

***Lithoxus stocki*, a species new to science of ancistrin loricariid catfish from the Maroni River drainage, with a comparison of the primary type specimens of the six species of *Lithoxus* (syn.: *Paralithoxus*) (Pisces, Siluriformes, Loricariidae)**

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Abstract

Lithoxus stocki, a catfish species new to science from the Maroni River drainage in French Guiana and Surinam is described. A lectotype is designated for *Lithoxus bovallii*. Morphometric and meristic characters of the six species of the genus are provided. *Paralithoxus*, originally proposed as a subgenus of *Lithoxus*, is relegated to the synonymy of *Lithoxus*.

Résumé

Une nouvelle espèce de Poisson-chat, *Lithoxus stocki*, est décrite de la rivière Maroni (Guyane française et Surinam). Le lectotype de *Lithoxus bovallii* est désigné. On précise les caractères morphométriques et méristiques de toutes les six espèces du genre. *Paralithoxus*, proposé comme sous-genre de *Lithoxus*, est rélégué dans la synonymie de *Lithoxus*.

Introduction

The loricariid subtribe Lithoxina (subfamily Ancistrinae, tribe Pseudacanthicini) hitherto consisted of three genera: *Lithoxus* Eigenmann, 1910, *Exastilithoxus* Isbrücker & Nijssen, in Isbrücker, 1979, and *Paralithoxus* Boeseman, 1982. The latter was established as a subgenus of *Lithoxus*, and raised to generic rank by Isbrücker & Nijssen (1986). *Paralithoides* Boeseman, 1982 is an apparent lapsus for *Paralithoxus*.

For 70 years *Lithoxus* was considered to consist of only its type species, *L. lithoides* Eigenmann, 1910. *Ancistrus bovallii* Regan, 1906 was assigned to *Lithoxus* by Isbrücker in 1980. Boeseman (1982)

established the subgenus *Paralithoxus*, with *Lithoxus bovallii* as its type species. Boeseman retained only *L. lithoides* in the nominate subgenus *Lithoxus*, and described three additional species in the subgenus *Paralithoxus*: *Lithoxus* (*P.*) *pallidimaculatus*, *L. (P.) planquettei*, and *L. (P.) surinamensis*.

Examination of relatively rich material from the Maroni River drainage, French Guiana (this border river is called the Marowijne River on the Surinam shore) revealed a distinct new species, herein described as *Lithoxus stocki*. The two paratypes of *L. planquettei* from the Maroni River are actually *L. stocki*. The combination of characters (see section "Comparison") present in *L. stocki* indicates that *Lithoxus* and *Paralithoxus* are synonyms. The continued recognition of *Paralithoxus* would necessitate the description of several new genera. Such a further generic subdivision complicates the nomenclature. The taxonomically simpler alternative of a single genus (*Lithoxus*) is judged preferable and is the procedure followed herein.

Systematic part

***Lithoxus* Eigenmann, 1910**

Lithoxus Eigenmann, 1910: 405 & 412 (type species by original designation, *Lithoxus lithoides* Eigenmann, 1910).

Lithoxus (*Paralithoxus*) Boeseman, 1982: 45–46 (type species by original designation, *Ancistrus bovallii* Regan, 1906).

Paralithoides Boeseman, 1982: 41 (lapsus, in summary, for *Paralithoxus*).

Table 1. Morphometric and meristic characters of A) *Lithoxus bovallii* (BMNH 1905.11.1: 43, lectotype, by present designation), B) *L. lithoides* (FMNH 53557, holotype), C) *L. pallidimaculatus* (RMNH 28368, holotype), D) *L. planquettei* (RMNH 28304, holotype), E) *L. surinamensis* (RMNH 28361, holotype), and F) *Lithoxus stocki* (IRSNB 639, holotype). Standard length through total length in mm, head length through lower caudal spine length is a ratio of standard length, snout length through width caudal peduncle is a ratio of head length. G (mm) *Lithoxus stocki*, measurements (in mm to the nearest tenth) of the holotype.

| specimen | A | B | C | D | E | F | G (mm) |
|---------------------------|--------|--------|--------|--------|--------|--------|--------|
| mature male | – | + | + | + | + | + | |
| MORPHOMETRICS | | | | | | | |
| standard length | 44.3 | 67.3 | 46.1 | 52.0 | 41.0 | 46.8 | |
| axial length | 53.0 | 78.3 | 54.8 | 62.2 | 48.7 | 54.1 | |
| total length | >55.2 | 81.2 | 55.9 | 65.7 | – | 58.5 | |
| head length | 3.1 | 3.2 | 3.2 | 3.0 | 3.2 | 2.9 | 16.0 |
| predorsal length | 2.3 | 2.3 | 2.3 | 2.3 | 2.3 | 2.2 | 21.1 |
| postdorsal length | 2.6 | 2.9 | 2.5 | 2.5 | 2.5 | 2.7 | 17.5 |
| postanal length | 3.6 | 3.4 | 3.3 | 3.1 | 3.4 | 3.2 | 14.6 |
| dorsal spine length | 5.4 | 5.2 | 5.0 | 4.5 | 4.6 | 4.8 | 9.7 |
| anal spine length | 15.3 | 16.4 | 10.0 | 12.7 | 9.8 | 11.1 | 4.2 |
| anal fin height | 7.9 | 11.4 | 8.4 | 8.0 | 8.7 | 9.8 | 4.8 |
| pectoral spine length | 4.0 | 2.4 | 3.9 | 4.0 | 3.6 | 2.9 | 16.1 |
| pelvic spine length | 5.0 | 4.5 | 4.5 | 4.1 | 4.0 | 4.5 | 10.3 |
| adipose spine length | 21.1 | 16.0 | – | 11.6 | – | 11.1 | 4.2 |
| upper caudal spine length | <9.0 | 6.8 | 5.2 | 4.4 | <6.4 | 5.0 | 9.3 |
| lower caudal spine length | <4.9 | 4.7 | 4.7 | 3.8 | <7.5 | 3.9 | 11.9 |
| snout length | 2.0 | 1.9 | 1.9 | 1.9 | 2.0 | 2.0 | 8.0 |
| lower lip length | 7.2 | 2.9 | 3.3 | 3.5 | 3.4 | 3.6 | 4.4 |
| maxillary barbel | 6.9 | 5.6 | 8.0 | 6.9 | 8.7 | 6.9 | 2.3 |
| max. barbel + lip | 3.2 | 3.4 | 3.3 | 3.4 | 3.4 | 3.5 | 4.6 |
| thoracic length | 1.3 | 1.2 | 1.1 | 1.6 | 1.3 | 1.4 | 11.4 |
| abdominal length | 1.7 | 1.6 | 1.8 | 1.6 | 1.5 | 1.6 | 10.2 |
| maximum orbital diameter | 6.6 | 5.9 | 6.9 | 6.9 | 7.2 | 5.3 | 3.0 |
| interorbital width | 3.5 | 4.1 | 3.0 | 2.9 | 3.2 | 3.9 | 4.1 |
| cleithral width | 1.1 | 1.0 | 1.1 | 1.1 | 1.1 | 1.0 | 16.0 |
| supracleithral width | 1.5 | 1.6 | 1.5 | 1.5 | 1.5 | 1.5 | 10.8 |
| head depth | 2.9 | 3.6 | 2.2 | 2.3 | 2.3 | 3.1 | 5.1 |
| body depth at dorsal fin | 3.3 | 3.8 | 2.3 | 2.5 | 2.4 | 3.1 | 5.2 |
| body width at dorsal fin | 1.6 | 1.4 | 1.3 | 1.4 | 1.4 | 1.5 | 10.5 |
| body width at anal fin | 2.6 | 2.6 | 2.4 | 2.7 | 2.2 | 2.6 | 6.1 |
| depth caudal peduncle | 3.9 | 5.5 | 3.6 | 3.4 | 3.6 | 3.8 | 4.2 |
| width caudal peduncle | 12.0 | 13.3 | 12.0 | 17.2 | 13.0 | 8.0 | 2.0 |
| MERISTICS | | | | | | | |
| lateral scutes | 27/27 | 26/25 | 26/26 | 27/26 | 27/26 | 27/27 | |
| preD scutes | 5 | 5 | 5 | 4/5 | 6 | 4 | |
| interD scutes | 7+7 | 8+5 | – | 6+8 | – | 7+7 | |
| postA scutes | 2+11 | 1+13 | 2+11 | 2+12 | 2+10 | 2+12 | |
| transocc. scutes | 4+4 | 4+4 | 3+3 | 4+4 | 4+4 | 5+5 | |
| preadip. scutes | 1 | 1 | 0 | 2 | 0 | 1 | |
| membr. adip. | 2 | 5 | – | 3.5 | – | 5 | |
| dorsal fin rays | 1.6.i | 1.6.i | 1.6.i | 1.6.i | 1.6.i | 1.6.i | |
| anal fin rays | 1.4.i | 1.3.i | 1.4.i | 1.4.i | 1.4.i | 1.4.i | |
| pectoral fin rays | 1.6 | 1.6 | 1.6 | 1.6 | 1.6 | 1.6 | |
| pelvic fin rays | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | |
| caudal fin rays | I.14.I | I.14.I | I.14.I | I.14.I | I.14.I | I.14.I | |
| premaxillary teeth | 5/5 | 3/3 | 3/3 | 4/5 | 4/3 | 6/5 | |
| mandibular teeth | 5/7 | 9/10 | 5/5 | 6/6 | 4/5 | 8/10 | |

Table II. Selected morphometric and meristic characters of *Lithoxus* spp. possessing an adipose fin. Head length through depth caudal peduncle is a ratio of standard length. *Lithoxus bovallii* (BMNH 1905.11.1: 43; BMNH 1905.11.1: 44–48, two), *L. lithoides* (FMNH 53557; ZMA 110.632, three; BMNH 1911.10.31: 109–112, two), *L. planquettei* (RMNH 28304, three; RMNH 28305, two; RMNH 28306, two; RMNH 28308; BMNH 1926.3.2: 762), *Lithoxus stocki* (IRSNB 639; IRSNB 640, two; IRSNB 641, two; IRSNB 642; IRSNB 788; IRSNB 786; RMNH 28307, two).

| species | <i>bovallii</i> | <i>lithoides</i> | <i>planquettei</i> | <i>stocki</i> |
|------------------------------------|-----------------|------------------|--------------------|---------------|
| N | 3 | 6 | 9 | 10 |
| P ₁ -odontodes abundant | no | yes | males only | yes |
| MORPHOMETRICS | | | | |
| standard length | 34.8–44.3 | 40.3–67.3 | 30.0–52.0 | 36.4–51.4 |
| head length | 2.9–3.1 | 2.8–3.2 | 3.0 | 2.8–3.1 |
| dorsal spine length | 4.6–5.4 | 4.3–5.2 | 4.1–4.5 | 4.1–4.5 |
| anal fin height | 7.7–8.9 | 10.2–12.6 | 7.5–8.6 | 8.1–10.1 |
| pectoral spine length | 4.0–4.7 | 2.4–3.4 | 3.8–4.4 | 2.8–3.6 |
| thoracic length | 3.9–4.5 | 3.6–4.0 | 4.0–4.7 | 3.5–4.2 |
| max. orbital diameter | 17.4–20.2 | 14.6–18.7 | 17.5–20.8 | 15.6–19.0 |
| interorbital width | 10.1–10.8 | 12.0–12.9 | 8.7–9.7 | 10.1–11.9 |
| head depth | 7.4–9.0 | 8.6–11.4 | 6.7–8.8 | 7.9–9.0 |
| body depth | 8.5–10.1 | 9.8–12.0 | 6.2–10.2 | 7.7–9.4 |
| depth caudal peduncle | 11.2–12.0 | 15.7–17.3 | 9.8–11.4 | 9.0–11.2 |
| MERISTICS | | | | |
| lateral scutes | 27 | 23–26 | 25–27 | 25–27 |
| anal fin rays | 4,i | 3,i | 4,i | 4,i |
| premax. teeth | 3–5 | 3–4 | 3–5 | 4–6 |
| mandib. teeth | 4–7 | 8–12 | 4–7 | 5–10 |

Characters. – Small to moderately long (little over 70 mm in SL) species of the subtribe Lithoxina, tribe Pseudacanthicini of the loricariid subfamily Ancistrinae. Maxillary barbels well-developed, often in an oblique, anteriorly directed position. Margin of snout, including area between orbital rim and evertible interopercular odontodes, covered with close-set, small, isolated polygonal scutelets. Anal papilla distinct. Body and head depressed. Lower lip broad, three-quarters-circular, with minute papillae along outer margin. Premaxillary teeth few, about twice size of mandibular teeth, those along symphysis of jaw distinctly thicker than others. Evertible interopercular odontodes well-developed.

Lithoxus stocki n. sp.

Etymology. – Dedicated to Prof. Dr. Jan H. Stock, on occasion of his retirement, with remembrance of and gratitude for his energetic and enthusiastic activities as a teacher and colleague.

Material examined (42 specimens, SL up to 51.4 mm). – French Guiana, Maroni river basin. – IRSNB 639, holotype, SL 46.8 mm, Marouini River, downstream of village Epoia, coll. J.-P. Gosse, 22-XI-1969; IRSNB 640 (two paratypes), SL 42.1 – 46.8 mm, same data as holotype; IRSNB 641 (fourteen paratypes), ZMA 107.943 (six paratypes), SL 28.7 – 51.4 mm, Inini River, Saut Sonnelle, coll. J.-P. Gosse, 16-XI-1969; IRSNB 642 (one paratype), SL 47.2 mm, Marouini River, just downstream of first rapid, coll. J.-P. Gosse, 23-XI-1969; IRSNB 788 (seven paratypes), SL 41.1 – 50.8 mm, Ouaiqui River, right bank tributary to Tampoc River at Saut Bali, coll. J.-P. Gosse, 18-XI-1969; RMNH 28307 (two paratypes; also paratypes of *Lithoxus (Paralithoxus) planquettei* Boeseman, 1982), SL 36.4 – 41.4 mm, Saut Gostou, coll. P. Planquette, 12-X-1979.

Surinam, District Marowijne. – IRSNB 786 (seven paratypes), SL 31.8 – 46.2 mm, Paloemeu River at Papadronsoela, coll. J.-P. Gosse, 1-XI-1966; IRSNB 787 (two paratypes), SL 47.4 – 47.8 mm, rapid of Paloemeu River, upstream of confluence with Waloemeroekreek, coll. J.-P. Gosse, 3-XI-1966.

Description. –

Morphometric and meristic data are given in Tables I–III. Shape and structure see Figs. 1–2.

Dorsum, sides of body and head, and caudal peduncle completely covered with scutes and dermal ossifications. Areas along the dorsal and anal

Table III. Selected morphometric characters of *Lithoxus* spp. possessing an adipose fin. Dorsal spine length through depth caudal peduncle is a ratio of head length. Same material as listed in caption of Table II.

| species | <i>bovallii</i> | <i>lithoides</i> | <i>planquettei</i> | <i>stocki</i> |
|-----------------------|-----------------|------------------|--------------------|---------------|
| N | 3 | 6 | 9 | 10 |
| MORPHOMETRICS | | | | |
| standard length | 34.8–44.3 | 40.3–67.3 | 30.0–52.0 | 36.4–51.4 |
| dorsal spine length | 1.6–1.8 | 1.5–1.8 | 1.4–1.5 | 1.5–1.7 |
| anal fin height | 2.6–3.0 | 3.5–4.3 | 2.5–2.9 | 2.7–3.5 |
| pectoral spine length | 1.3–1.6 | 0.8–1.2 | 1.3–1.5 | 1.0–1.3 |
| thoracic length | 1.3–1.5 | 1.2–1.4 | 1.3–1.6 | 1.2–1.5 |
| max. orbital diameter | 6.0–6.7 | 5.1–5.9 | 5.9–6.9 | 5.3–6.4 |
| interorbital width | 3.4–3.6 | 4.1–4.3 | 2.9–3.2 | 3.5–4.0 |
| head depth | 2.5–2.9 | 3.0–3.6 | 2.3–2.9 | 2.8–3.1 |
| body depth | 2.9–3.3 | 3.3–3.8 | 2.1–2.5* | 2.6–3.3 |
| depth caudal peduncle | 3.8–3.9 | 5.5–5.9 | 3.3–3.8 | 3.1–4.4 |

*3.4 in one paratype.

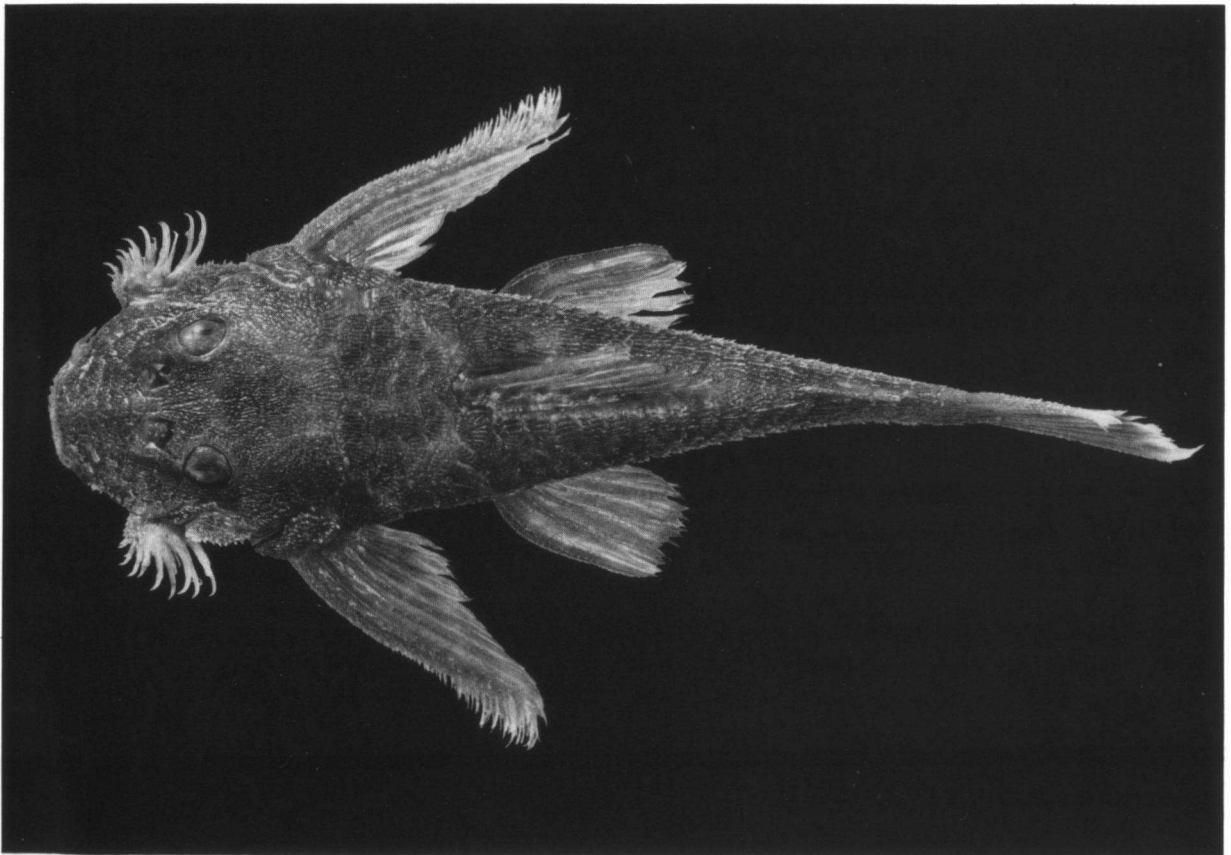


Fig. 1. *Lithoxus stocki* n. sp., holotype in dorsal view.

fin bases and dorsal to pectoral and pelvic fin bases naked. Supraorbital rim not raised.

Dermal ossifications, scutes, fin spines, and most of fin-rays covered with odontodes. Ventral part of

scutes anterior to distal part of the anal fin-rays covered with bare skin.

Holotype a nuptial male. Odontodes on scutes prominent, arranged in horizontal ridges extending

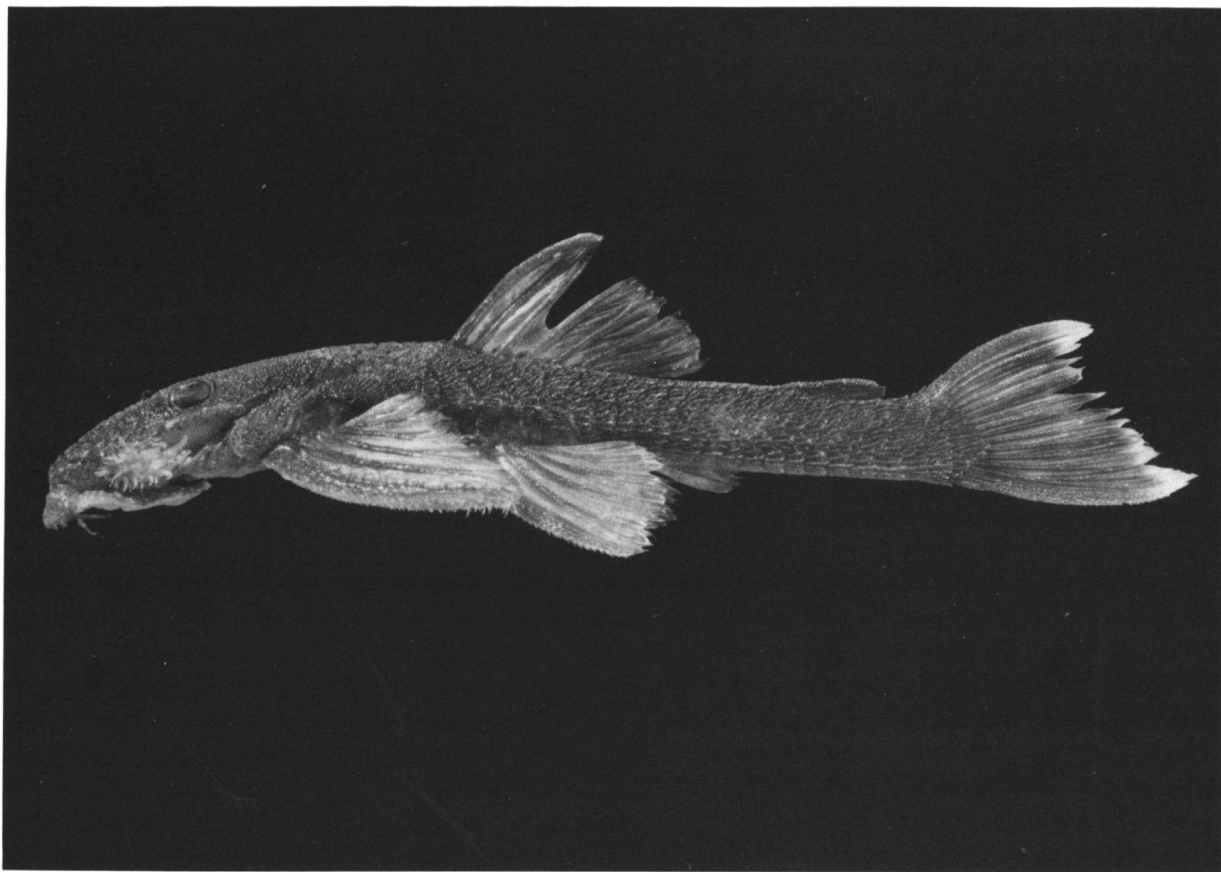


Fig. 2. *Lithoxus stocki* n. sp., holotype in lateral view.

posteriorly from about the vertical line through dorsal fin origin. Ventral margin of operculum with series of quite prominent odontodes. Anterior half of sides and dorsum of pectoral fin spine closely set with long and slender odontodes with an antrorse tip. Adipose fin spine rough. The pelvic fin spine and ventral part of pectoral fin spine bear rather broad odontodes. Minute odontodes on dorsal and anal fin spines, and on caudal fin. Sides and dorsum of snout covered with small, irregular, firmly fused, rough scutelets. Posterior evertible interopercular odontodes progressively longer than anterior ones, which merge gradually with adjacent non-evertible odontodes. Body and head ventrally flat. Body at height of dorsal fin origin oval, depressed, and at height of adipose fin origin laterally compressed, slightly convex. Dorsum of body flat posterior to dorsal fin origin. Abdomen and ventral part of head naked; some strong muscles can be seen clearly

through thin skin, which bears a small number of minute papillae. Adipose fin membrane triangular, with convex outer margin. Lateral line and other pores almost invisible. Free margin of long operculum almost straight. Outer and ventral surface of upper lip narrow. Upper lip merges completely with much broader lower lip. Lips with numerous flat papillae. Posterior margin of lower lip with small, papilla-like extensions. Median two premaxillary teeth in each jaw about twice as long and at least twice as thick as mandibular teeth; outer teeth considerably smaller than median ones. Inner premaxillary teeth with small outer lobe and large inner lobe. Middle premaxillary teeth have two small outer lobes, and outer premaxillary teeth have a minute outer lobe. All mandibular teeth bilobed.

Eye not covered with flap.

Caudal fin with oblique distal margin, lower lobe longer than upper.

Colour. – Almost even chestnut brown, lighter ventrally. Only one specimen (IRSNB 642) shows some irregular, whitish markings. Caudal fin with narrow, white distal margin.

Comparison

The first described *Lithoxus* species was originally named *Ancistrus bovallii* by Regan (1906: 96). It was described from seven syntypes originating from the “Kaat River, tributary to the Treng River, Upper Potaro, British Guiana, in a rapid on the under side of stones.” Neither the Kaat River, nor the Treng River can be traced on maps of British Guiana (= Guyana); Boeseman (1982: 49) suggested that Treng of Regan might be the Ireng River and designated this species as the type of his subgenus *Paralithoxus*. Our comparison is here confined to the syntypes (because *L. bovallii* sensu Boeseman apparently consists of more than one species). We herewith designate BMNH 1905.11.1: 43 (see Table I) as the lectotype, with BMNH 1905.11.1: 44–48 being the six paralectotypes.

Lithoxus lithoides Eigenmann, 1910, type species of the genus, was described from in total 182 specimens collected by Eigenmann (in 1908) at Amatuk (type locality), Warraputa, Konawaruk, Crab Falls and Waratuk on the Lower Potaro River, tributary to the Essequibo River. Concerning the species, Eigenmann (1912: 243) stated that it is: “Abundant, clinging to the rocks in the rapids. Secured with “Hiari,” which caused them to come to the surface.”

Lithoxus pallidimaculatus Boeseman, 1982 was described from the holotype and three paratypes originating from “Kwambaolo Creek, right tributary of Sara Creek above Dam, Suriname River system, Surinam . . .”.

Lithoxus planquettei Boeseman, 1982 was described from Comté-, Mana-, Maroni (or Marowijne)-, and Approuage river systems, all in French Guiana. The two specimens from the Maroni are herein reidentified as *Lithoxus stocki*.

Lithoxus surinamensis Boeseman, 1982 was based upon 57 (small) specimens from near Awaramdam (type locality) and Grandam, Gran Rio, upper

Suriname River system, Surinam.

Boeseman (1982) provided exhaustive morphometric and meristic characters of *L. bovallii* (syntypes), *L. lithoides* (paratypes), and of his three new species. Since his data were not all in agreement with our present results, measurements and counts of the primary types of all *Lithoxus* spp. are given in Table I.

Lithoxus pallidimaculatus and *L. surinamensis* differ from all other *Lithoxus* species in the lack of an adipose fin. According to Boeseman’s key (1982: 46), these two species can be distinguished from each other by “Back and sides with light roundish spots: . . . *L. pallidimaculatus*” against “Black [read: Back] dusky, with or without suggestions of cross-bands: . . . *L. surinamensis*.” *Lithoxus lithoides* (including the holotype) has three branched anal fin rays (last one split to its base), in contrast to four (last one split to its base) in the other five species. The shape of the teeth in *L. lithoides* and *L. bovallii* is similar, especially the middle premaxillary teeth which have a broad, obliquely truncate biting edge on both lobes, in contrast to the acute tips of the bilobed teeth in the four other *Lithoxus* species. *Lithoxus planquettei* is easily distinguished from *L. stocki* by its colour pattern and by some morphometric and meristic characters (see Tables II–III). *Lithoxus stocki* appears to be most similar to *L. bovallii*, from which it can be easily recognized by the shape of the teeth (acute versus truncate tips), presence versus absence of numerous well developed odontodes on anterior half of the pectoral fin spine (even in females of *L. stocki* such odontodes are abundant; in the lectotype and paralectotypes of *L. bovallii* such odontodes are inconspicuous), and relative length of the pectoral fin spine (2.8 – 3.6 against 4.0 – 4.6 in SL and 1.0 – 1.3 against 1.3 – 1.6 in head length, in *L. stocki* and *L. bovallii*, respectively).

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L.A. van der Laan made the photographs of the holotype of *Lithoxus stocki*. This paper was reviewed by Dr R.P. Vari.

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