

XVIII DESCRIPTION OF A NEW SPECIES
OF *NEMACHILUS* FROM NORTHERN
INDIA.

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Nemachilus mackenziei, sp. nov.

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Length of head 4, height of body $4\frac{4}{5}$, length of caudal $3\frac{1}{2}$ to 4 and the distance of cloacal opening from the root of caudal $3\frac{1}{2}$ in the total length. Breadth of body $1\frac{1}{5}$ in its height.

Head.—Upper profile a straight line from nape of neck to behind the nasal pits, from which point it curves and suddenly slopes down. Shape of head cylindrical, being almost of equal height and breadth, both of which measurements are contained $1\frac{1}{2}$ times in the length of head. There is a small slit or depression on each side in front of the eyes which in the male is bordered by a ridge extending like a small pad to below the eye on each side, where it terminates in a small rounded knob-like hanging flap.

Eyes comparatively large, being $3\frac{1}{2}$ to 4 diameters in the length of the head, $1\frac{1}{5}$ to $1\frac{1}{2}$ in the length of the snout and 1 to $1\frac{1}{5}$ diameters apart; the intraorbital space nearly flat.

Barbels.—6 in all, 4 rostral and 2 maxillary; the outer rostrals are the longest, reaching below the hind margin of the eye and the maxillary reaches beyond them; the inner rostrals reach below the anterior margin of the orbit.

Lips rather thin for the genus. The ends of the suctorial band meet at the middle of the lower lip. The ends are slightly expanded and curved up, thus making the lower lip look interrupted medially. No spine-like process projecting from the middle of the lower lip.

Fins.—The dorsal is in advance of the middle point as well as of the ventral fin. There is a short thick appendant in the angle between the outer margin of the ventral fin and the body. The length of the pectoral fin is contained $1\frac{2}{5}$ in the interval between pectoral and ventral fins while the lengths of the ventral and anal fins are contained $1\frac{2}{5}$ and $1\frac{1}{5}$ in the intervals between the ventral and the anal and the anal and the caudal, respectively. The outer margin of the caudal is rounded and is bilobed, being divided by a notch in the middle.

Shape of body.—Slightly compressed. The anterior end of the root of the dorsal fin is the highest point, the upper profile is almost a straight line with a slight concavity behind the dorsal fin

as the hinder part of the body gradually tapers a little towards the root of the caudal fin. The ventral profile is somewhat curved, with the convexity downwards, the lowest point being the anterior root of the ventral fin.

Lateral line.—Complete, generally follows the curvature of the ventral rather than that of the dorsal profile; in the anterior one-third it slightly curves downwards then upwards to reach the upper corner of the opercle.

Scales of moderate size, all over the body except on the head.

Air-bladder very much reduced and enclosed in paired osseous capsules placed dorsally behind the gills.

Colour.—Head down to the level of the eye dark brown or grey with black patches and spots interspersed irregularly. Body above the lateral line dark brown or grey divided by obliquely transverse thick black bands looping round the back and extending to below the lateral line, the interspaces being often quite as broad as the bands; 5 to 6 such bands in front of the dorsal fin, 4 to 6 below the fin and 5 to 6 behind it. The ground colouring of the sides of the abdomen below the lateral line is of lighter brown to pale yellowish white dashed with silver; the part of the sides immediately below the lateral line is characteristically marked with 12 or 13 wedge-shaped blackish brown or grey inverted-cone-like markings the apices of which reach some distance below the lateral line, along which the bases of these cone-shaped markings run. These markings appear to be in reality the intercepted terminals of the transverse bands mentioned above. The interspaces between the cones are broader than the breadth of their bases. About the middle of the interspaces a fainter and narrower series of grey or pale brown interrupted markings are noticed which are detached below the lateral line, and disappear above the apices of the cones. These faint markings make the darker cones still more conspicuous. Fins: the dorsal fin is pale brown or grey with five or less black or brown bands made up of spots; the caudal is also pale brown and is banded with six black or brown convex curves in some (one Naini Tal and one Champaran specimen) and wedge-shaped in others (Saran and Champaran specimens). The convexity of the curves and the apices of the cones, as the case may be, always pointing outwards (posteriorly). The pectoral, ventral and anal are not banded but are pale yellow to dull white, being somewhat similar to the lower abdomen. There is a black ocellus on the upper border of the root of the caudal fin.

Secondary sexual characters.—There are two male secondary sexual characters to be noticed in the type specimens from Cheriya-dhang (U. P.), firstly, a slit-like deep groove in front of the eye which bends round a small knob-like rounded flap of skin protruding below the anterior one-third of the orbit, the ridge above the groove appearing slightly swollen and cushion-like; secondly, there is a kind of padding and thickening on the upper surface of the pectoral fins, where, on the padding, minute hooked denticular outgrowths are noticed.

Two specimens (of which one is a sexually mature male measuring 7.5 cm.) were obtained by a Museum collector in a small stream at Cheriadhang near Kathgodam and one at Jaulasal, in the Naini Tal district (U. P.), at the base of the W. Himalayas. Seven specimens were collected by Mr. Mackenzie from the Jharai and the Jamwari Nadi near Siripur in the district of Saran (Bengal), and two specimens (the bigger being a sexually mature female measuring 7.4 cm.) were obtained by Mr. Walker from a *jhil* at Purnahia (P. O. Ghorasan) in the district of Champaran.

There is some superficial resemblance between this new species and *N. rubidipennis*, which is reported only from Tenasserim (Burma), and the type of which is in the Indian Museum collection. From *N. rubidipennis* the new species differs in many important characters, especially in the shape of the head; also in the number of fin rays, shape and markings of caudal fin, proportional lengths of barbels and in several other particulars.
