



## Description of a new species of fish, *Barilius pectoralis* (Cypriniformes: Cyprinidae: Daniniinae) from Uttarakhand

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### ABSTRACT

A new cyprinid fish, *Barilius pectoralis*, has been described from Tons river, a tributary of river Yamuna, Western Doon Valley, Dehra Dun and differentiated from its nearest ally, *Barilius shacra* (Hamilton, 1822) in a number of characters, especially the pectoral fin.

**Key Words:** *Barilius pectoralis*, sp.nov.

### INTRODUCTION

The fish fauna of Uttarakhand, especially of Dehra Dun district and around has attracted the attention of various workers during the past (Das, 1960; Fowler, 1924; Hora and Mukerjee, 1936; Lal and Chatterjee, 1963; Singh, 1964; Tilak, 1969, 1970; Grover, 1970; Tilak and Husain, 1974, 1975, 1977, 1978a,b, 1980a,b, 1990; Husain, 1975, 1976, 1979, 1980, 1995, 2010; Husain and Tilak, 1995, Uniyal and Kumar, 2006) but present find was never encountered or missed.

However, during a faunistic survey of Dehra Dun district in August, 1965, an interesting material of the genus *Barilius* Hamilton, 1822 was collected from river Tons (a tributary of river Yamuna) at Haripur near Kalsi (30° 32' N Latitude and 77° 51' E Longitude), base of Chakrata Hills, by the author (with T. D. Soota), which on detailed examination is found to belong to an hitherto unknown species under the genus *Barilius* Hamilton, 1822 and is described here as *Barilius pectoralis*, a species new to science. It is named on its characteristically shaped pectoral fins. The type material has been deposited at Northern Regional Centre, Zoological Survey of India, Dehra Dun, Uttarakhand for further reference, if required.

Earlier, Tilak and Husain (1980, 1990) and Husain (2010) described three new species under genus *Barilius* Hamilton, 1822, viz. *Barilius corbetti* from Corbett National Park (now Corbett Tiger

Reserve), *Barilius dimorphicus* from Rajaji National Park and *Barilius lanceolatus* from Dehra Dun which were different from the allied species *Raiamas bola* (Hamilton, 1822), *Barilius tileo* (Hamilton, 1822) and *Barilius radiolatus* Gunther, 1868, respectively, in a number of characters.

### MATERIALS AND METHODS

#### Type Material

**Holotype:** 100 mm in total length, 81 mm in standard length; Tons river, Haripur near Kalsi, District Dehra Dun (30° 32' N Latitude and 77° 51' E Longitude); 01.viii.1965; Coll. T. D. Soota and Akhlaq Husain; Regd. No. NRC / ZSI / V-1197.

**Paratype:** One example, length and other data same as that of Holotype;

Regd. No. NRC / ZSI / V-1198.

**Location of Type Material:** Deposited at Northern Regional Centre, Zoological Survey of India, Dehra Dun, Uttarakhand, India.

### RESULTS AND DISCUSSION

*Barilius pectoralis*, sp. nov. (Fig.1)

**Description:**

**Meristic Characters:**

Branchiostegal and fin rays: B. iii, D. III/7, P. I/14, V. I/8, A. III/8, C. 17.

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Scales: L.I. 58-59, D.-L.I. 10.5, L.I.-V. 4-5, P. D. S. 29.

Pharyngeal Teeth: 3, 5 / 5, 3.

**Morphometric Characters (Ratios):**

Head length 4.88-5.13, body depth 4.76-5.26, body width 10.00, pre-dorsal distance 2.38-2.44, post-dorsal distance 2.56-2.63, pectoral-pelvic distance 4.76-5.00, pelvic- anal distance 5.26-5.71, pre-anal opening distance 1.85, post-anal opening distance 3.23-3.57, height at anal fin 6.67-7.14, anal fin 9.52-10.00 and caudal fin 5.26 in total length

Head length 3.95-4.15, body depth 3.86-4.26, body width 8.10, pre-dorsal distance 1.93-1.98, post-dorsal distance 2.08-2.13, pectoral-pelvic distance 3.86-4.05, pre-pelvic distance 1.98-2.03, post-pelvic distance 1.84-1.95, pelvic-anal distance 4.26-4.63, pre-anal opening distance 1.50, post-anal opening distance 2.61-2.89, height at anal fin 5.40-5.79, anal fin 7.71-8.10 and caudal fin 4.26 in standard length.

Head width 1.86-1.95, head height 1.39-1.46, postorbital head length 2.05, eye diameter 3.90-4.10, inter-orbital width 3.25-.42, snout length 3.42-3.75, dorsal fin 1.39-1.46, dorsal base 1.77-1.86, pectoral fin 1.26-1.32, pelvic fin 1.63-1.71, height at anal 1.37-1.39, anal fin 1.86-2.05 and anal base 1.78-1.82 in head length.

Other proportions: Eye diameter 1.04-1.20 in snout length and 1.20 of inter-orbital width, inter-orbital width 1.67-1.83 in head width, dorsal fin 1.36-1.50 of body depth, dorsal base 1.27 in dorsal fin height, pectoral fin 1.29-1.35 of pectoral-pelvic distance, pelvic fin 1.46-1.58 in pelvic-anal distance, height at anal 1.36-1.40 in body depth, anal base 0.96-1.03 in dorsal base, caudal peduncle least height 1.88-2.00 in caudal peduncle length.

**Descriptive Characters:**

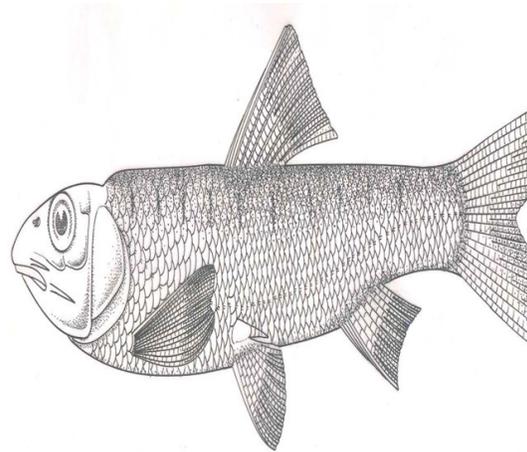
Body robust, moderately compressed, ventral profile comparatively more arched than that of dorsal profile; area in front of pectoral bases smooth, broadly flattened and slightly depressed with raised sides.

Head oval, snout obtuse; mouth sub-terminal, cleft extending very slightly behind anterior margin of eye, upper jaw overhanging lower jaw; barbels two pairs, rostral pair equal to eye diameter and extending

to anterior margin of its pupil and slightly beyond base of maxillary barbel while latter slightly shorter than former and nearly extending to hind edge of eye; nostrils nearer eye than snout tip; eyes in anterior half of head, 3<sup>rd</sup> suborbital half as deep as uncovered part of cheek below, its hind margin distinctly separated from pre-opercular edge; with of operculum equaling length of snout; gill-openings wide.

Dorsal origin slightly behind that of pelvic and midway between nasal opening and caudal base, its height more than its base, fin emarginated, tip of last ray extending above vertical from 7<sup>th</sup> anal ray.

Pectorals fan-shaped with a deep notch at the level of 3<sup>rd</sup> ray, three rays thickened with 3<sup>rd</sup> one the shortest, next three rays slightly prominent and superficially united with a continuous membranous margin, fins provided with muscular pads. Pelvics fleshy (overlap each other in non-living condition), fan-like (when expanded), middle rays thickened, inner few rays (5<sup>th</sup> and 6<sup>th</sup>) lightly prominent, last two rays somewhat united, tip not reaching anal-opening which latter lies slightly in front of anal base. Axillary appendage of paired fins short and fleshy. Anal origin just behind vertical from last ray of dorsal, fin slightly emarginated. Caudal forked, upper lobe slightly longer.



**Figure 1. Lateral view of *Barilius pectoralis*, sp. nov.**

**Table 1. Differences between *Barilius pectoralis*, sp. nov. and *Barilius shacra* (Hamilton, 1822)..**

Sl. No.	<i>Barilius pectoralis</i> , sp. nov.	<i>Barilius shacra</i> (Hamilton, 1822)
1.	D. III/7; P. I/14; V. I/8; A. III/8; C. 17.	D. II/7; P. 13-15; V. 8; A. II/8; C. 19-20 (Hamilton, 1822; Gunther, 1868; Day, 1878)
2.	Snout broadly obtuse	Compressed (Day, 1878).
3.	Upper jaw over hanging lower jaw.	Jaws of about equal length in front (Day, 1878).
4.	Maxilla reaching to slightly beyond anterior margin of eye.	Reaching below anterior margin of orbit (Day, 1878).
5.	3 <sup>rd</sup> suborbital half as deep as uncovered part of cheek below.	2/3 <sup>rd</sup> as wide as uncovered part of cheek below (Day, 1878).
6.	Dorsal commencing midway between Nasal opening and caudal base.	Midway between anterior margin of orbit and caudal base (Day, 1978).
7.	Three outer pectoral rays strongly thickened. Margin of pectoral fin notched at 3 <sup>rd</sup> outer ray and next three rays bounded by a thick membrane in males.	4-6 outer pectoral rays strong. No mention of a notch and thick membrane by Hamilton (1822) and Day (1878).
8.	4-5 rows of scales between lateral line and base of pelvic fin.	About seven rows of scales (Day, 1878).
9.	Lateral line scales 58-59.	72 (Gunther, 1968), 60-70 (Day, 1878).
10.	Predorsal scales 29.	25 scales.
11.	9-10 short lateral bars, not extending beyond dark colouration of back.	About 13 bluish spots along side of back (Gunther, 1868). About 12 incomplete Bars go from back downwards towards Lateral line (Day, 1878).
12.	No dark band on dorsal fin.	A dark bar along upper 3 <sup>rd</sup> of dorsal fin (Day, 1878).

Scales small, area in front of pectorals with a row of few indistinct scales in middle and on raised sides; lateral line concave, running along lower half of body and passing almost through middle of caudal base.

**Colouration:**

Colour silvery, back dark with 9-10 short indistinct bars not extending below. Fins pale except for lower half of caudal in which is stained with grey.

**Distribution:**

Uttarakhand: Dehra Dun: Yamuna drainage system.

**Notes on Ecology:**

**Habitat:** It is found in the terrestrial streams with very cold water and stony and rocky bed.

**Food, feeding habits and breeding:** Studies on these aspects could not be undertaken due to the rare occurrence of the species.

**Commercial importance:**

Due to its smaller size and rare occurrence, it is not of much importance as food.

**Relationship:** The closest ally of this species is *Barilius shacra* (Hamilton, 1822) from which it differs mainly in lesser number of scales between lateral line and base of pelvic fin. Other differentiating characters are given in Table 1.

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