

***Pseudecheneis suppaetula*, a new species of glyptosternine catfish (Teleostei: Sisoridae) from India**

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Abstract

A new species of sisorid catfish, *Pseudecheneis suppaetula*, is described from tributaries of the Ganges River in India. *Pseudecheneis suppaetula* can be distinguished from congeners in having a combination of a long adipose-fin base (at least 2.0 times length of anal-fin base; 26.6–30.6% SL), small eye (8.1–8.3% SL), the presence of pale spots on the body, and the neural spines of the last 2–3 preanal and first 6–7 postanal vertebrae gradually increasing in height.

Key words: Ganges River, South Asia, Himachal Pradesh

Introduction

Sisorid catfishes of the genus *Pseudecheneis* Blyth, 1860 are diagnosed by a thoracic adhesive apparatus consisting of a series of transverse ridges (laminae) separated by grooves (sulcae) (de Pinna, 1996; Roberts, 1998), and are found in the upper reaches of rivers throughout the Subhimalayan and Indochinese region. Recent studies (Ng & Edds, 2005; Ng, 2006) recognize ten valid species of *Pseudecheneis*: *P. sulcata* (M'Clelland, 1842), *P. paviei* Vaillant, 1904, *P. tchangi* (Hora, 1937), *P. immaculata* Chu, 1982, *P. sulcatoides* Zhou & Chu, 1992, *P. sympelvica* Roberts, 1998, *P. crassicauda* Ng & Edds, 2005, *P. serracula* Ng & Edds, 2005, *P. eddsi* Ng, 2006 and *P. stenura* Ng, 2006.

As part of a phylogenetic study of the Sisoridae, an examination of material collected from the Ganges River drainage in the state of Himachal Pradesh in northwestern India and previously identified as *P. sulcata* was undertaken. This material is shown to belong to an undescribed species, the description of which as *Pseudecheneis suppaetula*, sp. nov., is provided below.

Material and methods

Measurements were made point to point with dial calipers, and data recorded to tenths of a millimeter. Counts and measurements were made on the left side of specimens whenever possible. Subunits of the head are presented as proportions of head length (HL). Head length and measurements of body parts are given as proportions of standard length (SL). Measurements follow those of Ng & Rainboth (2001). An asterisk after a particular meristic count indicates a value for the holotype. Osteological data were obtained from radiographs.

Material examined in this study is deposited in the following institutions: Academia Sinica, Institute of Zoology, Beijing (ASIZB), Natural History Museum, London (BMNH), California Academy of Sciences, San Francisco (CAS), Collection of Maurice Kottelat, Cornol (CMK), Kunming Institute of Zoology, Kunming (KIZ), University of Kansas Natural History Museum, Lawrence (KU), Muséum National d'Histoire Naturelle, Paris (MNHN), Naturhistoriska Riksmuseet, Stockholm (NRM), Department of Zoology Collection of Vertebrates, Oklahoma State University, Stillwater (OSUS), University of Michigan Museum of Zoology, Ann Arbor (UMMZ), and Zoölogisch Museum Amsterdam (ZMA).

Pseudecheneis suppaetula sp. nov.

(Fig. 1)

Pseudecheneis sulcata (non M'Clelland, 1842)—Kullander et al., 1999: 153.

Type material

Holotype: NRM 36977, 84.1 mm SL; India: Himachal Pradesh, Ganges River drainage, upper reaches of Giri River, in Chhaila area (in the vicinity of Kotkhai), 31°6'15"N 77°25'56"E; E. Åhlander et al., 3 November 1997.

Paratypes: NRM 36968 (1), 41.3 mm SL; NRM 36974 (2), 66.6–77.5 mm SL; data as for holotype.

Diagnosis

Pseudecheneis suppaetula is distinguished from *P. paviei* and *P. sympelvica* in having an elongate body with 37–38 vertebrae (vs. short body with 33–35 vertebrae) and from *P. sympelvica* in having separate (vs. fused) pelvic fins. It differs from other congeners (except *P. immaculata* and *P. serracula*) in having a longer adipose-fin base (at least 2.0 times length of anal-fin base vs. 1.5–2.0 times; 26.6–30.6% SL vs. 17.8–24.3) and (except for *P. crassicauda* and *P. immaculata*) in having a smaller eye (8.1–8.3% SL vs. 8.8–12.8). *Pseudecheneis suppaetula* is distinguished from *P. immaculata* in the presence (vs. absence) of pale spots on the body, and from *P. serracula* in having a smaller eye

(8.1–8.3% HL vs. 9.1–12.2) and the neural spines of the last 2–3 preanal and first 6–7 postanal vertebrae gradually increasing in height (vs. neural spines of corresponding pre- and postanal vertebrae strongly elevated; Fig. 2).



FIGURE 1. *Pseudecheneis suppaetula*, NRM 36977, holotype, 84.1 mm SL; India: Giri River. Dorsal, lateral and ventral views.

Description

Biometric data as in Table 1. Head and abdominal region narrow and strongly depressed. Dorsal profile rising gently from tip of snout to origin of dorsal fin, then almost horizontal or sloping very gently ventrally to end of caudal peduncle. Ventral profile horizontal to anal-fin base, then sloping very gently dorsally to end of caudal peduncle. Caudal peduncle long and moderately compressed. Anus and urogenital openings located at posteriormost extent of pelvic fin. Skin smooth, tuberculate in some areas. Lateral line complete and midlateral. Vertebrae 18+19=37* (3) or 19+19=38 (1).

TABLE 1. Biometric data for *Pseudecheneis suppaetula* (n=4)

	Holotype	Range	MeanSD
%SL			
Predorsal length	34.6	34.4–35.3	34.7±0.39
Preanal length	64.1	60.0–64.1	61.9±1.69
Prepelvic length	39.8	37.2–39.8	38.5±1.47
Prepectoral length	17.5	16.5–18.0	17.5±0.68
Length of dorsal-fin base	11.3	11.3–14.2	13.1±1.34
Anal-fin length	14.0	11.6–14.0	12.8±1.06
Pelvic-fin length	23.5	21.8–23.5	22.8±0.73
Pectoral-fin length	29.0	27.6–29.0	28.1±0.66
Caudal-fin length	20.0	19.0–22.8	21.0±1.82
Length of adipose-fin base	30.6	26.6–30.6	28.7±1.71
Dorsal to adipose distance	11.5	10.9–13.4	12.1±1.12
Post-adipose distance	14.7	13.6–15.4	14.6±0.74
Caudal peduncle length	24.9	24.9–25.9	25.3±0.43
Caudal peduncle depth	4.3	3.9–4.5	4.3±0.26
Body depth at anus	12.8	10.9–14.8	13.1±1.66
Head length	19.1	19.1–20.3	19.6±0.59
Head width	18.3	17.7–19.0	18.3±0.56
Head depth	12.6	12.6–13.5	13.1±0.40
%HL			
Snout length	64.6	64.3–67.6	66.0±1.77
Interorbital distance	29.2	29.2–33.3	31.3±1.81
Eye diameter	8.1	8.1–8.3	8.2±0.12
Nasal barbel length	24.8	15.5–24.8	21.5±4.14
Maxillary barbel length	54.7	48.5–57.4	53.6±3.73
Inner mandibular barbel length	18.0	12.9–18.0	16.4±2.40
Outer mandibular barbel length	31.1	22.7–31.1	28.5±3.90

Head acutely rounded when viewed from above. Gill openings moderate, extending from posttemporal region to base of first pectoral-fin element. Head covered with thick, tuberculate skin. Ventral surface of head with unculiferous collar on distal margin of branchiostegal membrane immediately anterior to thoracic adhesive apparatus.

Thoracic adhesive apparatus consisting of 11–13 transverse ridges (laminae) separated by grooves (sulcae); ridges sometimes not meeting at midline of adhesive apparatus. Adhesive apparatus extending from immediately posterior to collar on distal margin of branchiostegal membrane to level of last pectoral-fin ray.

Barbels flattened, and in four pairs. Maxillary barbel with ventral surface densely covered with papillae, and pointed tip; barbel extending about two-thirds of distance between its base and base of first pectoral-fin element. Distal half of barbel attached to snout via large, thin flap of skin. Nasal barbel with small flap of thin skin fringing posterior margin and extending midway to distance between posterior nares and anterior orbital margin. Inner mandibular-barbel densely covered with papillae; origin close to midline, extending to collar on distal margin of branchiostegal membrane. Outer mandibular barbel originates posterolateral of inner mandibular barbel, extending to level of anterior orbital margin. Eye small and almost rounded, subcutaneous and located on dorsal surface of head.

Mouth inferior, with moderately broad, thin papillate lips. Rictal lobe large and papillate. Premaxillary tooth band not exposed when mouth is closed. Premaxillary teeth short and conical, arranged in irregular rows on a moderately large quadrangular patch. Dentary teeth long, thin and somewhat rounded at tip; arranged in irregular rows on two separated, roughly triangular patches.

Dorsal-fin origin located at point through anterior third of body. First and second dorsal fin-ray elements not ossified, bearing i,6 (4) rays, and fin margin straight. Adipose fin with moderately long base, at least 2.0 times anal-fin base length; located in middle third of postdorsal region. Adipose fin margin gently convex; posterior end deeply incised. Caudal fin forked, with i,7,8,i (4) principal rays; procurrent rays symmetrical and extend only slightly anterior to fin base. Anal fin with short base extending less than half of adipose fin-base length and iv,6 (2), iv,7 (1) or iv,8* (18) rays. Anal fin margin almost straight.

Pelvic-fin origin at vertical through second or third dorsal fin-ray base. Pelvic fin greatly enlarged, extending to base of first anal-fin ray. Anterior fin margin strongly convex, first element broadened and with regular striae on ventral surface; with i,5 (4) rays. Pectoral fin greatly enlarged and with convex anterior margin, reaching to just beyond pelvic-fin base. First element not ossified, broadened and with regular striae on ventral surface; fin with i,11,i (4) rays.

Coloration

In 70% ethanol: grayish brown on dorsal and lateral surfaces of head and body, fading to light brown on ventral region. Dorsal surfaces of head and body with distinctive series of small light brown spots: one spots on supraoccipital region; a pair on either side of body on supratemporal region; one papillon-shaped spot on base of first dorsal-fin ray, and another immediately posterior to last dorsal-fin ray; a pair of elongate ovate spots on sides

of the body immediately ventral to origin of adipose fin, another chevron-shaped spot at posterior end of adipose fin. Posterior end of caudal peduncle with a pair of ovate spots: one dorsal and one ventral; spots coalesce with corresponding spots on other side of body along dorsal and ventral midlines. Dorsal and anal fins light brown, with grayish brown base and subdistal band. Adipose fin light grayish brown, with light brown ovate spot at origin and light brown distal margin along posterior two-thirds of fin, coalescing with chevron-shaped spot on body at posterior extremity of fin. Caudal fin grayish brown, with light brown band on middle third of fin. Dorsal surfaces of pectoral and pelvic fins grayish brown, with light brown distal margin; ventral surfaces light brown. Maxillary and nasal barbels grayish brown dorsally and light brown ventrally.

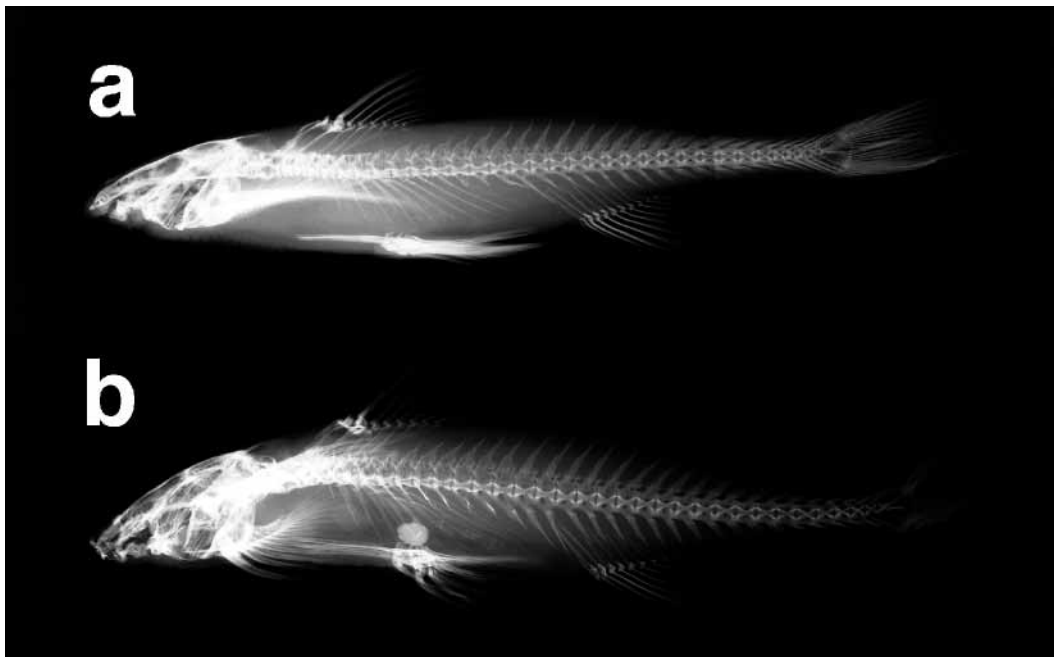


FIGURE 2. Radiographs showing differences in relative heights of neural spines in: a. *Pseudecheneis suppaetula*, holotype, NRM 36977, 84.1 mm SL; b. *P. serracula*, paratype, OSUS 15718, 65.0 mm SL.

Distribution

Presently known only from the Ganges River drainage in Himachal Pradesh, India (Fig. 3).

Habitat and ecology

The type locality was a wide (ca. 20 m), shallow (1 m) river with a rocky/sandy bottom. The water was clear and swift-flowing. Other fish species collected at this locality were *Schizothorax richardsonii* (Cyprinidae), *Tor chelynooides* (Cyprinidae), *Schistura montana* (Balitoridae), and *Glyptothorax pectinopterus* (Sisoridae).

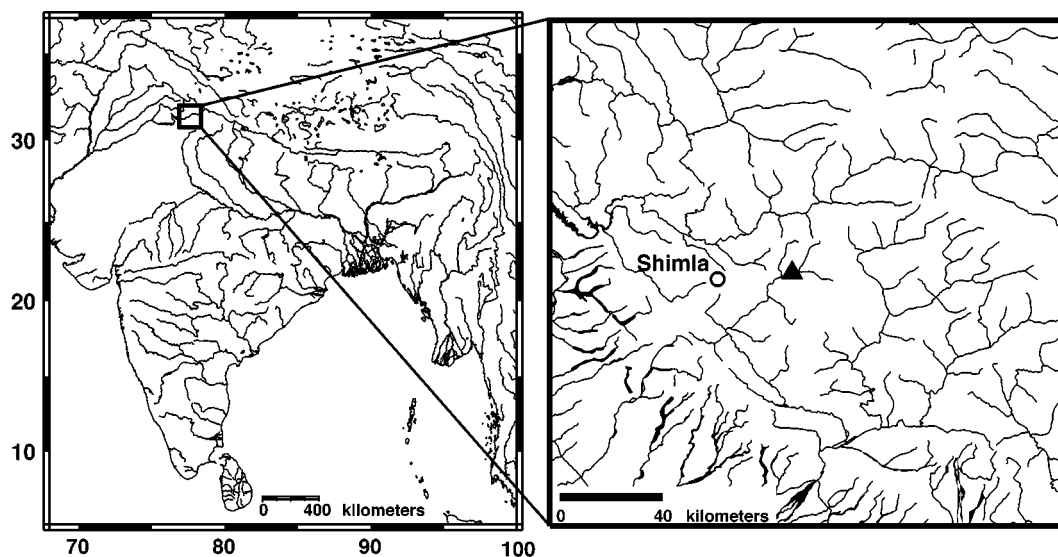


FIGURE 3. Map showing type locality of *Pseudecheneis suppaetula* (indicated by solid triangle).

Etymology

From the Latin *suppaetus*, meaning squinting somewhat, in allusion to the small eye of this species. Used as an adjective.

Discussion

The relatively long adipose-fin base of *P. suppaetula* easily distinguishes it from congeners. Only *P. immaculata* and *P. serracula* have adipose-fin bases that are as long, but they can be distinguished from *P. suppaetula* by the characters mentioned in the diagnosis. Externally, *P. suppaetula* most resembles *P. serracula*, a species also found in the Ganges River drainage. However, in addition to the larger eye of *P. serracula* when compared to *P. suppaetula*, the strongly elevated neural spines of *P. serracula* impart a noticeably hunched appearance to this species (as pointed out by Ng & Edds, 2005) when compared to *P. suppaetula*.

There are apparently fewer transverse ridges (laminae) in the thoracic adhesive apparatus of *P. suppaetula* (11–13) when compared to *P. serracula* (13–18). However, with only four specimens of the former species, the variation in this number is not well understood. The difference in the eye diameter between *P. serracula* and *P. suppaetula* is not due to ontogeny. A biplot of eye diameter for *P. suppaetula* vs. *P. serracula* (Fig. 4) shows that the regression lines are significantly different (ANCOVA; $P < 0.05$).

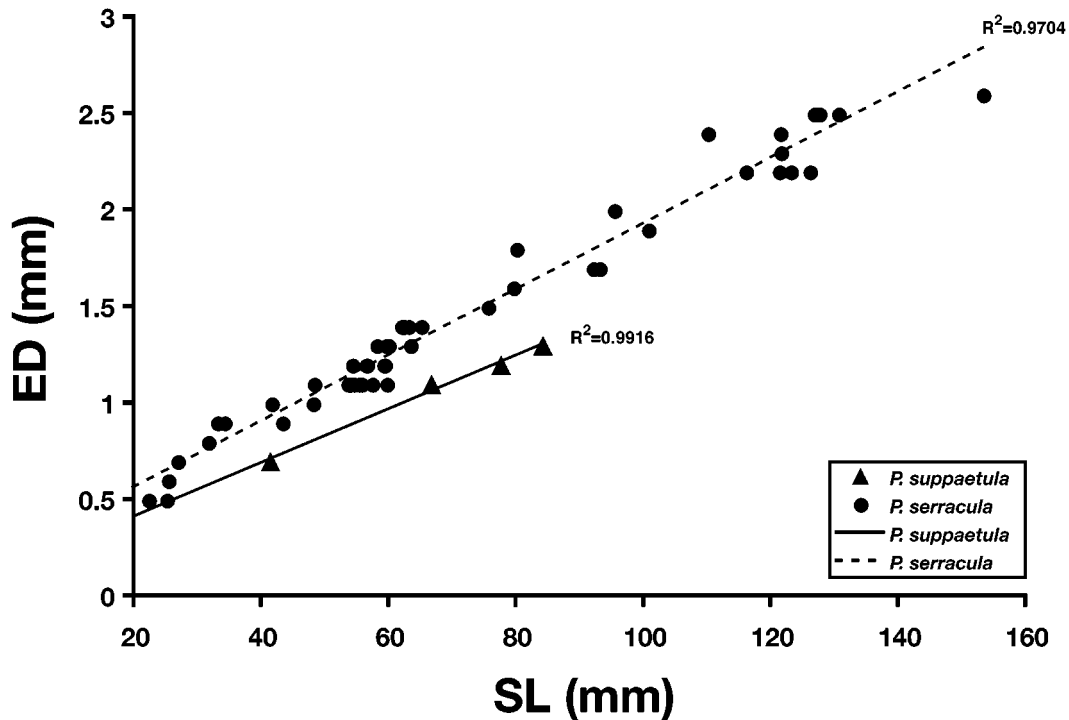


FIGURE 4. Biplot of eye diameter (ED) against standard length for *Pseudecheneis suppaetula* and *P. serracula*.

Comparative material

Pseudecheneis crassicauda: BMNH 1958.9.1.8 (holotype), 103.7 mm SL; BMNH 1958.9.1.9 (1 paratype), 56.8 mm SL; Nepal: Mewa Khola (River), Dhankuta District, 27°0'N 87°20'E. BMNH 1970.12.14.230 (1 paratype), 136.8 mm SL; Nepal: Mewa Khola (River), Sanghu

P. eddsi: KU 36872 (holotype), 84.1 mm SL; KU 29629 (5 paratypes), 40.5–74.4 mm SL; Nepal: Tanahun, Khairenitara, Seti River (Ganges River drainage), 28°2'0.0"N 84°4'0.0"E. CAS 44188 (3 paratypes), 45.5–62.1 mm SL; CAS 50306 (30 paratypes), 34.7–45.8 mm SL; Nepal: Mahesh Khola, 24–32 km WNW of Kathmandu, on the road to Pokhara (Ganges River drainage). KU 29084 (3 paratypes), 55.8–94.4 mm SL; Nepal: Tanahun, Khairenitara, Seti River (Ganges River drainage), 28°2'0.0"N 84°4'0.0"E.

P. immaculata: BMNH 1987.9.17.5 (1 paratype), 80.9 mm SL; China: Yunnan, Deqin County, Liudongjiang. Additional data from Chu (1982).

P. paviei: BMNH 1987.9.17.24 (1 paratype of *P. intermedius*), 55.5 mm SL; China: Yunnan, Jingdong County, Dongbao. BMNH 2003.2.9.2–3 (2), 51.1–51.2 mm SL; China: Yunnan, Jingdong County, Yuanjiang drainage. MNHN 1935-0042 (1), 47.0 mm SL;

Vietnam: Nghia Lo.

P. serracula: KU 29554 (holotype), 153.2 mm SL; Nepal: Mugu/Bajura, Jhugala, Karnali River, purchased at Jhugala, 29°31'18.0"N 81°46'48.0"E. BMNH 1985.9.16.50–51 (2 paratypes), 48.0–48.2 mm SL; Nepal: Narayani River, Chitawan National Park. KU 28669 (5 paratypes), 41.5–56.5 mm SL; Nepal: Kanchanpur, Brahmadev, Mahakali River at Brahmadev, 29°4'54.1"N 80°8'30.1"E. KU 29038 (1 paratype), 58.0 mm SL; Nepal: Gulmi/Syangja, Kali Gandaki River at Ridi Bazar; 27°56'6.0"N 83°26'30.1"E. KU 35545 (2 paratypes), 48.0–95.3 mm SL; Nepal: Tanahun, Khairenitar, Seti River at Khairenitar, 28°2'0.0"N 84°4'0.0"E. OSUS 15703 (4 paratypes), 31.6–59.3 mm SL; Nepal: Syangja, Kali Gandaki River at Nimaa. OSUS 15718 (9 paratypes), 34.1–75.5 mm SL; Nepal: Gulmi/Syangja, Kali Gandaki River at Ridi Bazar; 27°56'6.0"N 83°26'30.1"E. OSUS 15729 (3 paratypes), 53.5–59.6 mm SL; Nepal: Baglung, Kali Gandaki River at Sumsaa Ghat (Binamaare). OSUS 15736 (6 paratypes), 19.8–54.4 mm SL; Nepal: Myagdi, Kali Gandaki River at Simaa. OSUS 16340 (1 paratype), 79.5 mm SL; Nepal: Chitawan, Narayani River at Narayanagarh, upstream from irrigation office. OSUS 16609 (1 paratype), 22.2 mm SL; Nepal: Chitawan, Narayani River at Amaltaari Ghat. OSUS 16637 (15 paratypes), 63.0–130.5 mm SL; Nepal: Chitawan, Narayani River at Narayanagarh, upstream from irrigation office. OSUS 16695 (1 paratype), 62.3 mm SL; Nepal: Syangja, Kali Gandaki River at Nimaa. OSUS 17179 (1 paratype), 80.0 mm SL; Nepal: Syangja, Kali Gandaki River at Nimaa.

P. stenura: KIZ 199811999 (holotype), 132.1 mm SL; CAS 219177 (55 paratypes), 41.3–180.1 mm SL; China: Yunnan, Baoshan Prefecture, Longchuanjiang at Lianmengjie bridge (Irrawaddy River drainage).

P. sulcata: BMNH 1870.11.30.56 (3), 99.8–129.0 mm SL; BMNH 1889.2.1.2718–2719 (2), 60.9–89.8 mm SL; ZMA 121.861 (1), 87.8 mm SL; India: Meghalaya, Khasi Hills. BMNH 1928.9.17.5 (1), 83.8 mm SL; India: Meghalaya, Khasi Hills, Nong Priang stream. UMMZ 243677 (10) 46.6–118.1 mm SL; India: West Bengal, Rishi Khola (River) at Rishi (on W Bengal-Sikkim border), 27°9'56.0"N 88°38'7.0"E. ZMA 121.862 (1), 55.2 mm SL; India: Meghalaya, Nong Priang stream below Cherrapunji.

P. sulcatoides: CMK 5611 (3), 19.5–87.5 mm SL; China: Yunnan, Yangbi River from its confluence with Er-Hai River to about 20 km upstream of Yangbi. Additional data from Zhou & Chu (1992).

P. sympelvica: CMK12257 (3), 54.6–55.4 mm SL; Laos: Khammouan Province, Nam Theun, waterfall about 7 km downriver of NT2 dam site, 18°1'40"N 104°58'54"E. CMK 15231 (1), 62.4 mm SL; Laos: Xiangkhouang Province, Nam Ngum, rapids downstream of Ban Latbouak, 19°36'20"N 103°14'28"E. UMMZ 241107 (1), 43.7 mm SL; Laos: Luang Prabang Province, Nam Khan at Keng Noun (rapids), 10 km E of Luang Prabang.

P. tchangi: ASIZB 20010 (holotype), 120 mm SL; China: Yunnan (photographs examined).

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