A New Species of *Scoloplax* with a Remarkable New Tooth Morphology within Loricarioidea (Siluriformes: Scoloplacidae)

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A New Species of *Scoloplax* with a Remarkable New Tooth Morphology within Loricarioidea (Siluriformes: Scoloplacidae)

Marcelo Rocha[1], Henrique Lazzarotto[2], and Lucia Rapp Py-Daniel[3]

A new species of *Scoloplax* is described with a remarkable new tooth morphology, possessing dentary teeth with four cusps and premaxillary teeth with two to four cusps, features unique among all Loricarioidea and rare among Siluriformes. *Scoloplax baileyi,* new species, is further distinguished by eight diagnostic features. The new species is found in the small tributaries of Rio Unini, an important tributary to the Rio Negro, and in the Anavilhanas Archipelago, lower Rio Negro, Amazonas State, Brazil. Based on a review of scoloplacids, a new record of *S. baskini* is given to include the Rio Negro, increasing the number of species of *Scoloplax* from that basin to four.

SPECIES of the Neotropical family Scoloplacidae are distinguished from other Siluriformes by the presence of a conspicuous shield-shaped rostral plate bearing numerous large and recurved odontodes (Schaefer, 2003).

Scoloplacidae is a monogeneric family endemic to South America and known from the Amazon, Paraguay, and Paraná basins. In the Amazon basin, the family is distributed in the Araguaia, Xingu, lower Japurá, middle Juruá, upper and middle Purus, Negro, Solimões, Tapajós, and Madeira basins (Schaefer, 2003; Rocha et al., 2008; de Oliveira et al., 2009; pers. obs.).

An ichthyological survey coordinated by HL in the Rio Unini basin (an important tributary of the lower Rio Negro) resulted in the discovery of a new species of *Scoloplax* in medium-sized tributary streams with flooded areas. Unlike other species of *Scoloplax*, this new species was collected primarily over substrates of sand or silt. The objective of this paper is to describe this new species and comment on its remarkable morphology.

MATERIALS AND METHODS

Measurements were made to the nearest 0.1 mm using a digital caliper with the aid of a stereomicroscope. Body measures are given as percentages of standard length (SL) and head length (HL). Landmarks for measurements and terminology are: 1) standard length = from tip of snout to middle caudal-fin base; 2) predorsal length = from tip of snout to origin of dorsal-fin spine; 3) head length = from tip of snout to posterior margin of opercle; 4) body width = width across cleithra immediately anterior to pectoral-spine insertions; 5) body depth = depth immediately anterior to insertion of dorsal-fin spinelet; and 6) interorbital distance = least distance between bony margins of orbits. Counts of vertebrae follow Schaefer (1990). Counts of all fin rays (except when not possible), plates, odontodes, and vertebrae were made on cleared-and-stained (CS) specimens, prepared according to Taylor and Van Dyke (1985). Institutional abbreviations follow Sabaj Pérez (2010). Geographical coordinates are given only when available.

Scoloplax baileyi, new species

Figures 1, 2

Holotype.—INPA 35637, 14.0 mm SL, Brazil, Amazonas State, Barcelos, Rio Negro basin, Igarapé do Ingá, right bank tributary of Rio Arara, Rio Unini basin, 1°42′45.25″S, 63°33′25.27″W, 7 September 2010, H. Lazzarotto et al.

Paratypes.—Brazil, Amazonas State, Barcelos, Rio Negro drainage, Rio Unini basin: INPA 35627, 1 (not measured), Igarapé Camaleão, left bank tributary of Rio Pauini, 1°52′48.50″S, 63°14′23.32″W, 30 July 2009, H. Lazzarotto et al.; INPA 35628, 1, 11.6 mm SL, 1 CS, 11.2 mm SL, Igarapé Solimõeszinho, 1°39′23.29″S, 62°58′49.62″W, 14 September 2010, H. Lazzarotto et al.; INPA 35629, 1, 14.7 mm SL, Igarapé Solimõeszinho, 1°39′23.29″S, 62°58′49.62″W, 27 January 2010, H. Lazzarotto et al.; IDSM 2298, 1, 11.4 mm SL, INPA 35630, 1, 11.9 mm SL, beach at Igarapé Solimõeszinho, 1°39′2.81″S, 62°57′58.97″W, 14 November 2010, H. Lazzarotto et al.; INPA 35631, 1, 11.9 mm SL, beach at Igarapé Camaleão, left bank tributary of Rio Pauini, 1°53′41.71″S, 63°14′9.82″W, 1 September 2010, H. Lazzarotto et al.; INPA 35632, 1, 15.4 mm SL, 1 CS, 16.1 mm SL, Igarapé do Ingá, right bank tributary of Rio Arara, 1°42′38.38″S, 63°33′15.48″W, 1 February 2010, H. Lazzarotto et al.; INPA 35633, 1, 14.0 mm SL, Igarapé Solimõeszinho, 1°40′34.21″S, 63°3′36.00″W, 27 April 2010, H. Lazzarotto et al.; INPA 35634, 2, 11.6–12.4 mm SL, Igarapé do Ingá, right bank tributary of Rio Arara, 1°42′45.25″S, 63°33′25.27″W, 26 November 2010, H. Lazzarotto et al.; INPA 35635, 1, 10.7 mm SL, collected with holotype; INPA 35636, 1, 14.9 mm SL, beach at Igarapé Copaíba, left bank tributary of upper Rio Unini, 1°39′18.94″S, 63°53′8.59″W, 6 February 2010, H. Lazzarotto et al. Novo Airão: MZUSP 34760, 1, 9.6 mm SL, Anavilhanas, Lago do Prato, ca. 2°42′S, 60°45′W, M. Goulding.

Diagnosis.—*Scoloplax baileyi* is distinguished from all other species of *Scoloplax* by the following diagnostic features: dentary teeth with 4 cusps (vs. 2 cusps); premaxillary teeth with 4, 3, or 2 cusps (vs. 2 cusps; Fig. 3); basipterygia with an enlarged anterolateral and central projection, giving a W-shape appearance in ventral view, and a very concave posterior region (vs. basipterygia lacking a W-shape appearance in ventral view; Figs. 4, 5); rib on sixth centrum with its distal tip conspicuously hypertrophied (vs. not hypertrophied; Fig. 6); connecting bone short and very hypertrophied (vs. long and not hypertrophied; Fig. 6); dorsolateral plates

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Fig. 1. *Scoloplax baileyi*, new species, INPA 35637, holotype, 14.0 mm SL, Igarapé do Ingá, right bank tributary of Rio Arara, Rio Unini basin.

Fig. 2. *Scoloplax baileyi*, new species, holotype before preservation, INPA 35637, 14.0 mm SL, photograph taken a few hours after collection.

large, closer to each other and joined at midline after the third pair (vs. dorsolateral plates small, distant from the dorsal-fin spinelet and contacting each other at midline after the fourth pair; Fig. 6); transverse process (*sensu* Schaefer 1990:192) short and hypertrophied (vs. long and not hypertrophied; Fig. 6); rectangular and long swimbladder capsule process (vs. quadrangular and short in *S. dolicholophia* and pointed in other species; Fig. 7); midventral plates large with a rectangular shape, with two rows of odontodes along their external margins (vs. small quadrangular plates in *S. baskini*; ovoid or irregular plates with odontodes scattered over the plates in *S. dicra*, *S. empousa,* and *S. distolothrix*; and plates with expanded posterior wings and a v-shaped anterior margin in *S. dolicholophia*; Fig. 8); and central part of coracoid very thin, with a concave anterior margin (vs. without a concave anterior margin; Fig. 5).

Description.—Morphometrics given in Table 1. Small size, 10.7–15.4 mm SL. Head and body strongly depressed. Dorsal profile of head and predorsal area nearly straight. Body profile straight between dorsal and caudal fins. Snout rounded in dorsal view.

Head with odontodes on orbital margin of frontal bone, preopercle, opercle, compound pterotic, and supraoccipital process. Lateral ethmoid plate present and bearing odontodes. Rostral plate bearing recurved odontodes. Eye dorsal and conspicuous. Interopercle absent. Mouth small, terminal. Dentary teeth with four cusps. Premaxillary teeth with 2, 3, or 4 cusps. Maxillary barbel biramous, largest ramus elongate, reaching base of pectoral-fin spine; minor ramus short, not reaching base of pectoral-fin spine. Mental barbel uniramous, origin anterior to gular fold and posterior to mandibular symphysis. Mandibular barbel uniramous, origin at corner of mouth. Small platelet at distal tip of rib on sixth vertebra bearing small odontodes. Mesethmoid with slender and thin anterior process. Four branchiostegal rays.

Dorsal fin with spinelet, spine, and three soft branched rays. Dorsal spine with small odontodes. Locking mechanism present. Pectoral fin I,6. Pectoral spine large and straight covered with small odontodes only on its anterior margin and lacking posterior serrae; locking mechanism present. Small filament on tip of pectoral spine. Pelvic fin with one unbranched and four branched rays; first ray smaller and bearing odontodes. Basipterygia with enlarged anterolateral and medial projections, W-shaped, and with strongly concave posterior region. Basipterygium anterolateral projection bearing odontodes on its external margin. Basipterygium anterolateral, medial and posterior processes visible through skin in ventral view in preserved specimens. Anal fin i,4,i. Caudal fin i,9,i; outer rays bearing small odontodes. Procurrent caudal-fin rays absent.

Eighteen dorsolateral plates, extending posteriorly from base of dorsal-fin spinelet to caudal peduncle. Two longitudinal series of dorsal plates joined at midline. Each plate bearing odontodes on its distal margin and center. Ten ventrolateral plates. Six ventral midline plates. Ventral midline plates bearing odontodes along lateral margins, forming two longitudinal rows of odontodes. Total vertebrae 27.

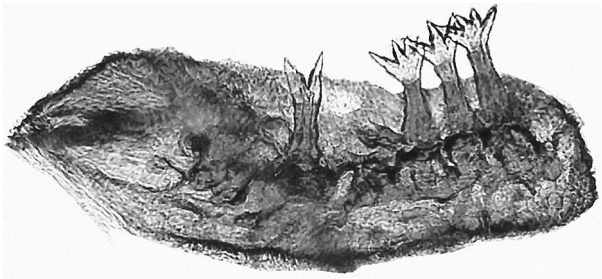

Fig. 3. Left premaxilla of *Scoloplax baileyi*, paratype, INPA 35632, 16.1 mm SL. Scale = 0.5 mm.

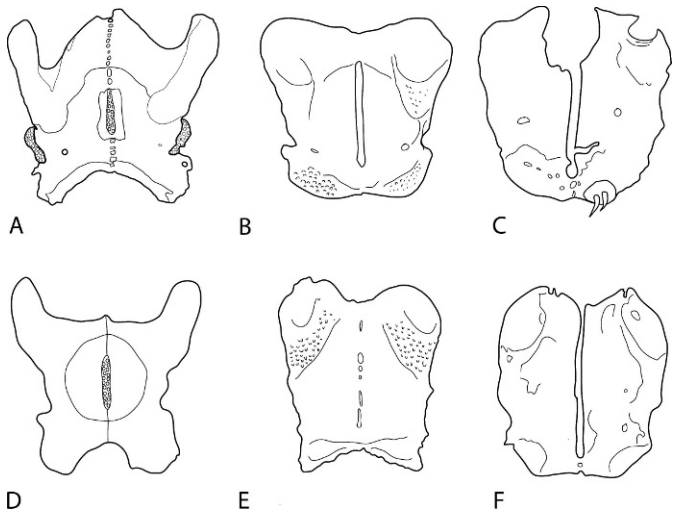

Fig. 4. Basipterygia of scoloplacid species. Ventral view, anterior toward top. (A) *Scoloplax baileyi*, paratype, INPA 35632, 16.1 mm SL; (B) *S. baskini*, paratype, INPA 28650, 15.6 mm SL; (C) *S. dicra*, INPA 27210, 11.1 mm SL; (D) *S. dolicholophia*, INPA 28965, 12.2 mm SL; (E) *S. empousa*, NUP 4806, 19.7 mm SL; (F) *S. distolothrix*, INPA 4006, 11.7 mm SL.

Color in alcohol.—Overall body light brown to cream-colored in dorsal view. Fins and spines almost translucid. Very small light brown dots sometimes present on all fins. Narrow longitudinal dark brown stripe present on lateral region of body from pectoral spine to caudal peduncle. Ventral portion of body pale, cream-colored, with pectoral and pelvic girdles visible through skin.

Color in life.—Body overall brownish. Trunk light brown with four narrow dark saddles, first saddle covering dorsal fin, except for lighter dorsal-fin spine. Narrow longitudinal gray stripe along lower region of trunk from pectoral to caudal fin. A second longitudinal, narrow, dark brown, stripe running immediately above entire length of dark stripe.

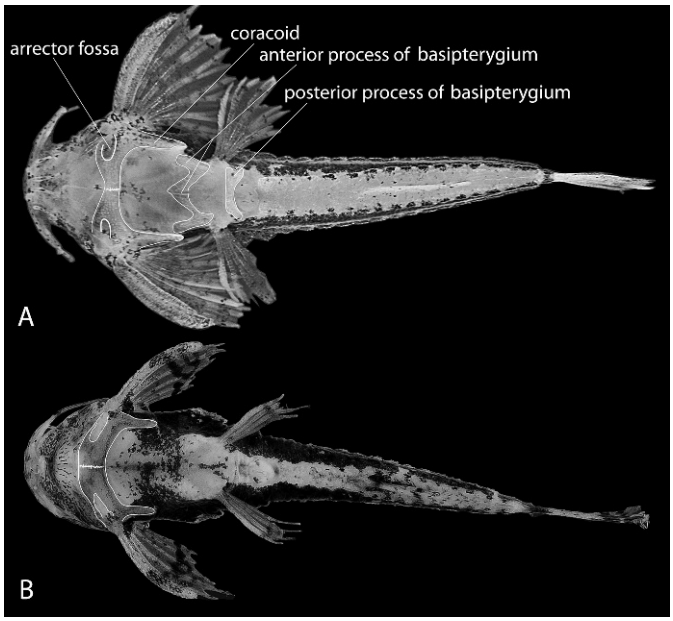

Fig. 5. Ventral view of *Scoloplax*. (A) *S. baileyi*, INPA 35637, holotype, 14.0 mm SL; (B) *S. baskini*, INPA 28649, 16.3 mm SL.

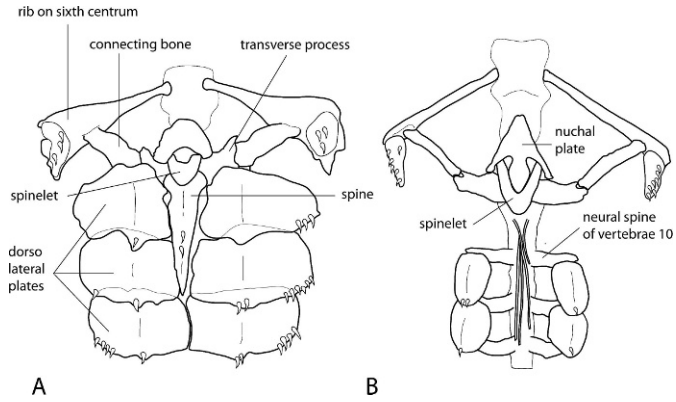

Fig. 6. Partial view of dorsal plates and associated osteology of vertebral elements. Dorsal view, anterior toward top. (A) *Scoloplax baileyi*, paratype, INPA 35632, 16.1 mm SL; (B) *S. distolothrix*, INPA 4006, 11.7 mm SL.

Pectoral, caudal, and pelvic fins with brown dots scattered over a hyaline ground. Caudal fin with distal dark brown vertical bar; tips of caudal-fin rays hyaline. Dorsal part of head light brown with a dark brown triangle with axis pointed to dorsal spine. Few small dark dots scattered over trunk and head (Fig. 2).

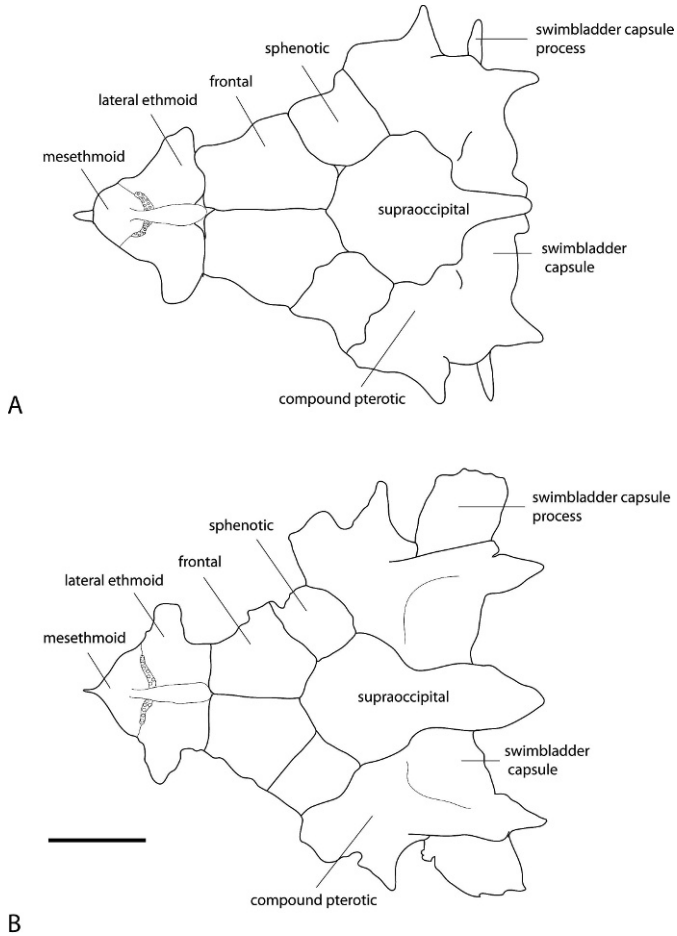

Fig. 7. Dorsal view of neurocranium of species of *Scoloplax*. (A) *S. dicra*; (B) *S. baileyi*, paratype, INPA 35632, 16.1 mm SL. Rostral plate removed. Anterior toward left. Figure of *S. dicra* modified from Schaefer (1990). Scale = 1 mm.

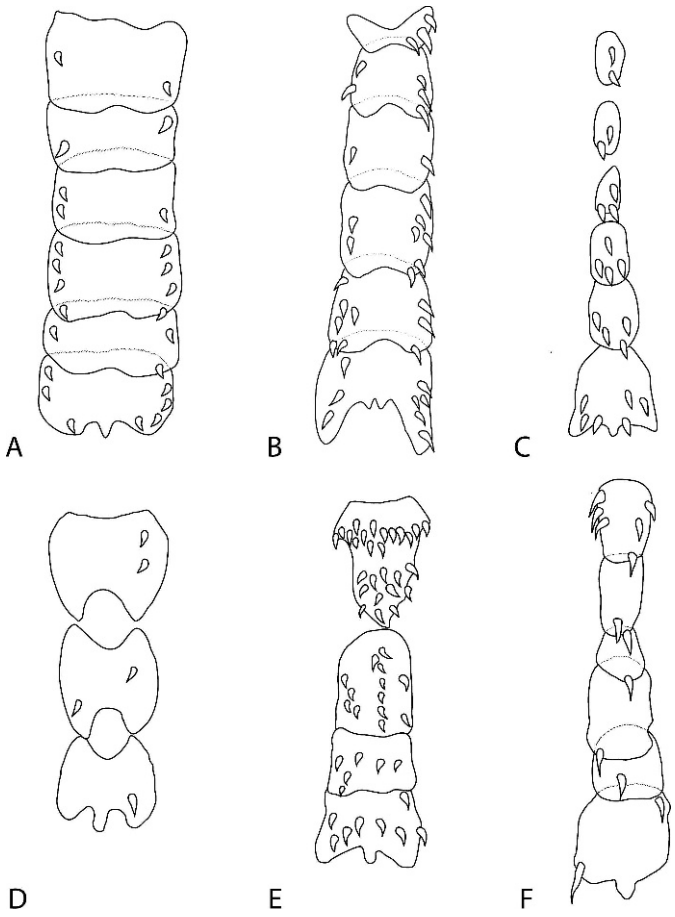

Fig. 8. Ventral midline plates in scoloplacid species. Ventral view, anterior toward top. (A) *Scoloplax baileyi*, paratype, INPA 35632, 16.1 mm SL; (B) *S. baskini*, paratype, INPA 28650, 15.6 mm SL; (C) *S. dicra*, INPA 27210, 11.1 mm SL; (D) *S. dolicholophia*, INPA 26257, 10.7 mm SL; (E) *S. empousa*, NUP 4806, 19.7 mm SL; (F) *S. distolothrix*, INPA 4006, 11.7 mm SL.

Distribution.—*Scoloplax baileyi* can be found in streams of the Rio Unini, lower Rio Negro basin. The distance through the water course between different sampled localities can reach up to 350 km, indicating that the new species is well spread through the drainage (Fig. 9). A single specimen (MZUSP 34760) was found in Anavilhanas, lower Rio Negro basin, further suggesting a more widespread distribution.

Habitat notes.—In Rio Unini basin, *Scoloplax baileyi* can be found in mid-sized streams within dense forest vegetation. These streams are blackwater throughout most of the year but, during the dry season, some streams carry a small amount of sediment and present higher pH and conductivity values. The microhabitats where *S. baileyi* was found presented fine sand and silt as substrate. Other species of this genus are usually found in leaf-litter substrate (Rocha et al., 2008). Specimens of *S. baileyi* were collected with handnets sweeping stream bottom in depths that ranged from 0.4 to 1.5 m exclusively in areas with sand and silt. Extensive collecting effort throughout several sites of the Rio Unini basin in areas with leaf-litter substrate did not result in the collection of a single specimen of the new species. Stream temperature varied from 24.8°C to 26.7°C, pH from 5.2 to 6.5, conductivity from 8.8 to 18.6 μS/cm, and dissolved oxygen from 1.07 to 6.68 mg/l. Sites where *S. baileyi* can be found include at least 40 additional species, including other undescribed species, from different taxonomic groups.

Conservation remarks.—Although not many specimens of *Scoloplax baileyi* have been collected elsewhere, its wide distribution in the Rio Unini basin does not raise concern about its conservation status, particularly because it occurs inside three protected areas. Mid-sized streams such as the ones where *S. baileyi* was collected are very common in the region, leading us to believe that this species might be present in several additional localities as well.

Etymology.—Named in honor of Dr. Reeve M. Bailey (1911–2011) for his remarkable contributions to ichthyology including the description of the genus *Scoloplax* and its type species, *S. dicra*.

DISCUSSION

The majority of the specimens of *Scoloplax baileyi* was found in the small streams of the Rio Unini basin, with one record from the Rio Negro, indicating that this species may be widespread in the Rio Negro basin as well. Currently, only *S. dolicholophia* and *S. dicra* are known from the Rio Negro basin. Specimens of *S. dicra* are from the Igarapé Tarumazinho, nearly 45 km north of Manaus (MZUSP 6834, 1, 12.8 mm SL) (type locality of *S. dolicholophia*), and Rio Itu, 10 km upstream from its confluence with Rio Negro, approx. 0°40′N, 63°40′W (ZSM 25490, 1, 12.8 mm SL), both from Amazonas State in Brazil. Although the ZSM specimen was not analyzed for this work, we were able to analyze specimens of *Scoloplax dicra* from small tributaries of upper Rio Madeira, small tributaries of the Rio Solimões (de Oliveira et al., 2009), and some records from Rio Purus

Table 1. Morphometric Data of *Scoloplax baileyi,* New Species.

		Paratypes (=12)		
Measurements	Holotype	Mean	Range	
Standard length (mm)	14.0	12.6	10.7	15.4
Percent of SL				
Predorsal length	37.9	36.7	34	40.3
Head length	20.0	19.9	17.5	21.8
Body width	30.7	30.5	27.2	34.5
Body depth	15.7	15	13.8	16.4
Percent of HL				
Interorbital distance	39.3	33.7	25.9	39.1

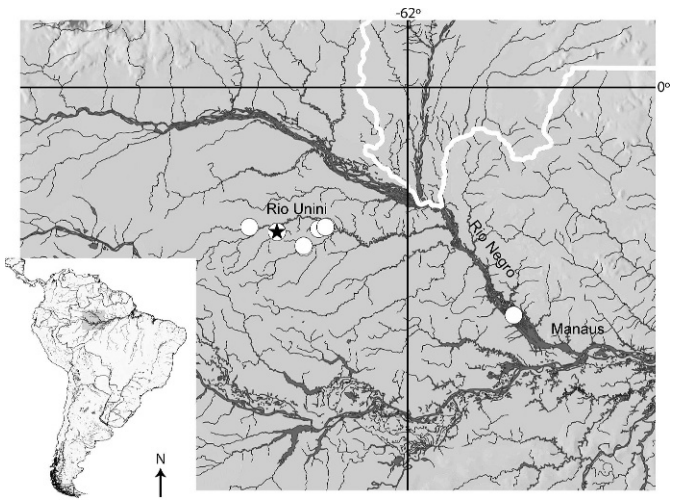

Fig. 9. Geographic distribution of *Scoloplax baileyi*. The white line is the political border between the Brazilian states of Amazonas and Roraima.

and Rio Juruá basins (M. Rocha, unpubl. data), showing the wide distribution of this species.

Specimens of *Scoloplax dolicholophia* are found in the Rio Negro basin from its lower part, in the confluence with Rio Solimões to tributaries in the upper Rio Negro (upstream from São Gabriel da Cachoeira falls, Amazonas State). However, despite the proximity and the historical and present connections between the Rio Negro and Rio Orinoco basins, which serves as a water corridor for some particular species (Winemiller et al., 2008), samplings have never produced any specimen of *Scoloplax* in the Rio Orinoco basin thus far. A revision of all specimens of *Scoloplax* from many museums revealed some specimens here recognized as *S. baskini* from some localities in Rio Negro. *Scoloplax baskini* was thought to be restricted to the Rio Aripuanã, Rio Madeira basin (Rocha et al., 2008), but with these new records, the diversity of this family in the Rio Negro basin increases to four species occurring syntopically.

Tooth morphology in Loricarioidea can vary remarkably in some taxa. According to Schaefer (1990) and de Pinna (1998), tooth cusps can be sharply pointed (Callichthyidae, some Trichomycteridae), bifid (Scoloplacidae, Astroblepidae, Loricariidae, *Nematogenys,* and *Trichogenes*), or even strongly spatulate (Copionodontinae). The new species is unique among all Loricarioidea in having teeth with three or four cusps (Fig. 3). Within Siluriformes the presence of more than two cusps is rare and such a condition has been reported solely for unrelated species (Heptapteridae; DoNascimiento and Milani, 2008). Among all of the cleared-and-stained specimens of species of *Scoloplax* analyzed in this study, only *S. baileyi* showed this tooth morphology.

The pattern of plates on the ventral midline and their odontodes is very useful to diagnose some species of *Scoloplax*. The presence of two rows of odontodes along the external margins of the midventral plates is shared by *Scoloplax baileyi*, *S. baskini,* and *S. dolicholophia*, although in *S. dolicholophia* the odontodes are concealed by skin (Rocha et al., 2008). In *S. dicra*, *S. empousa,* and *S. distolothrix*, the odontodes are scattered over the plates (Fig. 8). The paired dorsal plates in the new species are large and closely connected to each other and to the nuchal plate and the spinelet (Fig. 6A). The remaining species of *Scoloplax* display the pattern of plates illustrated in Figure 6B.

The basipterygium in *S. baileyi* has two anterior projections, lateral and medial, on the bone (Figs. 4A, 5). Only *S. dolicholophia* shows a pronounced anterolateral projection but lacks the medial one (Fig. 4D). In *S. baileyi*, the basipterygium posterior and anterior processes are visible through the skin in ventral view in preserved specimens, with some specimens possessing odontodes on the anterior projections (Fig. 5).

Within Scoloplacidae the lateral fenestra of the swimbladder capsule is a large opening not occluded by the compound pterotic. Schaefer (1990) considered this condition to be derived within Loricarioidea. In *Scoloplax baileyi*, the lateral fenestra is a narrow opening and the swimbladder capsule displays a hypertrophied lateral process (Fig. 7B), a condition not seen in any species of *Scoloplax*. The remaining species have a thin, pointed process (Fig. 7A), or a short projection as found in *S. dolicholophia* (see Schaefer, 1990:179, fig. 5).

Possession of three dorsal-fin rays was thought to be an autapomorphy for *S. distolothrix* by Schaefer (1990). However, *S. baileyi* and *S. baskini* possess the same number of dorsal-fin rays (Rocha et al., 2008). A thorough taxonomic revision and phylogenetic analysis are in progress (MSR), which will establish the relationships of the new species (as well as *S. baskini*) with its congeners and allow inferences to be made about the evolution of morphology within the family.

KEY TO SPECIES OF *SCOLOPLAX*

1a. Mental barbel uniramous 2
1b. Mental barbel biramous 4
2a. A pair of plates with 3–5 odontodes between pelvic-fin base and anus; mid-ventral plates bearing odontodes on a single row ..... ***S. dicra***
2b. Plates between pelvic-fin base and anus absent; mid-ventral plates bearing odontodes on 2 longitudinal rows 3
3a. Serrations present on posterior margin of pectoral fin; pectoral fin with 4 soft rays; dentary and premaxillary teeth with 2 cusps ..... ***S. baskini***
3b. Serrations absent on posterior margin of pectoral fin; pectoral fin with 6 soft rays, dentary teeth with 4 cusps and premaxillary teeth with 2–4 cusps ..... ***S. baileyi*, new species**
4a. Mandibular and mental barbels biramous; serrations absent on posterior margin of pectoral-fin spine; ventral midline plates with odontodes scattered on its extension 5
4b. Mandibular barbel absent; mental barbel biramous; serrations present on posterior margin of pectoral-fin spine; ventral midline plates with 2 rows of odontodes largely concealed by skin with only their tips visible ..... ***S. dolicholophia***
5a. Dorsal fin with 3 soft rays; anal fin with 5 soft rays; pelvic fin with 4 soft rays ..... ***S. distolothrix***
5b. Dorsal fin with 4 soft rays; anal fin with 6 soft rays; pelvic fin with 4–5 soft rays ..... ***S. empousa***

MATERIAL EXAMINED

Museum catalog number followed by number of alcohol specimens, number of cleared-and-stained specimens (CS), and standard length, if recorded.

Scoloplax baskini: Brazil, Amazonas, Rio Aripuanã basin: ANSP 187488, 3, 12.5–13.1 mm SL, paratype, 5°59′32.3″S, 60°12′35″W; INPA 28649, 42 (20, 11.1–17.2 mm SL; 6 CS, 11.2–12.8 mm SL), paratype, 5°59′32.3″S, 60°12′35″W; INPA 28650, 24 (10, 10.7–16.1 mm SL; 4 CS, 11.8–16.1 mm SL), paratype, 6°08′48″S, 60°11′47.9″W; INPA 28651, 1, 11.2 mm SL, paratype, 6°24′39.53″S, 60°21′41.06″W; INPA 28652, 29 (4 CS, not measured), paratype, 5°59′32.3″S, 60°12′35″W; INPA 28658, 14.4 mm SL, holotype, 5°59′32.3″S, 60°12′35″W; MCP 43133, 3, 10.5–13.7 mm SL, paratype, 5°59′32.3″S, 60°12′35″W; MPEG 14754, 3, 12–12.3 mm SL, paratype, 5°59′32.3″S, 60°12′35″W; MZUSP 99301, 3, 12.7–14.8 mm SL, paratype, 5°59′32.3″S, 60°12′35″W; UFRO 6590, 9, 5°8′44.55″S, 60°24′34.70″W. Rio Purus basin: INPA 35289 (8 alc, 2 CS, 11.4–11.7 mm SL), 5°56′45.30″S, 64°51′19.60″W. Rio Negro basin: MZUSP 27641, 1, 1°28′S, 61°38′0.01″W; MZUSP 34758, 2, 0°30′S, 64°54′59.99″W; MZUSP 34759, 9, 0°57′60″S, 62°57′W; MZUSP 62101, 4. Pará, Rio Tapajós basin: MZUSP 21964, 1, 4°4′60″S, 55°36′59.99″W.

Scoloplax dicra: Brazil, Acre, Rio Purus basin: MCP 39952, 1, 9°45′45″S, 68°3′46″W. Amazonas, Rio Solimões basin: INPA 27210 (21 alc, 4 CS), 03°58′32.9″S, 64°21′13.3″W; INPA 27259, 13, 03°58′21.5″S, 64°20′20.8″W; MZUSP 9680, 3, 3°50′60″S, 62°3′60″W. Rio Negro basin: MZUSP 6834, 1, 3°10′S, 60°W. Rondônia, Rio Madeira basin: FMNH 94175, 2; MCP 39919, 1, 10°26′35″S, 65°20′40″W; MZUSP 39078, 2; UFRO 549, 12°10′43.90″S, 64°34′44.50″W; UFRO 8657, 15, 12°39′23.10″S, 63°12′54.80″W; UFRO 8659, 10, 12°38′10.50″S, 63°7′41.80″W; USNM 300620, 3, 10°56′S, 65°14′W. Peru, Rio Madre de Dios basin: MUSM 22012, 28, 12°28′11″S, 68°56′4″W; MUSM 22033, 22, 12°28′11″S, 68°55′59″W.

Scoloplax distolothrix: Brazil, Goiás, Rio Araguaia basin: MZUSP 39074, 1, 10°30′60″S, 50°14′W. Mato Grosso, Rio Araguaia basin: ANSP 162803, 10, 12.64–14.48 mm SL, paratype; ANSP 181058, 10, MCP 10691, 1, 15°40′S, 55°57′W; MZUSP 86228, 20, 14°17″20.6″S, 51°9″12.1″W; MZUSP 86243, 32, 14°12′45″S, 51°18′21″W; MZUSP 86254, 1, 14°8′57″S, 51°32′20.99″W; MZUSP 86265, 5, 14°11′14″S, 51°14′57.99″W; MZUSP 88057, 2, 14°19′35″S, 51°6′25″W. Rio Xingu basin: MCP 40282, 43, 11°42′40″S, 51°39′18″W; MCP 40644, 69, 11°42′40″S, 51°39′18″W; MZUSP 39065, 17.9 mm SL, holotype, 14°4′60″S, 54°4′60″W; MZUSP 87023, 3, 13°2′19″S, 53°25′17.01″W; USNM 300623, 2, paratype; USNM 319743, 16. Pará, Rio Xingu basin: INPA 4006 (48 alc, 3 CS, 11.6–12.7 mm SL), 3°12′42.58″S, 52°12′11.95″W; INPA 4159, 2, 3°18′14.26″S, 52°12′37.44″W; INPA 4249, 8, 3°12′27.01″S, 52°12′28.44″W; INPA 11559, 13, 3°18′14.26″S, 52°12′37.44″W. Rio Araguaia basin: MZUSP 36179, 22. Tocantins, Rio Araguaia basin: MZUSP 39069, 7, 11°48′S, 49°45′60″W; MZUSP 39073, 1, 0°30′60″S, 50°15′W; MZUSP 52226, 15, 12°32′S, 49°55′W.

Scoloplax dolicholophia: Brazil, Amazonas, Rio Negro basin: ANSP 149341, 3; INPA 4678, 1; INPA 26257 (8 alc, 2 CS), 2°53′47″S, 60°13′52″W; INPA 28955, 11, 0°26′3″S, 64°45′40″W; INPA 28959, 15, 0°23′44″S, 64°36′20″W; INPA 28962, 4, 0°24′56″S, 64°36′4″W; INPA 28965, 44 (2 CS, 10.9–12.2 mm SL); INPA 30453, 1, 2°42′45.97″S, 60°28′20.21″W; INPA 34947, 2, 0°0′51.30″S, 67°10′16.30″W; INPA 34948, 15, 0°7′24.60″S, 67°7′59″W; MZUSP 6788, 10.5 mm SL, holotype, 2°42′S, 60°03′W; MZUSP 39796, 2, 1°39′60″S, 61°30′W; MZUSP 74274, 3, 3°6′6.98″S, 60°1′30″W; USNM 300629, 2, paratype; USNM 300631, 1, 0°30′S, 64°49′58.80″W; USNM 300734, 2, 1°39′60″S, 61°30′W. Rio Japurá basin: INPA 28440, 36; MZUSP 87436, 3.

Scoloplax empousa: Brazil, Rio Madeira basin: INPA 21596 (6 alc, 2 CS, 14.7–15 mm SL). Mato Grosso, Rio Paraguai basin: MZUEL 5861, 3; MZUSP 25261, 1, 17°12′S, 54°9′0.01″W; MZUSP 25341, 15, 16°55′S, 57°35′W; MZUSP 28340, 2, 16°14′S, 56°36′59.99″W; MZUSP 44416, 3, 16°4′S, 57°41′W; MCP 15686 (2 alc, 2 CS), 16°3′S, 57°42′W; USNM 326411, 4; USNM 326787, 5. Rio Madeira basin: MZUSP 37489, 61, 15°30′S, 59°19′60″W; UFRGS 12260, 1, 15°15′58.6″S, 60°00′08.2″W; USNM 300625, 5, paratype; USNM 300627, 2, paratype; USNM 300632, 5, 15°30′S, 59°30′W. Mato Grosso do Sul, Rio Paraguai basin: FMNH 108609, 3, 19°27′22″S, 57°1′38″W; FMNH 108610, 44, 19°20′17″S, 56°57′42″W; MZUSP 49025, 10, 20°14′S, 56°21′59.99″W; MZUSP 59366, 48, 19°10′7″S, 55°18′25.99″W; MZUSP 59686, 2, 19°37′13″S, 56°55′42″W; MZUSP 59687, 6, 19°10′7″S, 55°18′25.99″W; MZUSP 77289, 10. Rio Paraná basin: MZUSP 39075, 19.9 mm SL, holotype, Brazil, Mato Grosso [sic] (=Mato Grosso do Sul), Rio Ivinhema 70 km upstream from its confluence with Rio Paraná and Rio dos Bandeirantes, 22°35′S, 53°32′60″W; NUP 4805, 1; NUP 4806 (14 alc, 3 CS, 19.6–19.8 mm SL); NUP 9347, 1.

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