



TAXONOMIC RECORD OF MOSQUITOFISH *GAMBUSIA AFFINIS* (BAIRD & GIRARD, 1853) FROM DHAKA, BANGLADESH

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Mosquitofishes (*Gambusia* spp.) are native to North America and were introduced to many countries for mosquito control in the sixties (ITIS, 2011a, b). By consuming mosquito larvae this fish can help in controlling the larvae of the vector mosquitoes of malaria, dengue, encephalitis, filarial diseases at community level (Rees, 1934; Krumholz, 1944; Brown and Fox, 1966; Crivelli and Boy, 1987; Haynes 1993). Two species of mosquitofish, *Gambusia affinis* (Baird and Girard 1853) and *G. holbrooki* Girard, 1859, have been introduced to more than 40 countries to control mosquito larvae (Angus and Hawell, 1996). No taxonomic record is available from Bangladesh literatures about this fish (Ahmed, 1956; Shafi and Quddus, 1982; IUCN, 2000; Rahman, 2004; Akhter and Rahman, 2007). Recently, Ahasan *et al.*, (2011) reported the breeding behavior of mosquitofish *G. affinis* from Bangladesh. Earlier Ahmed and Meher, (1985), Khanam *et al.*, 2002 and Ahmed *et al.*, (2011) mentioned guppy fish, *Poecilia reticulata* as mosquitofish in their studies. A detailed study on the biology of mosquito fish *Gambusia affinis* was done by Sarker (2009). To resolve the taxonomy of this species has led us to the present investigation. We have taxonomically identified and described *Gambusia affinis* collected from various water bodies of Dhaka city.

Fish samples were collected from the drainage system in different localities of Dhaka Metro city from May 2009 to April 2010. Two hand nets (mesh size 0.2 mm) were used and operated from two ends and closed to catch fish samples from the drains. Fifty samples were collected randomly from each site. The fishes were instantly preserved in 10% buffered-formalin and labeled with date, time and location. The samples were later washed with ample freshwater in the Zoology department, University of Dhaka. Later they were preserved again in 4% buffered formalin with proper label. Each sample was morphometrically analyzed following Rahman, (2004) by taking measurements of total length (TL), standard length (SL), head length (HL) in mm scale. Total weight (W) was taken by nearest gram (g) after removing extra water from sample body using dry tissue paper by electronic weighing machine (Metler, USA). Taxonomic formulae for all sampled fish were generated by counting fin rays (Rahman, (1984,

2004). Digital photograph were taken at micro mode by SONY Digital camera (Model DSLR-A330L, Sigma series, 10.1 mega pix, China) for 'homotype' samples of mature female, male and juvenile individuals.

Gambusia affinis (Baird & Girard, 1853)

Synonyms:

Fundulus inurus (Jordan & Gilbert, 1882),
Gambusia affinis affinis (Baird & Girard, 1853),
Gambusia gracilis Girard, 1859,
Gambusia humilis Günther, 1866,
Gambusia patruelis (Baird & Girard, 1853),
Haplochilus melanops Cope, 1870,
Heterandria affinis Baird & Girard, 1853,
Heterandria patruelis Baird & Girard, 1853,
Zygonectes brachypterus Cope, 1880,
Zygonectes gracilis (Girard, 1859),
Zygonectes inurus Jordan & Gilbert, 1882,
Zygonectes patruelis (Baird & Girard, 1853)

DESCRIPTION

Small and stout, dull grey in colour; robust with a rounded tail. Head relatively large and flattened on the upper surface, small mouth is superior (upturned) and protrusible. Eyes large in relation to body. Dorsal and caudal fins rounded and no visible lateral line. Body with characteristic diamond or net pattern formed by dark pigment at the scale margins. Grayish olive above and silvery below; pigmentation changes to match the environment. Small black dots are also usually present on the body and tail. A small dark bar below the eye. Dorsal fin single and with only soft rays. Typically with 7-9 soft dorsal rays, 8-10 anal fins, and 29-32 lateral line scales.

G. affinis is related to guppies (Angus and Howell, 1996) and is native to fresh/low-salinity waters of the eastern and southeastern US and Gulf of Mexico, from New Jersey to central Mexico (Hoese and Moore, 1977). The native range of *G. affinis* is from the Gulf Coast of northeastern Mexico, through Texas, and Louisiana including the Mississippi River and its tributaries (Krumholz, 1944). These fish has long been known that they feed readily on the aquatic larval and pupal stages of mosquitoes of these area and thus had been introduced to suitable warm water area of the world

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(Stockwell and Vingard, 2000; Nordie, 2006). The species is sexually dimorphic, with adult males being considerably smaller than females and possess a gonopodium (an elongated anal fin that functions as an intermittent organ for sperm transfer during mating). Mature females have a distinct gravid spot located on the posterior abdomen above the rear of the anal fin (Hoese and Moore, 1977).

The characteristic net-like scale pattern and the poster origin of the dorsal fin relative to the anal fin are

typically sufficient to distinguish *Gambusia* from the co-occurring poeciliid, *Poecilia* spp. (Hoese and Moore 1977). Poeciliid fishes can generally be differentiated from the potentially similar looking cyprinodontids by the presence of either a gravid spot (mature females) or an intermittent organ (occurring on mature males) on the former.

The mosquitofish *G. affinis* was introduced in Bangladesh by the government in 1973 in the Dhaka drainage system.

Table 1. Body parameters and taxonomic formula of mosquitofish collected from 4 localities of Dhaka city, Bangladesh (n= minimum 50 from each location).

	Parameter	Curzon Hall Homotype	Mohammadpur	Shantinagar	Uttara Model Town
Female	TL (mm)	21.0 - 42.0	22.0 - 31.0	20.0 - 24.0	19.0 - 29.0
	SL (mm)	15.0 - 28.0	18.0 - 25.0	16.0 - 19.0	15.0 - 23.0
	HL (mm)	04.0 - 07.0	5.00 - 8.00	4.00 - 5.00	4.00 - 6.00
	W (g)	0.07 - 0.90	0.03 - 0.05	0.03 - 0.04	0.03 - 0.05
Male	TL (mm)	20.0 - 28.0	18.0 - 25.0	19.0 - 24.0	20.0 - 28.0
	SL (mm)	15.0 - 18.0	15.0 - 20.0	16.0 - 17.0	15.0 - 18.0
	HL (mm)	04.0 - 6.00	4.00 - 6.00	4.00 - 6.00	4.00 - 6.00
	W (g)	0.06 - 0.03	.025 - 0.05	.025 - 0.04	0.03 - 0.05
Juveniles	TL (mm)	10.0 - 18.0	9.00 - 13.0	10.0 - 12.0	7.00 - 11.0
	SL (mm)	9.00 - 13.2	6.00 - 11.0	9.00 - 10.0	5.00 - 9.00
	HL (mm)	2.00 - 3.10	1.50 - 3.00	2.00 - 3.00	1.00 - 2.00
	W (g)	0.01 - 0.03	.015 - .025	0.018 - 0.024	0.01 - 0.02
Taxonomic formula D5 P8 V5 A7 C20					



Plate 1. Photographs of mosquitofish homotype samples, female (top-left), male (top-right), juvenile (bottom-left and right)

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