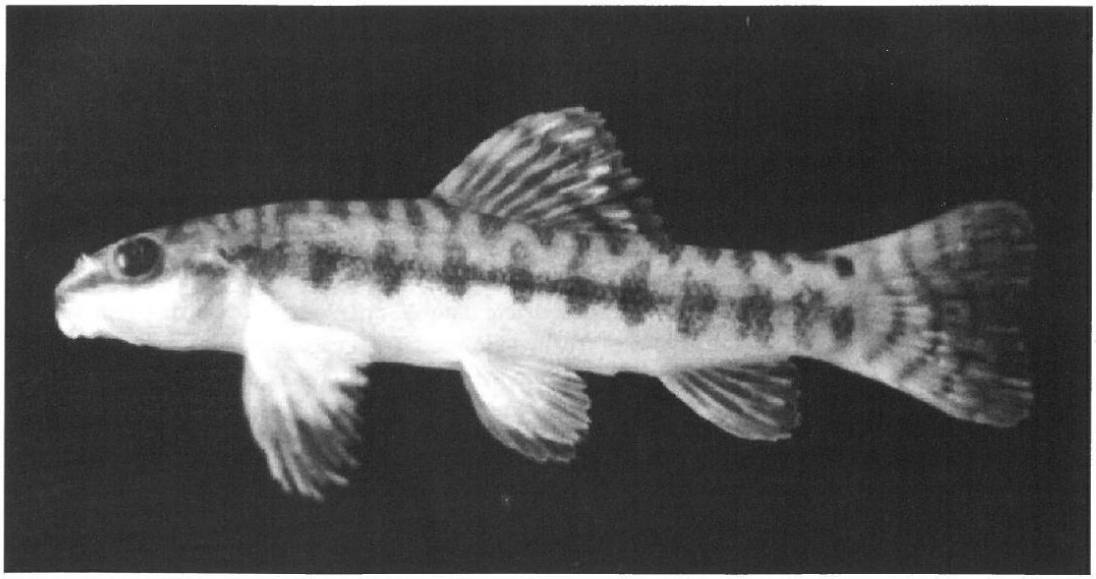

Figure 1. A recently killed specimen of *Acanthocobitis zonalternans* (Blyth) from Kg. Tandop, Baling, Kedah, Peninsular Malaysia.

Diagnosis: *Acanthocobitis zonalternans* is distinguished from all other balitorids by having an incomplete lateral line that reaches to above the pelvic fin base; upper lip with several rows of papillae; lower lip with a broad median interruption, and on each side a widened, strongly papillated pad. Dorsal fin rays: iv 9-11½, anal fin rays: iii 5½, pectoral fin rays: 11-13, ventral fin rays: 8-9, and caudal fin rays: 8+7-8, caudal fin slightly emarginate (see Kottelat, 1990: 38-39).

Live colouration based on live specimens from Kampung Tandop, Baling: pale brown on the sides of the body and head, pale yellow to white on the ventrum; a series of eight to ten irregular dark-brown or black mid-body blotches on the sides, these may be fused to form a blackish stripe along the lateral line. Twelve to 15 saddle-like blotches along the dorsal mid-line do not extended anteriorly onto the top of the head, nor below the lateral line. Most specimens have a blackish U-shaped mark on the snout between the eyes. All fins hyaline. Dorsal fin with two to three rows of black spots, and a small black spot at the base of the last simple dorsal ray. Caudal fin with three to four distinct V-shaped bars with apex pointing posterirly, formed by small black spots on the fin rays. Two black blotches at the caudal fin base, the lower blotch, paler than the upper blotch, situated just below the lateral line.

Ecological notes: According to Kottelat (1990: 42), the preferred habitat of *A. zonalternans* seems to be shallow riffles over small pebbles on which the fish, with its marmorated colour pattern, can be well camouflaged. This species has also been recorded on muddy to sandy substrate with a few stones, in depths ranging from 5 – 50 cm. These physical features were present in the habitats in Kedah where *A. zonalternans* is known to occur.

The collection site at Sg. Sari was a slow flowing stream of about 10 m wide and less than 20 cm deep, with clear water and a substrate of fine sand. Water is well oxygenated (dissolved oxygen, DO 6.2 – 6.7 mg/L), soft water, slightly acidic (pH 6.7) and low temperature (24.5 – 27.4 °C). The stream crossed under the main road and was close to human settlements. Syntopic fishes from the site include *Nemacheilus selangoricus, Lepidocephalichthys hasseltii* (Family Cobitiidae) and *Homaloptera tweediei.*

Three specimens of *Acanthocobitis zonalternans* were collected from a small pool with an area of about $2m^2$ and depth of around 50cm, at the confluence of a small, fast flowing stream of Sg. Nau, Baling, Kedah. The edges of the pool were covered with root mats, and there was soft clay substrate under the leaf litter. The pool, shaded by overhanging tree branches, was separated from the main stream by a small sand-pebble spit about 1 m wide. There was a 1 to 1.5 m wide slow-flowing channel that drained whitish, warm (relative to the main stream) water from an adjacent paddy field. Syntopic fishes include juvenile *Hemibagrus bleekeri, Tricogaster trichopterus, Rasbora paviana* and *Systomus banksi.*

The third type of habitat that contained *Acanthocobitis zonalternans* was a man-made ditch about 50 – 75 cm wide, with shallow water and slow current at Kg. Tandop, Baling, Kedah. The substrate consisted of soft clay with some patches of fine sand. The bank was largely cleared of vegetation and was thus exposed. Roots of marginal plants and small aquatic vegetation were observed in the ditch. Sometimes the ditch dried up leaving isolated pockets of water. *Acanthocobitis zonalternans* was found among the vegetation and leaf litter. Syntopic fish species include *Lepidocephalichthys hasseltii, Tricogaster trichopterus, Betta pugnax, Danio albolineata, Silurichthys hasseltii, Channa gachua* and *Systomus banksi.*

Acanthocobitis zonalternans was also collected from Langkawi Island off the coast of Kedah in the Malacca Straits. There, specimens were collected from under bank vegetation in a small, slow flowing stream with clear water and fine sand substrate. *Lepidocephalichthys hasseltii* and *Danio albolineata* were found at the same site.

Distribution: In Peninsular Malaysia, *Acanthocobitis zonalternans* is presently known from the state of Kedah (Figure 2) where it has been collected from the Sg. Muda and Sg. Kedah drainages, Sg. Badak at the foothill of Kedah Peak and Sg. Padang Gaong on Langkawi Island.

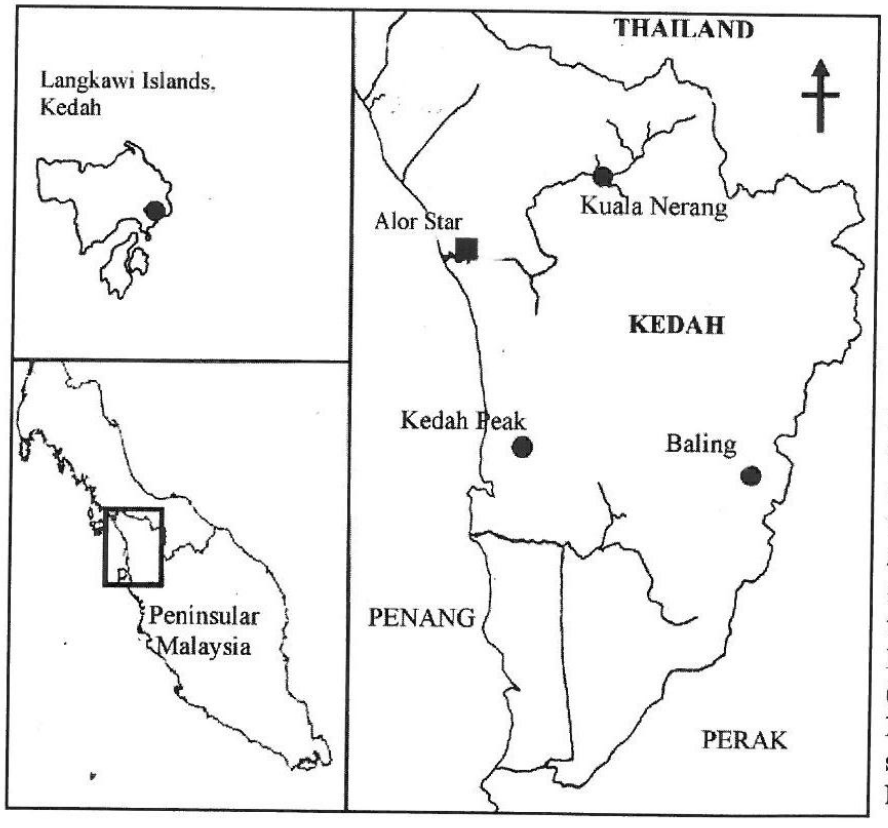

Figure 2. Map of the state of Kedah showing the localities where *Acanthocobitis zonalternans* were collected. Insets are the map of Langkawi Island (top) and Peninsular Malaysia (bottom) showing the state of Kedah.

A. zonalternans should be expected from the state of Perlis and the northern part of Perak. The population that thrived in ditch at Kampung Tandop, about 6-7 km along road from Baling to Weng, Kedah is facing extermination due to road construction to expend the existing road. People at the foothill of Kedah Peak are facing an uncertain future due to low water supply, habitat modification, pollution and collection of fish as 'feed-fish' by locals (pers. obs.). In Langkawi Island, only Sg. Padang Gaong harbours a large population of this species. Threats might be from water shortage as the stream itself is very small (1 – 2 m wide, surface water about 1m wide; water depth seldom reach 30 cm deep).

Acanthocobitis zonalternans having a good potential as ornamental fish which highly suitable for small to medium size aquarium. This fish is bottom dwellers, peaceful but active fish in captivity. It swims over bottom substratum, like leaping from pebbles to pebbles and resting on the bottom using its pectoral fins. The species is interesting which its marmorated colour pattern makes it inconspicuous from the bottom substrate making it interesting to keep. Since it was collected from a wide variety of habitat, keeping the fish in aquarium is relatively easy. It prefers slow moving water and cool shaded environment. Thus, it practically suitable for home aquaria or small community type aquaria with abundant of submerged aquatic plants and pebbles as decoration.

ACKNOWLEDGEMENTS

I thank Kelvin K. P. Lim for his support and encouragement. I thank Syed Ahmad Rizal Tn. Nek and my students for helping me in the field. This study was partly funded by the short-term grant from UMT (Vot 54142).

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