

CYPRINODONTIFORMES – killifishes and allies

Fishes of the order Cyprinodontiformes are greatly diversified in continental Africa and Americas, and only a single species of the family Aplocheilidae are native to Southeast Asia. Several African/American species with brilliant coloration are commonly seen as exotic ornamental fishes in the aquarium fish trade worldwide, and at least some of them escaped and then became

established in the wild outside the native regions. Another example of the exotic species is found in the poeciliid *Gambusia affinis* (next page), introduced for mosquito control. A single and 3 species of Aplocheilidae and Poeciliidae, respectively, were recorded from the Mekong, but some others, which are abundantly seen in the aquarium shops in this region, may be also found in the field.

Aplocheilus panchax (Hamilton, 1822)

Family: Aplocheilidae (FC: 257)

Size: 6.0 cm SL (Kottelat *et al.*, 1993: 91).

Distribution: Mekong Basin in Cambodia and Vietnam; South-east Asia.

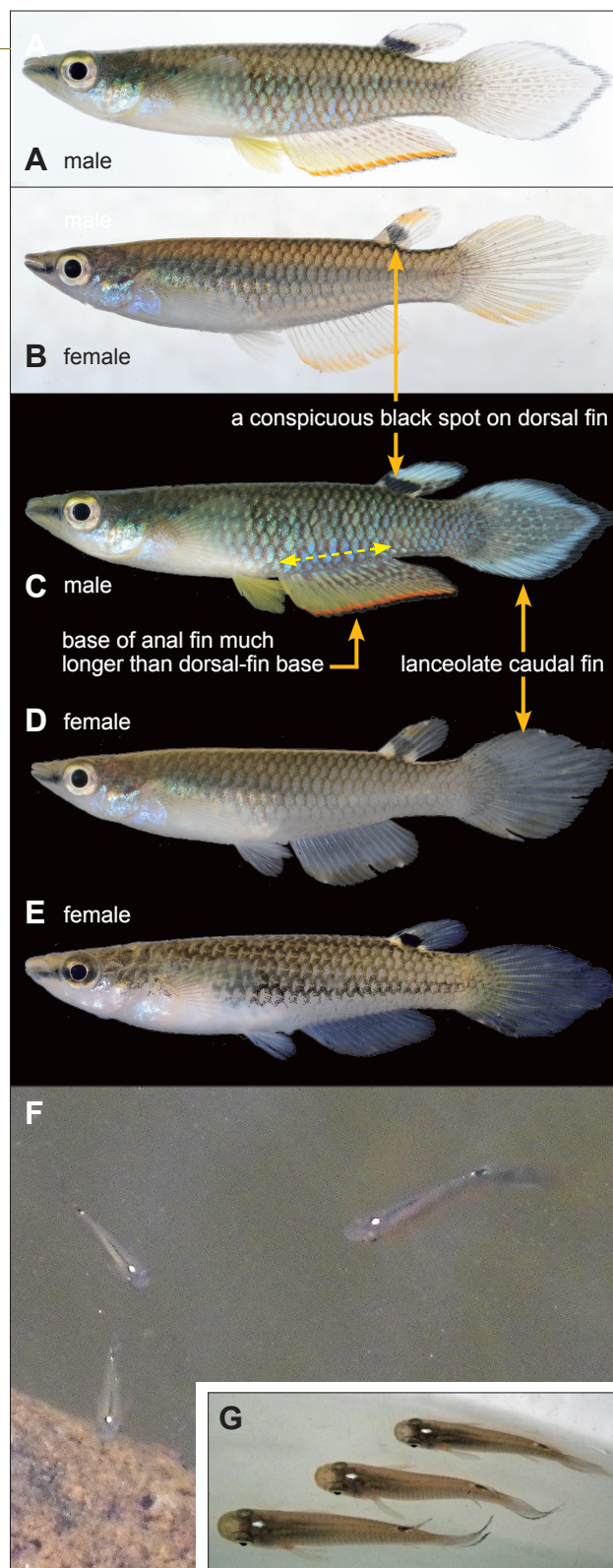
Notes: A medium-sized species of *Aplocheilus*, found in standing and slow-flowing waters, such as ponds, ditches, canals, and estuaries; it is also commonly seen in the aquarium fish trade.

The family Aplocheilidae is a compact group, comprising about 15 species assigned to 2 genera, viz., *Pachypanchax* (7 species, known from Madagascar and Seychelles) and *Aplocheilus* (about 8 species, known from South and Southeast Asia) (Lazara, 2001; Costa, 2004; Nelson, 2006; Loiselle, 2006; Katwate *et al.*, 2018; see also below). In Southeast Asia including the Mekong, only a single species *Aplocheilus panchax* is hitherto known.

Kottelat (2013c: 300) noted, "there is probably more than one species under the name *A. panchax*." Subsequently Katwate *et al.* (2018) recognized 3 distinct, allopatric species amongst the fishes that were once known as *Aplocheilus panchax*, and applied the name *A. armatus* for Southeast Asian population (rather than *A. panchax* and *A. andamanicus*, found in India and Andaman Islands, respectively). We, however, do not follow Katwate *et al.*'s (2018) conclusion provisionally, judging from the evidences that they indicated; their phylogenetic analysis showed a sister relationship between their *A. armatus* and *A. panchax* (viz., *A. armatus* and *A. panchax* form a monophyletic group), and the vertebral counts that they used to differentiate *A. armatus* from *A. panchax* were broadly overlapped (see Katwate *et al.*, 2018). And, regarding the materials from the regions around the boundary between South and Southeast Asia, they did not analyze more than a few, limited ones; namely, their materials from the regions comprise 6 (of which only 1 for molecular analysis) and no specimens from West Bengal and Myanmar/Thailand, respectively. Further research is crucial for this issue, and thus we here regard *A. armatus* as conspecific with, and a junior synonym of, *A. panchax*, as recognized before (e.g., Kottelat, 2013c).

Superficially *Aplocheilus panchax* somewhat resembles fishes of the adrianichthyid genus *Oryzias* (pp. 326–327), although it is readily distinguished by having, e.g., a conspicuous black spot on dorsal fin (vs. absent in *Oryzias*), non-transparent body (vs. nearly transparent), and protrusible mouth (vs. non-protrusible) (e.g., Parenti, 1999). In addition to the black spot on the dorsal fin, a bright white spot on the top of the head (named "pineal spot") is a useful character for identifying this fish in the fields (see photos F and G).

The males of *Aplocheilus panchax* have a much brighter coloration of the fins and body compare to the females (see photographs). Many of our specimens of *A. panchax* collected from the Cambodian Mekong (photo E) represent darker (heavily pigmented) coloration than the specimens from the Vietnamese Mekong; we here tentatively regarded it as an intraspecific variation.



A and C) CTU-P 1225 (photo: KS); B and D) CTU-P 816 (photo: KS); E) IFREDI-P 2252 (photo: PT); F) non-Mekong specimens, not preserved (Phu Quoc Island, Vietnam, photo: KS); G) non-Mekong specimens, 3 of CTU-P collection (Phu Quoc Island, Vietnam, photo: KS)

Poecilia reticulata Peters, 1859

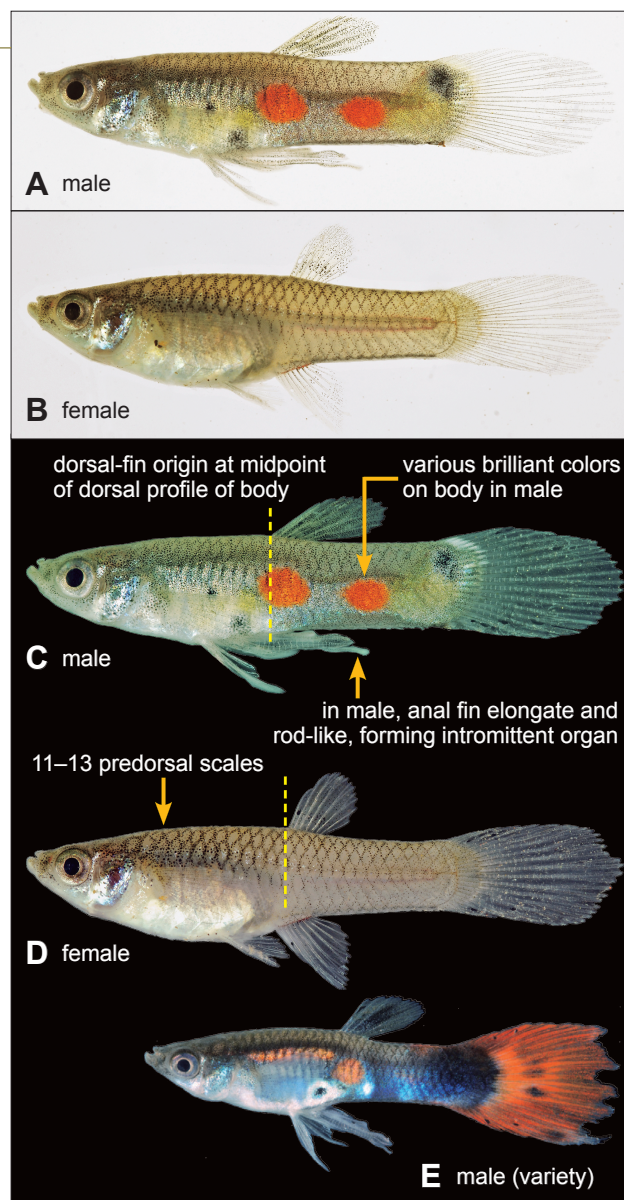
Exotic

Family: Poeciliidae (FC: 266)**Size:** 5.0 cm SL (Kottelat *et al.*, 1993: 91).**Distribution:** Throughout the Indochinese Mekong (all introduced); originally distributed in northern South America and Western Atlantic, but now widely introduced elsewhere.

Notes: A medium-sized species of poeciliid fishes, abundantly found in the polluted and degraded waters in/around towns in the Indochinese region. In such habitats, this fish is usually collected together with, e.g., *Oreochromis niloticus* (Cichlidae, p. 368) and *Trichopodus trichopterus* (Osphronemidae, p. 406) (Welcomme & Vidthayanon, 2003: 13; unpublished data based on our field surveys in 2007–2013). *Poecilia reticulata* is a very popular aquarium fish, known as "guppy"; colorful cultivative varieties of this fish are almost always seen at aquarium shops in this region. An example of the varieties is shown in photo E; this fish was collected from a small river in Vĩnh Long, Vietnam (maybe just after escaping from the captive water). Usually the non-aquarium fish (photos A and D) are much less colorful than the aquarium fish. The females (photos B and C) lack the colorful markings as found in males, and resemble the other exotic poeciliid *Gambusia affinis* (see below).



Poecilia reticulata in an aquarium (Cần Thơ, Vietnam, photo: KS)

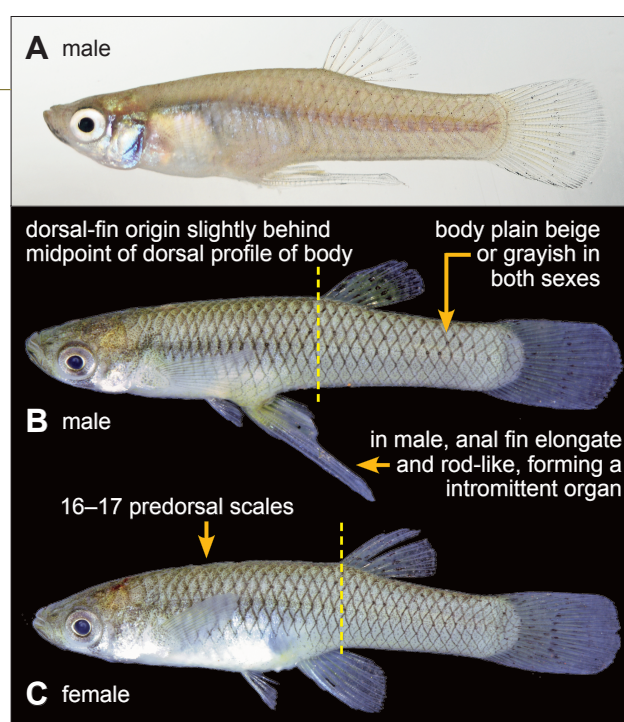


A and C: CTU-P 5387 (photo: HVM); B and D: CTU-P (photo: HVM); E: CTU-P 3627 (photo: LXT)

Gambusia affinis (Baird & Girard, 1853) Exotic**Family:** Poeciliidae (FC: 266)**Size:** 5.5 cm SL (Kottelat, 2001a: 144).**Distribution:** Throughout the Indochinese Mekong (all introduced); originally distributed in United States and Mexico, but now widely introduced elsewhere.

Notes: A medium-sized species of poeciliid fishes, found in floodplain lakes (Welcomme & Vidthayanon, 2003: 20); it is much less common than the guppy, *Poecilia reticulata* (above), in the Indochinese Mekong. The photographed specimens shown here were collected from Ubon Ratchathani of eastern Thailand (photo A) and Xekong Province of southern Laos (photos B and C). This fish was disseminated into the Mekong Basin for mosquito control, although the date of introduction is unknown (Welcomme and Vidthayanon, 2003).

Gambusia affinis is somewhat similar to *Poecilia reticulata*, but has much less colorful body with no distinct markings even in the males. The females of *G. affinis* can be distinguished from those of *P. reticulata* by the dorsal-fin origin behind a vertical line through middle of the anal-fin base (vs. before a vertical line through middle of the anal-fin base) (Senou *in* Nakabo, 2013).



A) Aquarium fish (not preserved, Ubon Ratchathani, Thailand, photo: KS); B) NUOL-P 4854 (photo: CG); C) NUOL-P 4855 (photo: CG)

