

differs in the dactyl failing to fit into palm in *H. guasaye* and the 6th article with a hump defining enlarged palm, hump bearing stridulation ridges whereas in the present specimen the 6th article of gnathopod 2 is devoid of the hump with stridulation ridges and the dactyl clearly fits into the palm. The telson in *H. guasaye* with 3 setae on the mid-lateral edge of each lobe whereas in the given specimen only 2 setae are present on each lobe.

Hence it is regarded as new species. The present amphipod is named as *Hyale gopalswamyi* sp. nov. in honour and memory of the late Dr K. V. Gopalaswamy, former Registrar of Andhra University.

ACKNOWLEDGEMENT

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ON A NEW CYPRINID FISH OF THE GENUS *BARILIUS* HAMILTON (PISCES: CYPRINIDAE) FROM ARUNACHAL PRADESH, INDIA¹

R. P. BARMAN²

INTRODUCTION

The cyprinid fishes of the genus *Barilius* Hamilton are distributed throughout India, Pakistan, Nepal, Bangladesh, Sri Lanka, Burma, Thailand, Malaya, China, Egypt and West Africa. Day (1889) recorded 14 species and Jayaram (1981) recorded 16 species under the genus from the Indian region. While revising the subfamily Rasborinae from the Indian region, three examples of a species from Arunachal Pradesh (formerly N.E.F.A.), India referable to the genus *Barilius* were found. When compared with the known species of the genus they proved to be of a hitherto un-

described species. The species is described here and named *Barilius jayarami* after Dr. K. C. Jayaram, one of the pioneer workers on the freshwater fishes of India and Joint Director, Zoological Survey of India, who confirmed the new species.

The new species is apparently related to *Barilius dogarsinghi* Hora and *Barilius infra-fasciatus* Fowler but distinctly differs from the latter two species in morphological details.

Material. Holotype (fig. 1): 71 mm in standard length. Reg. No. Zoological Survey of India, Calcutta, FF 2150. Locality: Namdapha Wildlife Sanctuary, Tirap district, Arunachal Pradesh. Coll. Dr. S. Biswas and party. Date of collection : 17.12.1983.

Paratypes. 2 examples, 73 mm-77 mm in standard length; Reg. No. Zoological Survey

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² Zoological Survey of India, Calcutta-700 016.

of India, Calcutta, FF 2151. Locality, collector and date of collection same as in holotype.

DIAGNOSIS

Dorsal fin commences opposite interspace between pelvic and anal fin and extending entirely over the latter. Lateral line scales 42-43. Head length 3.70-3.93 and body depth 3.52-3.70 in standard length. Eye diameter 3.00-3.20 in head length, Height of caudal peduncle 2.00-2.40 in its length. Lateral transverse bands vary from 8 to 9.

(1.20-1.60) in postorbital part of head, equal to or slightly shorter than interorbital distance. Gape of mouth wide, extending beyond anterior margin of eye. Two pairs of barbels present, anterior or rostral barbels very short and posterior or maxillary barbels are about one fifth in eye diameter. Height of caudal peduncle 2.18 (2.00-2.40) in its length.

Scales 42-43 in lateral line, $6\frac{1}{2}$ above, $3\frac{1}{2}$ below to base of pelvic fin; 19-20 predorsal and circumpeduncular 14.

Fins: D. ii-iii, 8; A. iii, 11; P. i, 12-13; V. i, 8; C. 19.

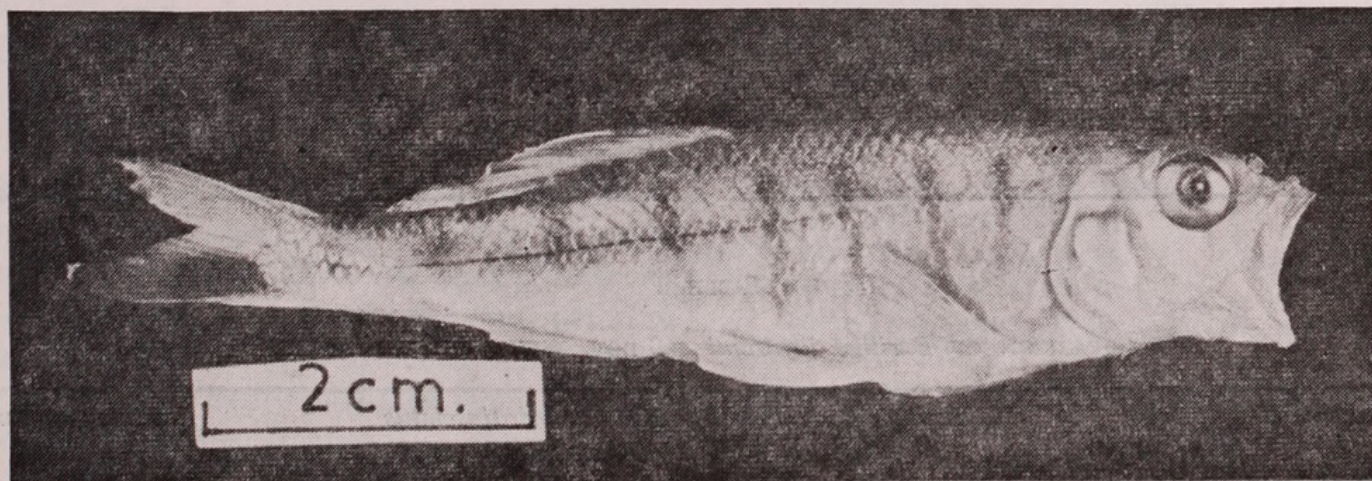


Fig. 1. Lateral view of *Barilius jayarami* sp. nov.

DESCRIPTION

Head length 3.79 (3.70-3.93), body depth 3.63 (3.52-3.70), predorsal distance 1.83 (1.81-1.85), prepelvic distance 2.30 (2.25-2.36), preanal distance 1.56 (1.53-1.59) and length of caudal fin 4.67 (4.50-4.91) in standard length. Height of head 1.19 (1.15-1.23) and width of head 1.99 (1.87-2.12) in head length. Snout length 3.71 (3.40-4.00) in head length, 1.18 (1.10-1.25) in interorbital distance, 1.54 (1.50-1.60) in postorbital part of head. Eye anterior, dorso-lateral, diameter 3.10 (3.00-3.20) in head length, 1.35

Dorsal originates opposite interspace between pelvic and anal, extending entirely over the latter; nearer to base of caudal fin than to tip of snout. Pelvic nearer to tip of snout than to base of caudal fin. Pectoral fin well extending pelvic which reaches anal fin. Height of dorsal 5.39 (4.84-5.90), height of anal (6.73-7.00), pectoral length 5.51 (5.36-5.72) and pelvic length 5.05 (4.91-5.25) in standard length. Caudal fin deeply forked with unequal pointed lobes lower one slightly longer than upper one.

Different body proportions, their range and mean have been shown in table 1.

TABLE 1

Body Proportions	Range	Mean
Standard length/Head length	3.70-3.93	3.79
Standard length/Body depth	3.52-3.70	3.63
Standard length/Predorsal distance	1.81-1.85	1.83
Standard length/Prepelvic distance	2.25-2.36	2.30
Standard length/Preanal distance	1.53-1.59	1.56
Standard length/Caudal fin length	4.50-4.91	4.67
Head length/Height of head	1.15-1.23	1.19
Head length/Width of head	1.87-2.12	1.99
Head length/Snout length	3.40-4.00	3.71
Interorbital distance/Snout length	1.10-1.25	1.18
Head length/Eye diameter	3.00-3.20	3.10
Standard length/Height of dorsal	4.84-5.90	5.39
Standard length/Height of anal	6.55-7.00	6.73
Standard length/Pectoral length	5.36-5.72	5.51
Standard length/Pelvic length	4.91-5.25	5.05
Length of caudal peduncle/ Height of caudal peduncle	2.00-2.40	2.18

TABLE 2

COMPARISON OF *Barilius jayarami* sp. nov. WITH RELATED SPECIES

Characters	<i>Barilius dogarsinghi</i> Hora	<i>Barilius infra fasciatus</i> Fowler	<i>Barilius jayarami</i> sp. nov.
Position of anal fin	entirely under the dorsal fin	partly under the dorsal fin	entirely under the dorsal fin
Diameter of eye in head length	4.00-4.75	3.40-4.00	3.00-3.20
Lateral line scales	38-39	41-43	42-43
Coloration			
(a) Lower lobe of caudal fin with a longitudinal band	absent	absent	present
(b) A deep black spot at the centre of the base caudal fin	present	absent	absent
(c) Caudal fin with 3 obscure dark bands	absent	present	absent
(d) A dark longitudinal band over the caudal peduncle and trunk of the body	absent	absent	present
(e) Vertical bars	9-10	10-12	8-9

Colour in alcohol. Dorsal surface dark and ventral surface bright silvery white. Along the lateral sides of trunk and caudal peduncle 8 or 9 transverse dark bluish bands, narrower than pale interspaces and extending from back to downwards till below lateral line, those on caudal peduncle shorter, and last as dark blotch at base of caudal fin. The dark longitudinal band in lower lobe of caudal fin is an unfailing character of distinction. A dark longitudinal line extending from base of caudal fin to below commencement of dorsal fin. Dorsal fin provided with dark bands across their rays. Pectoral, pelvic and anal fin dull white colour.

RELATIONSHIPS

Barilius jayarami is apparently related to *Barilius dogarsinghi* Hora (1921) and *Barilius infrafaciatus* Fowler (1934). The new species resembles *B. dogarsinghi* in having anal fin entirely under the dorsal fin, two pairs of barbels and lateral vertical bands 8 or 9. However, it can be easily separated from the latter by the following characters. Eye diameter 3.00-3.20 in former species vs. 4.00-4.75 in the later species in head length; lateral line scales 42-43 vs. 38-39; lower lobe of caudal fin with a longitudinal bar vs. no such bar on the lobes of caudal fin.

The new species can be also separated from *B. infrafaciatus* in having the anal fin entirely under the dorsal fin vs. anal fin partly under the dorsal fin; lower lobe of caudal fin is provided with a longitudinal band vs. caudal fin with three dark transverse bands and a dark longitudinal band present over the caudal peduncle and trunk of the new species vs. no such band is present in the latter species.

A comparison of the new species with the related species is given in table 2.

KEY TO THE INDIAN SPECIES OF THE GENUS *Barilius*

1. Cleft of mouth wide, extending far beyond posterior margin of eye. A well developed symphyseal knob on the lower jaw 2
Cleft of mouth moderate, not extending beyond middle of eye. Symphyseal knob absent or ill-developed 3
2. Lateral line scales 88-95. Predorsal scales 38-40 and circumpeduncular scales 22-24
..... *B. bola* (Hamilton)
Lateral line scales 48-50. Predorsal scales 23-24 and circumpeduncular scales 14
..... *B. guttatus* (Day)
3. Anal fin entirely under the dorsal fin 4
Part of anal fin under the dorsal fin 5
4. Lateral line scales 38-39. Eye diameter 4.00-4.75 in head length. Lobes of caudal fin without any band *B. dogarsinghi* Hora
Lateral line scales 42-43. Eye diameter 3.00-3.20 in head length. Lower lobe of caudal fin with a longitudinal band
..... *B. jayarami* sp. nov.
5. Body without vertical bands 6
Body with vertical bands 11
6. Lateral line scales 38-43 7
Lateral line scales 56-75 10
7. Lateral line scales 38-40. Anal fin rays 14-18 8
Lateral line scales 40-43. Anal fin rays 11-12.
Each scale with a black spot
..... *B. bendelisis bendelisis* (Hamilton)
8. Body uniformly silvery *B. evezardi* Day
Body with rows of spots 9
9. Anal fin rays 14-15. Body with two rows of spots. *B. canarensis* Day
Anal fin rays 17-18. Body with single row of spots *B. bakeri* Day
10. Lateral line scales 56-62. Rows of spots absent
..... *B. radiolatus* (Gunther)
Lateral line scales 70-75. Two rows of spots *B. tileo* (Hamilton)
11. Lateral line scales 39-46. 12
Lateral line scales 63-75. 15
12. Vertical bands 8-12. 13
Vertical bands 14-15. 14
13. Vertical bands 8-9. Body depth 3.32-3.68 in standard length. Barbels absent or rudimentary. *B. barna* (Hamilton)
Vertical bands 10-12. Body depth 5.06-5.36 in standard length. Barbels well developed,

- rostral barbels greater than eye diameter...
 *B. vagra vagra* (Hamilton)
 14. Lateral line scales 39-40. Anal fin rays 15-17.
 Body depth 3.27-3.54 in standard length.
 *B. gatensis* (Valenciennes).
 Lateral line scales 43-46. Anal fin rays 13-14.
 Body depth 4.77-5.22 in standard length
 *B. barila* (Hamilton)
 15. Lateral line scale 65. Vertical bands 18-19.
 Barbels rudimentary. *B. menoni* Sen
 Lateral line scales 70-75. Vertical bands 12-13.
 Barbels well developed. *B. shacra*
 (Hamilton)

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A NEW SPECIES OF *OPHIORRHIZA* L. (RUBIACEAE) FROM KERALA STATE, INDIA¹

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 (With six text-figures)

Ophiorrhiza nairii sp. nov.

O. roxburghiana Wight affinis sed, stipules interpetiolaribus linearibus, adbasim latioribus, bilobatis; foliis ovato-lanceolatis, magnioribus, crassis, supra perspersim villosis, infra minute villosis plus dense in nervis; petiolis longioribus; inflorescentia corymbosa; floribus in utroque pedunculo helicoidis; tubo corollae parvioribus; stigmate 2-lobato, distincte lanceolato et fructuobovoido differt.

¹ Accepted October 1984.

² Botanical Survey of India, Southern Circle, Coimbatore-641 003.

Ophiorrhiza nairii sp. nov.

Allied to *O. roxburghiana* Wight but differs in: interpetiolar stipules linear, broader at base, bilobed; leaves ovate-lanceolate, larger, thick, coriaceous very sparsely villous above, minutely villous below, more dense on veins; petioles longer; inflorescence corymb-like but flowers in each peduncle with distinct helicoid arrangement; corolla tube smaller; stigma dilated into 2 lobes, distinctly lanceolate and fruits obovoid.

Undershrubs; stems erect, branched, terete, densely hairy; internodes 4-12 cm long. Leaves opposite decussate, simple, unequally paired;



Barman, R. P. 1985. "On a new cyprinid fish of the genus *Barilius* Hamilton (Pisces: Cyprinidae) from Arunachal Pradesh, India." *The journal of the Bombay Natural History Society* 82(1), 170–174.

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