

## A new genus and two new species of loaches (Teleostei: Nemacheilidae) from Myanmar

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*Schistura callidora*, new species, is described from the Myitnge River drainage, Irrawaddy basin (Myanmar). It is distinguished by dark bars on the body much thinner in the anterior half of the body than in the posterior half; a high dorsal crest on the caudal peduncle;  $8\frac{1}{2}$ – $10\frac{1}{2}$  branched dorsal-fin rays; and the lateral line reaching behind the base of the anal fin. *Pteronemacheilus*, new genus, is characterised by the presence of elongated skinfolds on the dorsal side of the second and third branched pectoral-fin rays in males. *Pteronemacheilus lucidorsum*, new species, is described from the Myitnge River drainage, Irrawaddy basin (Myanmar). It differs from its only congener, *P. meridionalis*, by having the dorsal midline without pigmentation and usually 8+8 branched caudal-fin rays.

### Introduction

Loaches of the family Nemacheilidae are a characteristic element of the Eurasian ichthyofauna and occur in nearly every running water. About 30 genera and 720 nominal species are presently known, most of them from South and Southeast Asia. However, there remain a great number of undescribed taxa in all less sampled mountainous areas of Southeast Asia. The aim of the present study is to describe two new species recently collected in Shan State, Myanmar and to erect a new genus.

### Material and methods

The specimens were either fixed in 4 % formaldehyde and later transferred into 70 % ethanol for storage (all specimens deposited in ZRC and CMK) or fixed and stored in 96 % ethanol (all specimens in IAPG). All measurements and counts follow Kottelat (1990). Measurements were made point-to-point with digital callipers to the nearest 0.1 mm. Drawings were done using a camera lucida on an Olympus SZX7 stereomicroscope. Collection abbreviations: CMK, Collection of Maurice Kottelat, Cornol; IAPG, Institute of Animal Physiology and Genetics, Laboratory of Fish Genetics, Liběchov; ZRC, Zoological Reference Collection, Raffles Museum of Biodiversity Research, Department of Biological Sciences, National University of Singapore, Singapore.

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**Fig. 1.** *Schistura callidora*, ZRC 52037, holotype, 40.7 mm SL; Myanmar: Shan State: Hsipaw. Alive, shortly after capture. Right side, reversed. Photo R. Hoyer.

*Schistura callidora*, new species  
(Figs. 1–2)

**Holotype.** ZRC 52037, 40.7 mm SL; Myanmar: Shan State: mouth of Nam Paw at confluence with Myitnge River at Hsipaw city, 22°37'24" N 97°18' 12" E; R. Hoyer, 25 Nov 2009.

**Paratypes.** ZRC 52038, 4, 35.8–41.5 mm SL; IAPG A3909–3910, 2, 32.2–36.3 mm SL; CMK 21899, 1, 37.2 mm SL; same data as holotype.

**Diagnosis.** *Schistura callidora* is distinguished from all other species of *Schistura* by the combination of the following characters: a prominent skin crest on the dorsal midline of the caudal peduncle (skin crest 15–19 % of caudal peduncle depth), but no skin crest on the ventral midline of the caudal peduncle; 8½–10½ branched dorsal-fin rays; caudal fin deeply forked; 12–17 vertical bars on the flank, thin and densely set between opercle and dorsal-fin origin but broad and widely set under and behind base of dorsal fin.

**Description.** See Figures 1 and 2 for general appearance and Table 1 for morphometric data of holotype and 7 paratypes. A relatively small nemacheilid loach with moderately elongated body. Body anteriorly slightly compressed, caudal peduncle compressed. Maximum body depth between pectoral-fin base and dorsal-fin origin. Width of head constantly increasing from level of mouth backwards. Depth of caudal peduncle 0.8–1.0 times in its length. Axillary pelvic lobe present and free. A pronounced adipose crest on dorsal midline of caudal peduncle between dorsal and caudal-fin bases; its height 15–19 % of

depth of caudal peduncle. No adipose crest on ventral midline of caudal peduncle or restricted to stretch between end of last dark body bar and caudal-fin base. Largest known size 41.5 mm SL.

Dorsal fin with 4 simple and 8½–10½ branched rays. Distal margin of dorsal fin straight. Anal fin with 3 simple and 5½ branched rays, not reaching caudal-fin base. Caudal fin with 9+8 branched rays, deeply forked, lobes pointed. Pelvic fin with 8 rays; origin under branched dorsal-fin ray 2–3; reaching slightly beyond half of distance to anal-fin origin; not reaching anus, which is situated about one eye diameter in front of anal fin. Pectoral fin with 10 or 11 rays, reaching slightly behind half of distance between bases of pectoral and pelvic fins.

No scales on body in front of dorsal fin; few scales on flank below dorsal-fin base, arranged mainly along lateral line; body completely covered by scales (except belly) behind dorsal-fin base. Lateral line reaching behind base of anal fin, with 75–81 pores. Cephalic lateral line system with 6 supraorbital, 4+10 infraorbital, 9 pre-operculo-mandibular and 3 supratemporal pores. Lips and barbels covered with unculi.

Anterior nostril pierced in front side of a flap-like tube, with a low anterior rim. Mouth gape about three times wider than long (Fig. 3). Processus dentiformis wide, low, broadly rounded. Lips thick; upper lip with a well-marked median incision and no furrows. Lower lip with a broad median interruption and on each side 3–5 furrows. Inner rostral barbel reaching corner of mouth, outer one reaching behind base of maxillary barbel, maxillary barbel reaching behind vertical through posterior rim of eye.

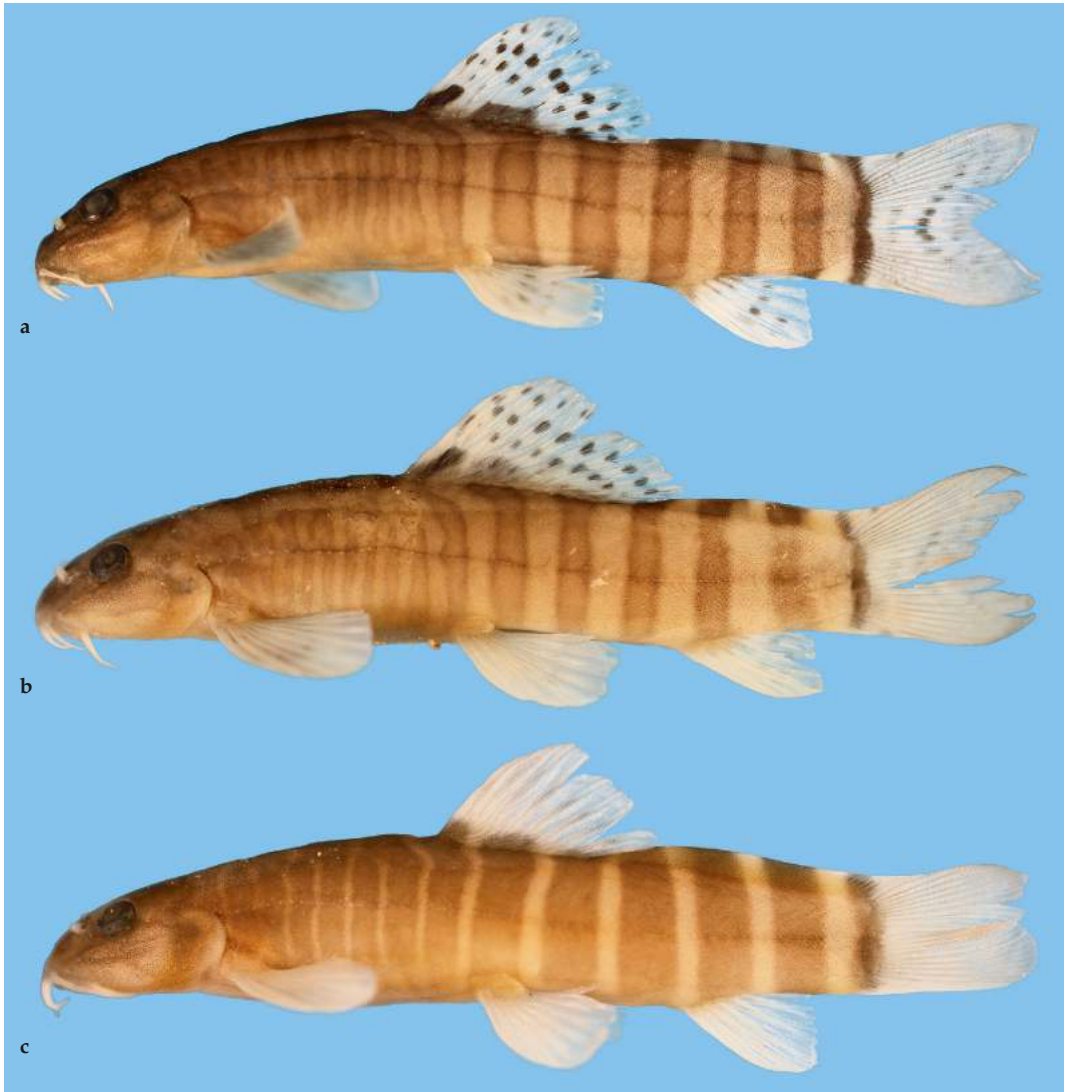


Fig. 2. *Schistura callidora*, Myanmar: Shan State: Hsipaw. **a**, ZRC 52037, holotype, 40.7 mm SL; **b**, ZRC 52038, paratype, 41.5 mm SL; **c**, ZRC 52038, paratype, 36.5 mm SL, with aberrant colour pattern.

**Sexual dimorphism.** None observed.

**Colouration.** Ground colour in freshly preserved specimens yellowish. Head except ventral side with regularly spread pigment cells. Areas of higher density of pigment cells form an irregular dark grey blotch before neck, a triangular blotch between eyes, half rings around dorsal base of nostrils and an irregular stripe from snout to ventral margin of nare; upper lip and base of rostral barbel with scattered black pigment cells.

Body with 12-17 dark brown bars reaching ventrally to level of pectoral-fin base. Six to 11 of them between opercle and dorsal-fin origin, irregular, about width of interspaces; occasionally neighbouring bars are connected at their dorsal extremity. Pre-dorsal bars not reaching dorsal midline; instead, two dorsal saddles between nape and dorsal-fin origin, reaching laterally down to dorsal end of lateral bars. Five or 6 bars under and behind base of dorsal fin usually more than twice width of predorsal bars and slightly broad-

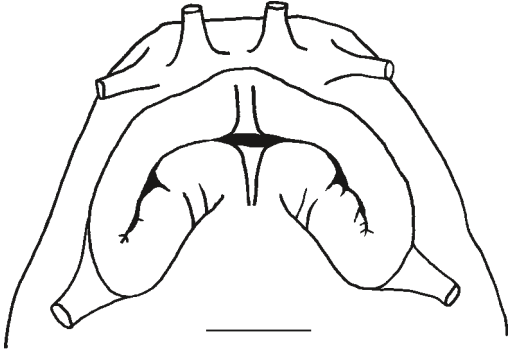


Fig. 3. *Schistura callidora*, ZRC 52037, holotype, 40.7 mm SL; mouth. Scale bar 1 mm.

er than interspaces; reaching ventrally at least to level of pelvic fin and dorsally to dorsal midline, where in most cases bars from opposite body sides meet. Margins of posterior bars darker than median area. Black bar at base of caudal fin thin, continuous; usually reaching dorsal midline but

not ventral midline. Three black blotches at base of dorsal fin, stretching across last unbranched and first branched ray; third to fifth or sixth branched rays and on last two branched rays, respectively. Two to three rows of black spots on dorsal fin, situated on rays, membrane hyaline. Caudal fin with a single row of dots, forming a V-shaped band; faint in some specimens; always most conspicuously marked on median rays. Other fins without pigment.

One paratype with different colouration: 6 predorsal bars and 3 saddles between nape and dorsal-fin origin. Each saddle joined with two lateral bands on each side. All bars much wider than interspaces, black bar at base of caudal fin of double width than in other specimens and no dark dots on fins.

**Habitat.** All specimens of *S. callidora* were collected at the mouth of a stream up to 20 m wide. The substrate in the creek was a mixture of gravel, stones and boulders of up to 30 cm diam-

Table 1. Morphometric data of holotype and 7 paratypes of *Schistura callidora*.

	holotype	range	mean	S.D.
Standard length (mm)	40.7	32.2–41.5		
<b>In percent of standard length</b>				
Total length	123.8	122.5–126.4	124.5	1.1
Dorsal head length	20.1	19.6–22.4	21.1	1.0
Lateral head length	21.4	21.4–24.1	23.0	1.0
Predorsal length	49.4	47.7–51.2	49.8	1.3
Pre-pelvic length	51.1	51.1–53.7	52.5	0.9
Pre-anus length	73.5	69.4–73.5	72.1	1.5
Preanal length	77.6	75.1–79.5	77.5	1.4
Head depth at eye	12.0	11.3–12.4	12.0	0.4
Head depth at nape	13.5	13.5–15.2	14.4	0.7
Body depth	18.4	17.5–19.9	19.0	0.8
Depth of caudal peduncle	15.0	14.4–16.1	15.2	0.6
Length of caudal peduncle	13.5	12.7–14.5	13.5	0.6
Snout length	9.6	9.1–10.3	9.5	0.4
Head width at nares	8.6	8.4–9.5	8.7	0.4
Maximum head width	16.0	14.8–16.4	15.6	0.5
Body width at dorsal-fin origin	13.5	12.6–14.5	13.6	0.7
Body width at anal-fin origin	6.6	6.0–7.5	6.6	0.5
Eye diameter	4.9	4.9–5.9	5.3	0.4
Interorbital width	6.1	5.8–6.8	6.3	0.3
Height of dorsal fin	14.3	14.1–18.2	15.8	1.5
Length of upper caudal lobe	23.3	21.6–25.2	23.1	1.1
Length of median caudal ray	15.0	13.3–16.1	14.7	0.9
Length of lower caudal lobe	23.3	21.6–25.5	23.6	1.3
Depth of anal fin	18.2	17.0–18.6	17.8	0.7
Length of pelvic fin	18.2	17.8–19.5	18.7	0.6
Length of pectoral fin	21.9	20.5–24.0	22.6	1.1

eter with few larger stones. Maximum water depth was 50 cm. At the time of sampling the water was clear and had a temperature of 24.4 °C (air temperature 23.2 °C), a conductivity of 2.6 S · m<sup>-1</sup> and a pH 6.5.

**Distribution.** *Schistura callidora* is presently known only from the Myit Nge River drainage in the surrounding of the city Hsipaw.

**Etymology.** The name *callidora* is derived from the Greek words *calloni*, beauty, and *doro*, gift, meaning 'gifted with beauty'. Treated as a noun in apposition.

**Remarks.** *Schistura callidora* belongs to a group of species with a conspicuous adipose crest on the dorsal midline of the caudal peduncle and 9½ branched dorsal-fin rays (vs. no or low adipose crest and 7½ or 8½ in most other species of *Schistura*) (Zhou & Kottelat, 2005). This group includes *S. alticrista* and *S. disparizona*. *Schistura callidora* also shares with *S. alticrista* and *S. disparizona* the absence of a suborbital flap and modified pectoral fin rays as sexual dimorphism, the presence of an axillary lobe and the continuous black bar at the base of the caudal fin. *Schistura callidora* differs from *S. alticrista* by the colour pattern consisting of narrow, densely set bars in the anterior part of flank and broader bars and interspaces in the posterior area (vs. bars and interspaces equally wide on whole body), by the absence of a conspicuous adipose crest on the ventral midline of the caudal peduncle (vs. presence), by the prominent incision in upper lip (vs. small incision) and by the forked caudal fin (vs. emarginated). *Schistura alticrista* is known from the Salween basin in Thailand (and is expected to be also present in Myanmar), while *S. callidora* occurs in the Irrawady basin in Myanmar.

*Schistura callidora* shares with *S. disparizona* the general colour pattern, but differs from it by the absence of a conspicuous adipose crest on the ventral midline of the caudal peduncle (vs. presence), by having a deeper caudal peduncle (depth 0.8–1.0 times in its length, vs. 0.9–1.4), dark grey or black blotches or dots on the top of the head and on the dorsal and caudal fins (vs. absence), the anterior bars as wide or wider than the interspaces (vs. much thinner), the black bar at the basis of the caudal fin reaching the dorsal midline (vs. not reaching) and usually two predorsal saddles (vs 3–5). *Schistura disparizona* is known only

from the Salween basin in China, while *S. callidora* occurs in the Irrawady basin in Myanmar.

*Schistura callidora* shows a greater variability in the number of branched dorsal-fin rays than *S. alticrista* and *S. disparizona* (8½ to 10½ vs. 9½) and in number of rows of small dots in dorsal fin (one to three vs. one). One of the paratypes of *S. callidora* differs from the other specimens in having all body bars broader than the interspaces (vs. about the same width in all other specimens), three saddles between nape and dorsal-fin origin (vs. two), posterior bars homogeneously pigmented (vs. the margins darker than the centre) and round tips of lobes of caudal fin (vs. pointed). After a careful comparison of the specimen with the other specimens we come to the conclusion that they are conspecific and consider the differences as intraspecific variability.

#### *Pteronemacheilus*, new genus

**Type species.** *Pteronemacheilus lucidorsum*, new species.

**Diagnosis.** *Pteronemacheilus* is distinguished from all other genera of Nemacheilidae by the presence of elongated skinfolds on the dorsal side of the second and third branched pectoral-fin rays in males. Species-level apomorphic features are presented in the species diagnosis.

**Etymology.** The generic name is derived from the Greek word 'ptero', wing, used as prefix here, and the generic name *Nemacheilus*, the type genus of the family Nemacheilidae; meaning 'nemacheilid loach with wings', referring to the skinfolds on the pectoral fins of males. Gender masculine.

**Remarks.** Male characters of sexually dimorphic Nemacheilidae comprise thickened pectoral fin rays (e.g. *Barbatula*, *Neonemacheilus*), prolonged pectoral and pelvic fins (e.g. *Physoschistura*), a 'suborbital flap' (e.g. *Acanthocobitis*, *Nemacheilus*, *Schistura*) or 'suborbital groove' (*Acanthocobitis*) under the eye, tubercles on the pectoral fin and head (e.g. *Barbatula*, *Triplophysa*) and different head shape (*Triplophysa*). Only two species of Nemacheilidae are known to bear skinfolds on the pectoral fins in males: *Pteronemacheilus lucidorsum* and *Nemachilus meridionalis* Zhu, 1982. *Nemachilus meridionalis* was considered as member of *Schist-*





**Fig. 4.** *Pteronemacheilus lucidorsum*, not preserved; about 38 mm SL; Myanmar: Shan State: stream Nam Paw west of Hsipaw. Photo R. Hoyer.

ura by Zhu (1989, 1995) and of *Physoschistura* by Kottelat (2001). *N. meridionalis* differs from all three genera by the skinfolds on the pectoral fins in adult males. Unpublished genetic data show that *P. lucidorsum* and *N. meridionalis* are closely related to each other but not to the type species of *Schistura* (*S. rupecola*) or of *Physoschistura* (*P. brunneana*). We consider that *N. meridionalis* belongs to *Pteronemacheilus*.

The presence of male-specific structures on the pectoral fins is a common character in spined loaches, family Cobitidae, occurs in some genera of the family Balitoridae (e.g. *Sewellia*) and in *Pteronemacheilus* of the family Nemacheilidae. The occurrence of structures in the same position in phylogenetically distinct lineages suggests that sexual dimorphism in the pectoral fin is a plesiomorph character of loaches in general.

***Pteronemacheilus lucidorsum*, new species**  
(Figs. 4-5)

**Holotype.** ZRC 52039, 41.2 mm SL, male; Myanmar: Shan State: stream Nam Paw west of Hsipaw city; 22°37'37"N 97°17'19"E; R. Hoyer, 24 Nov 2009.

**Paratypes.** ZRC 52040, 26, 27.8–53.0 mm SL; IAPG A3911–3915, 5, 32.4–40.3 mm SL; CMK 21900, 6, 35.2–44.6 mm SL; same data as holotype.

**Diagnosis.** *Pteronemacheilus lucidorsum* differs from all other species of the family Nemacheilidae, except its only congener *P. meridionalis*, by the presence of elongated skinfolds on the dorsal side

of the second and third branched pectoral-fin rays in males. It differs from *P. meridionalis* by having the dorsal midline without pigmentation (vs. bars or saddles across dorsal midline) and usually 8+8 branched caudal-fin rays (vs. 9+8).

**Description.** See Figures 4 and 5 for general appearance and Table 2 for morphometric data of holotype and 20 paratypes. A relatively small nemacheilid loach with moderately elongated body. Body anteriorly only very slightly compressed, caudal peduncle compressed. Maximum body depth between pectoral-fin base and dorsal-fin origin. Head width constantly increasing until end of opercle. Depth of caudal peduncle 0.9–1.0 times in its length. Anus situated about one eye diameter in front of anal fin. Axillary pelvic lobe present and free. No adipose crest on dorsal or ventral midline of caudal peduncle. Largest known size 53.0 mm SL.

Dorsal fin with 4 simple and 7½ or 8½ branched rays. Distal margin of dorsal fin straight or slightly convex. Anal fin with 3 simple and 5½ branched rays, nearly reaching caudal-fin base. Caudal fin usually with 8+8, rarely with 9+8 branched rays, deeply emarginated, lobes rounded. Pelvic fins with 8 rays; origin under branched dorsal-fin ray 2–3; not reaching beyond anus. Pectoral fin with 11, rarely 12 rays, reaching nearly to base of pelvic fin.

Body completely covered with scales except belly in front of anal-fin origin. Lateral line reaching to anal-fin origin; with 63–75 pores. Cephalic lateral line system with 6 supraorbital, 4+10 infraorbital, 9 pre-operculo-mandibular and 3 supratemporal pores. Lips and barbels covered with unculi.

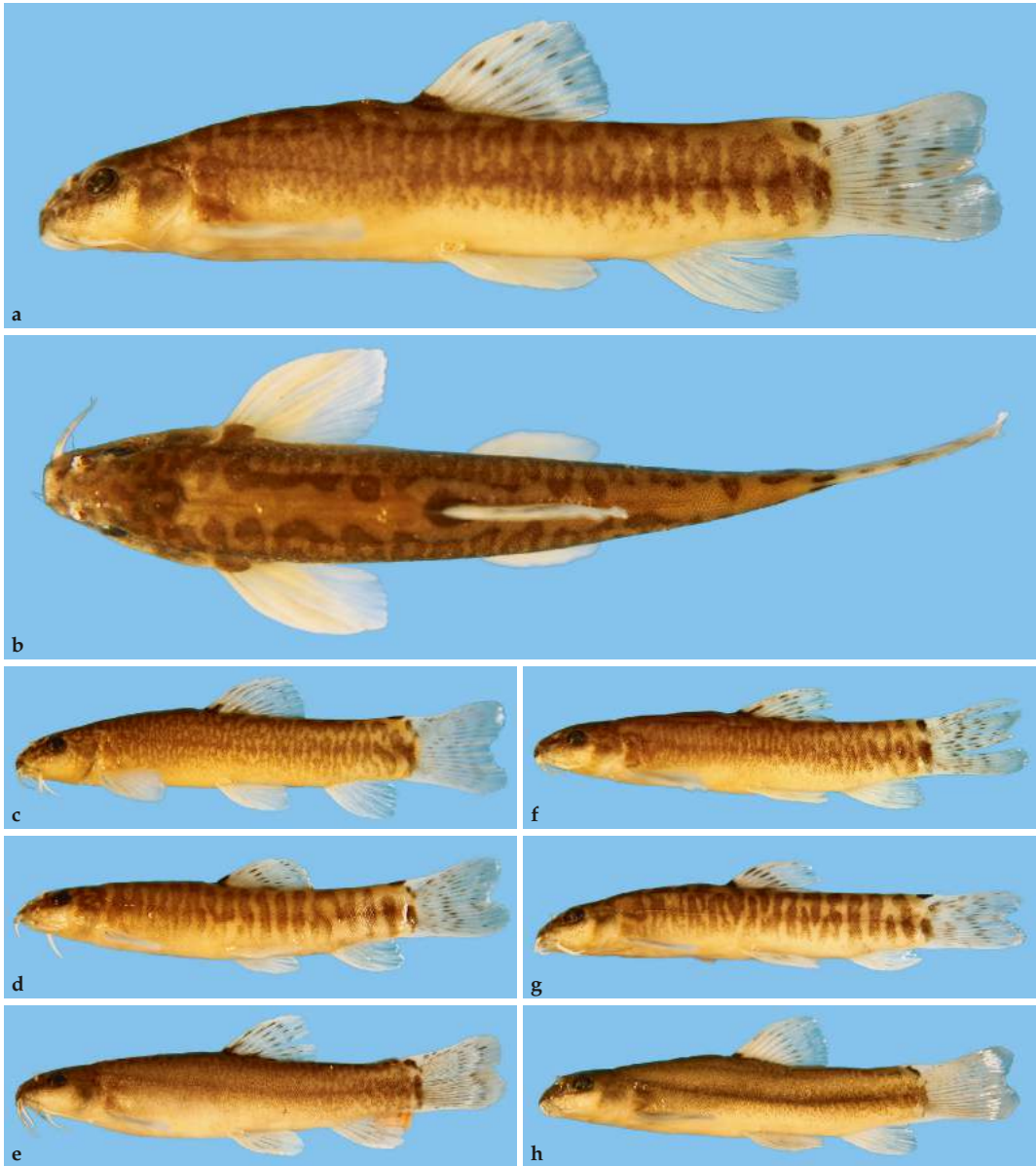


Fig. 5. *Pteronemacheilus lucidorsum*, Myanmar: Shan State: Nam Paw stream. a-b, ZRC 52039, holotype, 41.2 mm SL; c-h, ZRC 52040, paratypes, females (c-e), 36.4-46.6 mm SL, males (f-h), 32.6-38.8 mm SL.

Anterior nostril pierced in front side of a flap-like tube, with a low anterior rim. Mouth gape about three times wider than long (Fig. 6a). Processus dentiformis wide, low, broadly rounded. Lips thick; upper lip with a well-marked median incision and small furrows on its whole length. Lower lip with a broad median interruption and

on each side a prominent pad with 3-5 furrows. Inner rostral barbel reaching corner of mouth, outer one reaching behind base of maxillary barbel and beyond vertical through anterior rim of eye, maxillary barbel reaching behind vertical through posterior rim of eye.

**Sexual dimorphism.** Males with an elongated skinfold on dorsal side of second and third branched pectoral-fin rays (Fig. 6b). No suborbital flap present in males and no sexual dimorphism observed in pigmentation pattern, size, and fin length.

**Colouration.** Ground colour in freshly preserved specimens white to yellowish, lighter on ventral side, darker on dorsal side. Head except ventral side with dark grey or brown vermiculate pattern. In some specimens a faint dark grey stripe from base of rostral barbel to margin of eye; upper lip and rostral barbels with black pigment cells of varying density. Black dot on lateral base of maxillary barbel. Flank in most specimens with dark brown bars reaching ventrally to level of pectoral-fin base, but in some specimens with fine mottled or vermiculate pattern. Pattern on body sides varying substantially between individuals and no two specimens showing same pattern. In some specimens, a faint black stripe with indis-

tinct outline present along lateral midline. No pigmentation pattern element along dorsal midline except a single brown dot at origin of dorsal fin, surrounding base of unbranched and first branched rays. Most specimens with two black dots at base of caudal fin; upper one at margin of caudal-fin base, smaller than eye, black and with distinct outline; lower one about 1–2 times size of eye, but less dark than upper one and often with unsharp outline. Two to three rows of black spots in dorsal fin, on rays, membranes hyaline; caudal fin with three to four irregular rows of black spots on rays, membranes hyaline. All other fins regularly with pigments at half length of fin rays, sometimes forming an unclear band.

**Habitat.** The Nam Paw is a fast flowing stream about 4–10 m wide (Fig. 7) and 0.5 m deep at time of sampling (late dry season), but according to size of stones in the stream, water volume might be much higher during rainy season. The bottom

**Table 2.** Morphometric data of holotype and 20 paratypes of *Pteronemaceilus lucidorsum*.

	holotype	range	mean	S.D.
Standard length (mm)	41.7	33.2–53.0		
<b>In percent of standard length</b>				
Total length	122.8	121.6–127.2	124.7	1.4
Dorsal head length	20.4	17.8–22.2	20.2	1.1
Lateral head length	23.0	21.7–24.5	22.8	0.8
Predorsal length	48.9	49.1–53.6	51.2	1.3
Pre-pelvic length	50.6	51.2–55.1	53.0	1.1
Pre-anus length	68.6	70.3–75.3	72.9	1.3
Preanal length	76.0	76.0–80.5	78.7	1.3
Head depth at eye	11.0	10.4–13.2	11.6	0.6
Head depth at nape	13.9	13.1–16.5	14.4	0.8
Body depth	19.2	16.9–21.3	19.6	1.1
Depth of caudal peduncle	14.1	13.0–15.8	14.1	0.9
Length of caudal peduncle	13.4	12.2–14.6	13.7	0.7
Snout length	8.6	7.2–9.8	8.7	0.6
Head width at nares	9.8	8.1–11.4	9.9	0.8
Maximum head width	15.6	14.4–18.1	16.2	0.8
Body width at dorsal origin	13.7	13.2–17.7	15.1	1.2
Body width at anal origin	7.7	7.6–10.3	8.7	0.8
Eye diameter	4.6	4.0–5.3	4.6	0.4
Interorbital width	7.2	6.5–8.4	7.2	0.5
Height of dorsal fin	14.9	13.5–16.8	15.2	1.0
Length of upper caudal lobe	21.6	21.4–25.8	23.3	1.2
Length of median caudal ray	18.5	16.8–22.5	19.5	1.5
Length of lower caudal lobe	22.5	21.6–26.3	23.8	1.1
Depth of anal fin	19.4	17.6–20.8	19.2	1.0
Length of pelvic fin	19.4	17.5–21.0	19.6	0.8
Length of pectoral fin	22.5	18.8–25.1	22.1	1.5



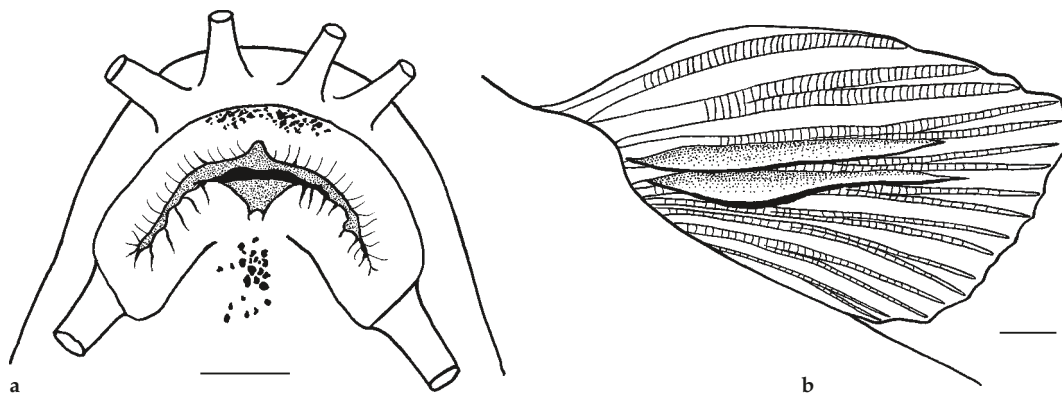


Fig. 6. *Pteronemacheilus lucidorsum*, ZRC 52039, holotype, 41.2 mm SL; **a**, mouth; **b**, right pectoral fin showing elongated skinfold on dorsal side of second and third branched rays. Scale bars 1 mm.

consists mainly of stones up to 60 cm diameter. At the time of sampling the water was clear and the temperature was 24.4 °C (air temperature 23.2 °C), the conductivity 2.6 S · m<sup>-1</sup> and pH 6.5. Among other fish species collected with *P. lucidorsum* were two other loach species: *Lepidocephalichthys bermorei* (Cobitidae) and a single specimen of *Physoschistura raoi* (Nemacheilidae).

**Distribution.** *Pteronemacheilus lucidorsum* is presently known only from the Nam Paw at Hsipaw, Myanmar.

**Etymology.** The name is derived from the Latin words *lux*, light, and *dorsum*, back, meaning 'with a light back', referring to the absence of pigmentation along the dorsal midline. A noun in apposition.

**Remarks.** Using the key in Kottelat (1990), the new species was identified as a member of the genus *Physoschistura* by the strongly arched mouth and by the median interruption in the lower lip with broad pads on either side. However, it differs from *Physoschistura* and all other Nemacheilidae except its only congener *P. meridionalis* by the presence of an elongated skinfold on the dorsal side of the second and third branched pectoral-fin rays in males. It differs from *P. meridionalis* by having the dorsal midline without pigmentation (vs. with bands or saddles) and by having usually 8+8 branched caudal-fin rays (vs. 9+8). It further differs from *P. meridionalis* by the variable lateral pigmentation; the pigmentation can be banded, mottled or a combination of both; no two

specimens have the same pigmentation and different pigmentation patterns are not sex-related (vs. body with about 15–25 irregular bars, males tend to have a midlongitudinal black stripe).

**Comparative material.** *Schistura alticrista*: IAPG uncat., 1; Thailand: Mae Hong Son Prov.: Mae La Ka.

*Schistura disparizona*: CMK 18395, paratypes, 2; China: Yunnan Prov.: Nangun River (available as high-resolution photographs).

*Pteronemacheilus meridionalis*: IAPG A2982–2983, 2; China: Yunnan Prov.: Man Pa River. – IAPG A3132–3141, 10; China: Yunnan Prov.: unnamed creek flowing to Salween River. – IAPG A3101, 1; China: Yunnan Prov.: Man Pa River. – CMK 14321, 7; Laos: Louang Namtha Prov.: Nam Youan watershed. – CMK 5635, 2; China: Yunnan Prov.: Mekong watershed around Mengla.

*Physoschistura raoi*: IAPG uncat., 1; Myanmar: Shan state: Nam Paw.

*Physoschistura brunneana*: IAPG uncat., 4; Myanmar: Shan state: Lake Inle.

*Physoschistura pseudobrunneana*: IAPG uncat., 10; Thailand: Chiang Mai Prov.: Mae Nam Lao. – IAPG uncat., 1; Thailand: Chiang Mai Prov.: Mae Nam Yom.

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Fig. 7. Myanmar: stream Nam Paw at Hsipaw, type locality of *Pteronemacheilus lucidorsum*; looking upstreams and to the west. Photo R. Hoyer.

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