Dzihunia, a new genus of nemacheiline loaches from the Aral Sea basin (Pisces: Cypriniformes: Balitoridae)

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Dzihunia gen. n. is described for *Nemacheilus amudarjensis* Rass, 1929 and *N. ilan* Turdakov, 1936, stat. n. (= *N. amudarjensis ilan*). The new genus is distinguished from other Nemacheilinae by the peculiar epidermal spinulation on head and body, unique mouth structure and some other characters. *N. amudarjensis choresmi* Berg, 1932 is considered a synonym of the nominotypical subspecies.

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"Nemacheilus" amudarjensis is a poorly-known species of loaches described by Rass (1929) from the upper Amudarya River. Berg (1932) and Turdakov (1936) added two new subspecies, *N. amudarjensis choresmi* and *N. amudarjensis ilan,* respectively. Later Nikolskij (1938) and Berg (1949) placed *N. a. ilan* in synonymy with the nominotypical subspecies, but recognized *N. a. choresmi* as a distinct subspecies differing from the nominotypical one in the slightly deeper body and larger eyes (Berg, 1949, p. 883). The generic placement of *"N." amudarjensis* is obscure. Bănărescu & Nalbant (1966) listed this species in the subgenus *Hedinichthys* subsequently synonymized with the genus *Triplophysa* (Bănărescu & Nalbant, 1995). Our study of the latter genus elucidated that *"N." amudarjensis* does not belong to *Triplophysa* on the basis of the absence of characteristic broadened and thickened pectoral rays and tubercles on the head and body, presence of a strong processus dentiformis on the upper jaw as well as in a number of unique characters (see below). We found that *N. a. ilan* is quite distinct from *N. a. amudarjensis,* and *N. a. choresmi* is not distinct, because any proportional characters of the latter are greatly overlapped with those of the nominotypical form.

Dzihunia gen. n.

Type species *Nemacheilus amudarjensis* Rass, 1929.

Diagnosis. Body scaleless, elongate cylindrical, thick, with very elongate caudal peduncle. Head strongly depressed, with broad interorbital and very small eyes. Mouth with broad, staple-like rim and strongly developed processus dentiformes. Upper lip strongly furrowed, without any lateral prolongations or lobes; lower lip interrupted, narrow and crenulated laterally, but broadened as strongly furrowed pad medially, without any lateral or mental lobes. Left and right medial pads of lower lip closely spaced. Posterior nostril much larger than anterior one and enclosing it on posterior margin. Dorsal fin nearly equidistant between tip of snout and caudal base, or slightly closer to former or latter, with 6-7 branched rays. Anal fin with 5 branched rays. Ventrals situated on the vertical of dorsal fin origin. All branched pectoral fin rays of similar breadth and thickness. Caudal fin deeply forked. No traces of adipose keel on caudal peduncle. Lateral line complete. Intestine short. Air bladder capsule with well spaced, rounded lateral lobes and distinct posterior cornua, without ridges or perforations. Free portion of air bladder reduced. Dorsal and lateral surfaces

of body and head as well as branchiostegal membrane and interpectoral area covered with spinule-like epidermal tubercles equally distinct in juveniles, females and mature males. Sexual dimorphism absent.

Etymology. The generic name is given after Dzihun, ancient Arabian name of the Amudarya River.

Included species: *D. amudarjensis* (Rass, 1929); *D. ilan* (Turdakov, 1936).

Comparison. The new genus strikingly differs from all known Nemacheilinae in the unique mouth structure (staple-like mouth rim; lower lip with narrow, crenulate lateral parts and pad-like, strongly furrowed medial parts) and the spinule-like epidermal tuberculations not associated with sex or maturity. These tubercles also are present on the branchiostegal membrane, which lacks tuberculation in all other genera. In most other respects, the new genus seems to be very close to the genus *Oreias* Sauvage, 1874, from the upper Changjiang basin in China, but differs also in the much longer and lower caudal peduncle and position of ventral fins, which are situated slightly anterior to the dorsal origin in *Oreias* (see Bănărescu & Nalbant, 1976, Pl. 1, fig. 1-4) and on one vertical in the new genus. *Dzihunia* gen. n. is well distinct from *Triplophysa* Rendahl, 1933, also in the absence of sexual dimorphism and equal breadth of all pectoral fin rays.

Abbreviations used for museums: ZISP, Zoological Institute, St.Petersburg; ZMMU, Zoological Museum, Moscow University. The number of specimens is given in parentheses.

Dzihunia amudarjensis (Rass, 1929)
(Figs 1-5)

Nemacheilus amudarjensis Rass, 1929: 253; Nikolskij, 1938: 161, fig. 51; Turdakov, 1946: 59; Berg, 1949: 881, fig. 629.

Nemacheilus amudarjensis choresmi Berg, 1932: 150, fig. 2; 1949: 882, fig. 630.

Nemacheilus (Hedinichthys) amudarjensis: Bănărescu & Nalbant, 1966: 156 (name only).

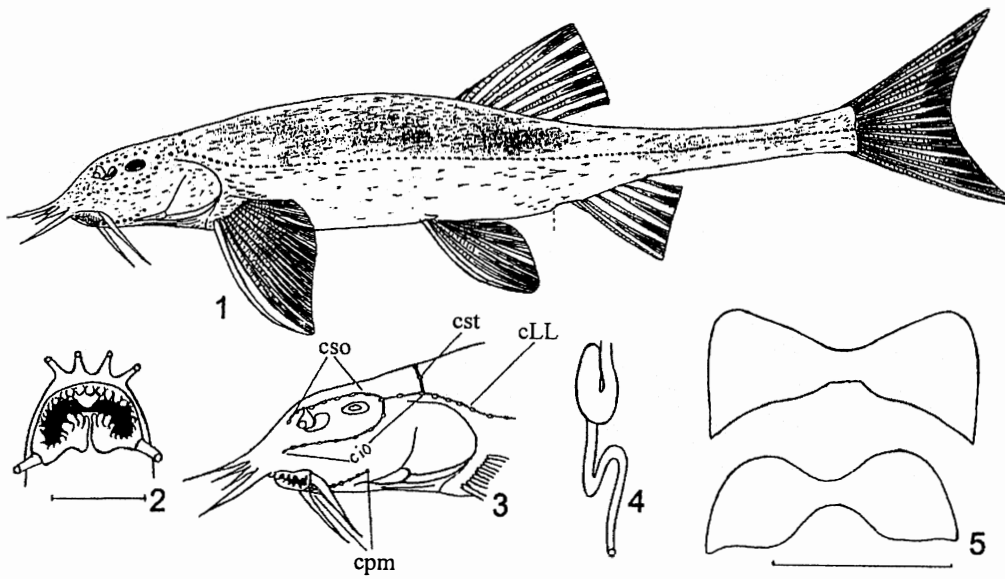
Syntypes of N. amudarjensis. ZISP no. 22042, Amudarya River near Termez (2).

Types of N. a. choresmi. ZISP no. 23866, Amudaryan delta near Tokmak-ata Island (1, holotype of *N. a. choresmi*); nos. 23867 (1) and 23868 (1) from the same locality (paratypes of *N. a. choresmi*).

Other material examined. ZISP no. 20715, upper Amudarya (1); no. 20732, Amudarya near Chardzhou (2); no. 26299, Pyandzh River, upper Amudarya basin (2); ZMMU nos. 2254 (10), 2334 (1), 2955 (2), 3996 (2), 4340 (4), all from the Amudarya River.

Description. Body elongate cylindrical, thick, with slightly arched dorsal profile and almost straight ventral profile (Fig. 1). Maximum body depth contained 6.4-9.2 times in standard length (SL). Maximum body width similar to maximum body depth. Caudal peduncle extremely elongate and low, its depth contained 4.8-6.0 times in its length and 15.3-23.8 times in SL. Caudal peduncle length much greater than maximum body depth or head length and contained 3.7-6.1 times in SL. Head strongly depressed, wide, its length contained 4.35-5.5 times in SL. Snout bluntly rounded, from slightly shorter to slightly longer than postorbital part of head; its length contained 2.0-2.8 times in head length. Eyes very small, dorsal; horizontal diameter of eye contained 2.5-3.0 times in interorbital width and 8-12 times in head length. Interorbital wide and flat, its width contained 3.3-3.4 times in head length. Measurements in percentages of SL: head length 18.1-23.0; maximum body depth 10.9-15.7; caudal peduncle length 21.1-27.0; caudal peduncle depth 4.8-7.8; predorsal length 44.8-53.5; preventral length 44.8-53.5; preanal length 65.2-73.0; pectoventral distance 25.7-29.3; ventro-anal distance 18.4-23.3; pectoral fin length 16.0-24.0; ventral fin length 13.3-17.6; dorsal base length 10.0-13.1; anal base length 7.6-9.1; dorsal fin height 16.2-18.4; anal fin height 15.2-17.6; caudal fin length 18.0-25.0; anus – anal fin origin distance 2.9-6.5; in percentages of head length: snout length 35.3-50.0; eye diameter 5.3-11.8; interorbital width 29.4-30.0.

Both anterior and posterior nares close together, the latter larger than anterior one and encloses it posteriorly. Nasal flap short and rounded. Mouth inferior (Fig. 2), wide; mouth rim broad and staple-shaped (in other nemacheilines, more or less horse-shoe-shaped). Upper lip continuous, strongly furrowed, without any lateral prolongations or lobes; lower lip narrow and only crenulated laterally, but becomes broad, strongly furrowed and pad-like medially. Lower lip interrupted, but both left and right medial pads closely spaced. No traces of mental or lateral lobes of lower lip. Upper jaw with strongly developed processus dentiformis. Lower jaw truncate, enclosed by medial pads of lower lip. Three pairs of barbels; rostral pair nearly two-thirds as long



Figs 1-5. *Dzihunia amudarjensis:* **1**, lateral view; **2**, ventral view of mouth; **3**, cephalic laterosensory system pattern; **4**, intestine; **5**, outline of air bladder capsule. Abbreviations for laterosensory canals are given in text. Scale bar 10 mm.

as maxillary pair; maxillary and mandibular barbels are nearly equidimensional. Mandibular barbels extend beyond posterior margin of eye; barbel length contained 2.7-3 times in head length.

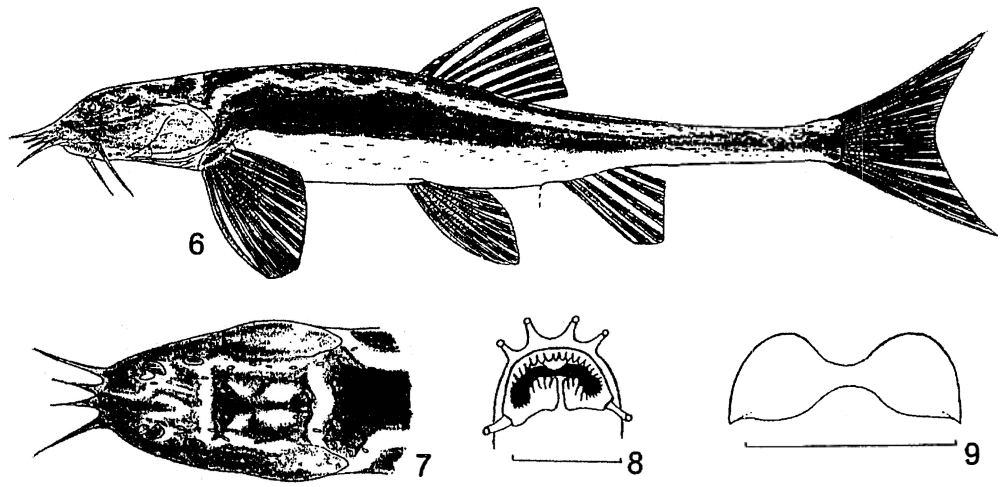
Supraorbital canal (cso) of cephalic laterosensory system uninterrupted between nasal and supraorbital parts and confluent with infraorbital canal (cio); the latter confluent with supratemporal commissure (cst) and body lateral line (cLL). Cst unpaired. Preoperculomandibular canal (cpm) short, its upper pore situated on line of mouth cleft. Lateral line complete, nearly straight. Number of pores: cso 7; cio 11; cst 3; cpm 7; cLL 90-95. Disposition of cephalic laterosensory canals as in Fig. 3.

Dorsal fin origin usually equidistant to snout tip and caudal base, but sometimes slightly closer to former or latter. Upper margin of dorsal fin straight. Dorsal fin rays II-III/6-7$^{1}/_{2}$. Tip of depressed dorsal fin extends to a vertical through middle of anal fin base. Anal fin short-based, with straight lower margin. Anal fin rays II/5. First branched anal fin ray the longest. Ventral fins situated on same vertical as dorsal origin. These fins usually extend to anus, sometimes to anal fin origin, but sometimes slightly before anus only. Ventral fin rays I/6-7. Tips of ventrals formed by second or third branched rays. Pectoral fins long, from half to three-quarters of pecto-ventral distance in length. Pectoral fin rays I/9-10. All rays of pectorals similar in breadth and thickness. Tips of pectorals formed by first and second or only second branched rays. These rays are slightly elongated. Caudal fin deeply forked, slightly longer than head.

Anus positioned close to anal origin, distance between anus and anal origin equal or smaller (as much as twice) than interorbital space, but always greater than eye diameter. Intestine (Fig. 4) short, with two coils. Air bladder capsule slightly varied in outline, extreme variations as in Fig. 5. Dorsal and lateral surfaces of head and body as well as branchiostegal membrane and interpectoral area covered with spinulae-like epidermal tubercles similarly developed in both sexes. These spinules are equally dense both in juveniles and mature fish. Sexual dimorphism absent.

Coloration. Overall coloration pale, sometimes with indistinct darkish markings on dorsal surface. All fins pale.

Comparison. Comparison with the only other known species of the genus, *D. ilan*, see under description of the latter.



Figs 6-9. *Dzihunia ilan:* **6**, lateral view; **7**, dorsal view of head; **8**, ventral view of mouth; **9**, outline of air bladder capsule. Scale bar 10 mm.

Remarks. Our measurements agree well with those by Rass (1929: 258-260) and Nikolskij (1938: 162). Nikolskij noted a great variability in most of the proportional characters in this species with growth.

Distribution. Amudarya River basin from Termez to the mouth. According to Turdakov (1946), also found in the Naryn River, Syrdarya basin. The latter record is doubtful, but we have no material from this region to verify the identification.

Dzihunia ilan (Turdakov, 1936), stat. n.
(Figs 6-9)

Nemacheilus amudarjensis ilan Turdakov, 1936: 207, figs 3a, 3b, 4.

Holotype. ZISP no. 30501, Zeravshan River downstream of Samarkand, Amudarya basin.

Description. Similar in body shape to *D. amudarjensis*. Maximum body depth contained 7.4 times in SL. Caudal peduncle long and low, its depth contained 5.1 times in its length and 21.4 times in SL. Caudal peduncle length greater than length of head and contained 4.2 times in SL. Head similar in shape to that of *D. amudarjensis*, its length contained 4.8 times in SL. Snout slightly shorter than postorbital part of head, its length contained 2.25 times in head length. Eyes very small; horizontal diameter of eye contained 2.2 times in interorbital width and 7.2 times in head length. Interorbital space broad, contained 3.3 times in head length. Measurements in percentages of SL: head length 21.1; maximum body depth 13.45; caudal peduncle depth 4.7; caudal peduncle length 24.0; predorsal distance 48.0; preventral distance 48.0; preanal distance 66.7; pecto-ventral distance 25.7; ventro-anal distance 19.9; length of pectoral fin 16.4; that of ventral fin 15.2; dorsal base length 14.0; anal base length 9.4; dorsal fin height 17.5; anal fin height 16.4; caudal fin length 22.2; distance anus – anal fin origin 4.1; in percentage of head length: snout length 44.4; eye diameter 13.9; interorbital width 30.6.

Both anterior and posterior nares close together, the latter larger than anterior one and enclosing it posteriorly. Mouth shape (Fig. 8) similar to that of *D. amudarjensis*. Barbels long. Length of first (rostral) pair of barbels contained 1.4 times in length of second and third, the latter ones equidimensional, their length contained 2.6 times in head length. Cephalic laterosensory canals pattern as in *D. amudarjensis*. Numbers of pores: cso 7, cio 9, cpm 5, cst 3, cLL *ca.* 82. Lateral line complete.

Dorsal fin origin closer to snout tip than to caudal base, with three simple and $7^1/_2$ branched rays. Upper margin of dorsal fin straight. Anal fin short based, with two simple and 5 branched rays. Second branched anal ray the longest and lower margin of anal seems to be convex. Ventrals situ-

ated on same vertical with dorsal origin, extending to anus. One simple and 6 branched rays in ventral fin, tip of this fin formed by second branched ray. Pectorals slightly more than half of pecto-ventral distance in length, with one simple and 9 branched rays; tips of these fins formed by third branched ray. All pectoral rays equal in breadth. Caudal fin deeply forked, slightly longer than head.

Anus removed from anal origin on distance contained 1.6 times in interorbital width but in 1.4 times as great as eye diameter. Intestine with two coils. Air bladder capsule as in Fig. 9. Spinulae-like epidermal tubercles arranged as in *D. amudarjensis*.

Coloration. Head and body very dark dorsally and laterally, yellowish ventrally with distinctive yellowish markings on dorsal surface of head (Fig. 7) and caudal base. Two parallel dorsal longitudinal yellowish stripes from opercles to caudal peduncle, which are zigzag anterior to dorsal fin origin but become straight posteriorly. Rays of dorsal and anal fins dark, interradial membranes yellowish. The pronounced blackish spots present on the bases of simple and two anterior branched dorsal rays. Caudal fin very dark.

Comparison. D. ilan differs from *D. amudarjensis* chiefly in its distinctive coloration as well as in the form of the anal fin. The longest branched anal ray is second in *D. ilan* and the lower margin of the anal fin becomes convex (vs. the first branched anal ray is the longest and the lower margin of the fin straight in *D. amudarjensis*). Both species also are distinctive in the numbers of the pores of cio (9 in *D. ilan* vs. 11 in *D. amudarjensis*), cpm (5 vs. 7) and cLL (82 vs. 90-95).

Distribution. Zeravshan River in Amudarya system.

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