A NEW BARILINE CYPRINID FISH OF THE GENUS *BARILIUS* HAMILTON, FROM MANIPUR, INDIA[1]

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(*With two text-figures*)

Key words: Bariline cyprinid fish, *Barilius ngawa* sp. nov., Manipur

Barilius ngawa, a new species is described from the Manipur river, Manipur, India. The fish is characterised by an elongated body, moderate body depth (22.5-26.9% of standard length), 42-43 perforated scales along the lateral line, 21-22 scales on the mid-dorsal streak in front of dorsal fin insertion and 16-17 circumpeduncular scales, 13-14 vertical dark bars on sides, and diameter of eyes 21.3-25.8 of length of head length. The species is distinct from the Burmese forms *B. barnoides* Vinciguerra and *B. ornatus* Sauvage in having more lateral line scales, shallower body and smaller eyes.

INTRODUCTION

Species of *Barilius* Hamilton (1822) are compressed, their scales are marked with incomplete transverse bars or spots, dorsal fins are inserted beyond the middle of the fish. The systematic position of the genus has been studied in detail by Howes (1980) based on detailed anatomical and osteological characters. The taxon now inhabits the Indian subcontinent, Thailand, Myanmar, South China (Yunnan), Cambodia, Laos, Vietnam and Borneo. The genus is characterised by having a deep rostrally curved ethmoid region, elongated nasals and parietals and reduced lateral ethmoids. The Indo-Burmese species, namely *Barilius bola* (Hamilton) and *B. guttatus* Day have been placed in the genus *Raiamas* Jordan on the basis of their features such as a greatly expanded kinethmoid, long shallow jaws and reduced premaxillary ascending process (Howes 1980).

Three species of *Barilius* were hitherto known from Manipur, India. They are *B. barila* (Hamilton), *B. bendelisis* (Hamilton) and *B. dogarsinghi* Hora. Of these, the first two are widely distributed both in the Ganga-Brahmaputra system; and the last, only in the streams of Manipur, leading to the Chindwin drainage of Myanmar. While making collections in the Manipur River System leading to the Chindwin, a new *Barilius* was discovered and is described below.

MATERIAL AND METHODS

Fishes were collected by gill net and preserved in 10% formalin. Photographs were taken before preservation. Details of the collection and coloration were noted. Counts and measurements follow Jayaram (1981). Dial calipers were used for measurement up to 0.1 mm accuracy. The specimens were deposited in the Manipur University Fish Museum (MUFM). Abbreviations: SL = standard length, and HL = head length.

Barilius ngawa sp. nov. (Fig. 1)

Holotype: MUFM 149, 84.8 mm, Sherou river, (tributary of Manipur river), 24° 18' N, 93° 54' E, 83 km south of Imphal, Manipur, W. Manojkumar, 20.iii.1993.

Paratype: MUFM 150, 40 exs., 61.5-134.3 mm, same data as holotype.

Diagnosis: An elongated *Barilius* of moderate body depth, its depth 22.5-26.9% of

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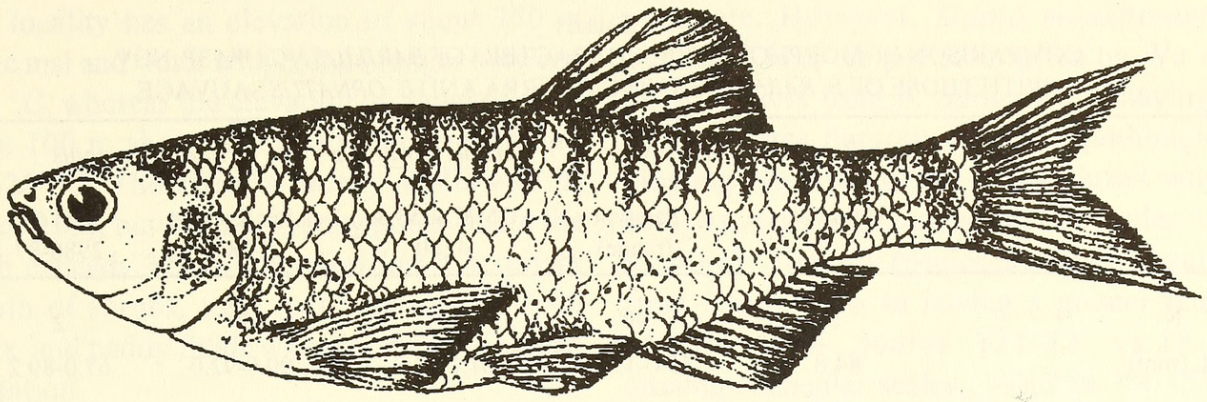

Fig. 1: Paratype of *Barilius ngawa* (MUMF 150/1), 124 mm SL

SL. 42-43 perforated scales along the lateral line. 21-22 scales on mid-dorsal streak in front of dorsal fin insertion and 16-17 circumpeduncular scales. Vertical bars on sides 13-14; eye diameter 21.3-25.8 of HL.

Description: D. ii-iii, 7-8; P. i, 12-13; V. i, 7, 1; A. ii-iii, 10-11; C. 19 (10+9); L.l. 42-43; L. tr. 8/1/2; PDS. 21-22. Body compressed, snout pointed, mouth terminal, gape of mouth reaching the middle of orbit, eyes large, but smaller than other related species (Table 1). Barbels 2 pairs. Snout long, its length equals interorbital space. Dorsal fin inserted opposite interspace between pelvic and anal fin base. Lower jaw with a symphysis and upper jaw with a notch to receive the knob. Depth of body equals length of head. Pelvic fin short. Caudal fin deeply forked, the lobes are equal, muscular pads are present at the base of pectoral and pelvic fins.

Proportional measurements of holotype and paratype (range in parentheses) in percentage of SL are given in Table 1.

Coloration: In life, sides are silvery, dorsal golden yellow, darkest at the mid-dorsal line. Sides with 13-14 vertical blue-black bars extending to the lateral line region of the body. Dorsal fin with a dark band. Caudal with dark margins. Fins with orange coloration in the margin.

Etymology: The local name is Nga-wa (Nga = fish; wa = swift movement of shoal). The species is named after its local name.

Habitat: The Manipur river follows a southward course, receiving several hill streams, and flows out of the State into Myanmar after receiving a tributary called Yankoilok. It then flows in the Chin Hills and then finally joins the Chindwin. The river has clear water with rocks and pebbles at the substratum. Sherou, the

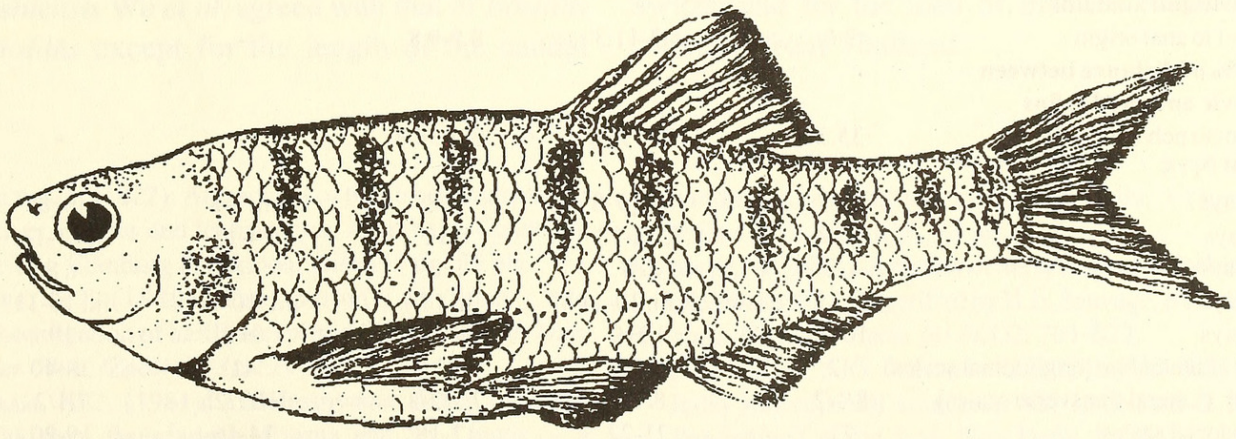

Fig. 2: *Barilius barnoides* (CMK 4280), collected by P. Hobleman from Mae Son Province, Thailand

TABLE 1
COMPARISON OF MORPHOMETRIC CHARACTERS OF *BARILIUS NGAWA* SP. NOV. WITH THOSE OF *B. BARNOIDES* VINCIGUERRA AND *B. ORNATUS* SAUVAGE

	Barilius ngawa sp. nov.		*Barilius barnoides*	*Barilius ornatus*	
	Holotype	Paratype (range)	CMK 4053 & 4280	After Kottelat (1984)	ZSI 6/ 2986-87
N	1	40	2	2	2
SL (mm)	84.8	35.0-134.3	61.2-83.3	90.0-92.0	67.0-89.2
In % of SIL					
Body depth of dorsal origin	24.1	22.5-26.9	27.5-29.8	33.6-35.6	31.1-31.3
Body depth at pelvic origin	25.8	23.7-29.3	29.6-32.4	-	-
Head length	24.8	24.7-26.9	26.1-26.4	27.8-28.3	26.9-29.4
Predorsal length	56.3	55.1-57.8	57.3-57.7	59.8-64.4	52.2-58.9
Length of caudal fin	25.5	24.0-28.6	29.9-30.7	-	-
Height of dorsal fin	17.8	17.7-19.9	20.8-24.0	-	24.0-24.6
Length of dorsal fin base	11.7	11.1-13.7	14.4-15.0	-	12.5-14.7
Length of pectoral fin	19.1	19.4-21.1	21.9-23.6	-	22.4-24.0
Length of pelvic fin	12.5	12.3-14.3	15.0-16.2	-	16.4-16.5
Length of anal fin	13.8	13.8-16.4	16.8-17.3	-	21.7-22.4
Length of anal fin base	14.9	14.0-17.6	16.3-18.3	-	14.5-14.7
Prepelvic length	47.8	47.8-51.6	49.3-52.5	56.5-58.9	-
Preanal length	68.0	66.0-69.9	68.8-70.8	75.0-78.9	-
Pre-anus length	65.0	63.2-66.7	60.0-66.8	72.8-77.8	-
In % of head length					
Height of head at occiput	69.5	63.0-76.6	78.06-79.4	-	73.9-82.0
Length of snout	31.0	29.7-31.2	29.5-33.8	26.9-28.0	32.0-36.2
Diameter of eyes	24.8	21.3-25.8	27.3-29.4	-	27.8-31.6
Interorbital space	33.3	29.1-34.4	33.7-36.3	38.8-32.0	32.8-33.3
Length of caudal peduncle	73.8	69.3-79.0	58.2-65.0	56.0-61.5	45.9-61.1
Height of caudal peduncle	40.0	37.4-43.4	42.5-46.4	42.3-44.0	41.0-44.28
Width of head	44.8	38.0-45.9	43.2-45.0	-	34.8-44.4
In % of length of caudal peduncle					
Height of caudal peduncle	54.2	54.2-66.7	65.4-79.7	68.8-78.6	70.0-89.3
In % of distance between pelvic and anal fins					
Vent to anal origin	9.6	5.3-11.3	8.9-9.8	-	-
In % of distance between pelvic and caudal fins					
Vent to pelvic fin origin	35.5	33.9-38.3	33.6-34.8	-	-
COUNTS					
D rays	iii, 7	ii-iii, 7-8	ii, 8	iii, 7-8	iii, 8
P rays	i, 12	I, 12-13	i, 12	14-15	i, 13-14
V rays	i, 8	i, 8	i, 8	9-10	i, 8
A rays	ii, 11	ii-iii, 10-11	ii, 11	iii, 10-11	iii, 10-11
C rays	10+9	10+9	10+9	9+8	19
L.l (Lateral line longitudinal scales)	42	42-43	40	41	38-40
L. tr. (Lateral transverse scales)	8/1/2	8/1/2	7/1/2-3	H7/1/2h	7/1/2
Predorsal scales	21	21-22	17-18	14-16	19-20
Circumpeduncular scales	16	16-17	14	12	-
Transverse bands	13	13-14	9-10	-	-

type locality has an elevation of about 750 m above msl and water temperature ranges between 8-25 °C, whereas the elevation of Yangkoilok is about 100 m above msl and water temperature is 8-28 °C. The river is mostly shallow (1.5-2.0 m deep), but there are rocky pools where the depth exceeds 3.5 m. The river has a luxuriant growth of shrubs, trees and bamboos on both banks, and paddy fields wherever there is human habitation.

Discussion: *Barilius ngawa* is close to *B. barnoides* Vinciguerra (Fig. 2) in its predorsal length, counts of dorsal, pectoral, ventral and anal fins, but differs in having smaller number of caudal fin rays, greater number of lateral line scale rows, fewer lateral transverse scales, greater number of predorsal scales. It also has a shallower body and smaller diameter of eyes. *B. ngawa* is also distinct from the upper Burma form (Shan State), i.e. *B. ornatus* Sauvage in having greater number of lateral line scales and circumpeduncular scales, shallower body, shorter head and predorsal length, smaller eye diameter, greater snout length and lesser height of caudal peduncle. A comparative account of the meristic characters and proportional measurements is given in Table 1. The new species also differs from *Barilius dogarsinghi* Hora in having greater numbers of transverse bars on the body (13-14 vs. 8-9) and more prominent symphyseal knob on the lower jaw. Kottelat (1984) mentioned that the description of *Danio monshiensis* Wu *et al.* agreed with that of *Barilius barnoides* except for the length of the caudal peduncle. However, *Danio monshiensis* of Yunnan, China (as per description by Wu *et al.* 1964), differs from *B. barnoides* in having 15-17 transverse bars on the body (although the drawing No. 1-44 of the paper shows only 13 bars) vs. 9-10 bars and lateral line scales 42-44 vs. 40-41. The new species is also distinguished from *monshiensis* in having a greater number of predorsal scales (21-22 vs.18-19), circumpeduncular scales (16-17 vs. 14-15) and equal caudal fin lobes vs. unequal caudal fin lobes with the lower lobe conspicuously longer. Talwar and Jhingran (1991) considered *B. ornatus* Sauvage as a synonym of *B. barnoides* Vinciguerra, by confining the distribution of the latter to Myanmar. But *B. ornatus* described by Kottelat (1984), differs from *B. ornatus* examined by us in predorsal scale and circumpeduncular scale counts (Table 1).

Comparative materials. *Barilius ornatus*, ZSI 2986-87, 2 exs., Nampamdet, Shan States, *Barilius barnoides* (CMK 4053, 4280, 2exs., Mae Hong Son Province, Thailand. CMK = Collections of Maurice Kottelat, Switzerland)

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