

Sewellia albisuera, a new balitorid loach from Central Vietnam (Cypriniformes: Balitoridae)

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Sewellia albisuera, new species, from headwaters of River Thu Bon, Central Vietnam, is distinguished from other *Sewellia* species by a reticulated colour pattern, faint inner axial stripe on body along lateral line, whitish skin around lateral-line pores, 20-21 branched pelvic-fin rays and 49-54+2 lateral line scales.

Introduction

Balitora lineolata described by Valenciennes (in Cuvier & Valenciennes, 1846) was placed by Günther (1868) in the genus *Homaloptera* and later, Hora (1932) erected the genus *Sewellia* for this unusual species. Seven additional species were described during the last seven years: *S. marmorata* Serov, 1996, *S. pterolineata* Roberts, 1998, *S. speciosa* Roberts, 1998, *S. diardi* Roberts, 1998, *S. elongata* Roberts, 1998, *S. patella* Freyhof & Serov, 2000 and *S. breviventralis* Freyhof & Serov, 2000, all from coastal rivers of Central Vietnam or from hill streams of the Mekong basin in Laos. During recent investigations by AMNH and ZFMK teams, an additional, new species of *Sewellia* was found in Central Vietnam.

Material and methods

Fish were caught using a DEKA 3000 portable electroshocker and preserved directly in 5 % formaldehyde. Measurements and counts follow those of Kottelat (1990). ‘Oropectoral membrane’ is defined by Roberts (1998). Generic diagnosis and general remarks on morphology are given by Freyhof & Serov (2000). Measurements were made point-to-point with dial callipers and recorded to 0.1 mm. Holotype is not included in the calculation of means and SD. Abbreviations used denote the following morphometric characters and institutions: SL, standard length; HL, dorsal head length; AMNH, American Museum of Natural History, New York; MNHN, Muséum National d’Histoire Naturelle, Paris; ZFMK, Zoologisches Forschungsinstitut und Museum Alexander Koenig, Bonn. Vietnamese spelling of location names may be very different from those presented in this paper. Moreover, at most locations, local people had various names for the

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Fig. 1. *Sewellia albisuera*, about 60 mm SL, not preserved; Vietnam: River Thu Bon, same locality as ZFMK 32910-32913.

streams and/or rivers and their spelling of these names was often different. Co-ordinates were obtained using a Magellan 3000 GPS.

***Sewellia albisuera*, new species**

(Figs. 1-2)

Holotype. ZFMK 32913, 44.3 mm SL; Vietnam: Quang Nam Da Nang Prov.: River Thu Bon about 16 km west of Than My; 15°40.33'N 107°48.45'E; J. Freyhof & D. Serov, 12 Mar 2000.

Paratypes. All from Vietnam. ZFMK 32910-32912, 3, 38.7-52.4 mm SL; same data as holotype. – AMNH 231609, 10, 33.8-64.0 mm SL; Quang Nam Da Nang Prov.: Try My district, River Nuac Ta at waterfall; M. L. J. Stiassny, R. A. Arrindell et al., 29 Mar 1999. – AMNH 231611, 3, 34.1-40.2 mm SL; Quang Nam Da Nang Prov.: Try My district, River Tranh; M. L. J. Stiassny, R. A. Arrindell et al., 4 Apr 1999. – AMNH 231616, 2, 56.0-57.4 mm SL; Quang Nam Da Nang Prov.: Try My district, River Nuac Ta; M. L. J. Stiassny, R. A. Arrindell et al., 29 Mar 1999. – AMNH 231622, 1, 39.7 mm SL; Quang Nam Da Nang Prov.: Try My district,

River Nam Nin; M. L. J. Stiassny, R. A. Arrindell et al., 3 Apr 1999.

Diagnosis. *Sewellia albisuera* is distinguished from all other species of the genus by the following combination of characters: dorsum of head, body and paired fin bases with whitish reticulated or whitish spotted pattern; faint dark grey axial stripe covering three scale rows; skin around lateral line pores whitish; posterior part of pectoral fin with 5-7 faint annular bands; 20-21 branched pelvic-fin rays; 49-54+2 lateral line scales; pelvic-fin origin below dorsal-fin origin; pectoral-fin origin posterior to corner of mouth; pelvic fin reaching anal-fin origin; small soft elevated patches of fine tubercles on first pectoral-fin rays in males; tubercles on simple pectoral-fin ray not enlarged; absence of cavity around mouth and absence of skin-fold between oropectoral membrane and ventral surface of head.

Description. Morphometric data of holotype and 18 paratypes (ZFMK 32910-32913, AMNH 231609, AMNH 231611, AMNH 231616, AMNH 231622) in Table 1. Head roundish in dorsal view. Dorsal fin with 3 simple and 8 branched rays, last one



Fig. 2. *Sewellia albisuera*, ZFMK 32913, holotype, 44.3 mm SL; Vietnam: River River Thu Bon.

split to base. Dorsal-fin margin straight to convex, origin slightly behind or above pelvic-fin origin. Anal fin with 2 simple and 4 branched rays, last one split to base. Second simple anal-fin

ray flat, spinous with posteriormost part soft and articulated. Pectoral-fin origin posterior to corner of mouth. Pectoral fin with 1 simple and 20-21 branched rays with last rays covering anterior

part of pelvic fin and reaching vertical of base of 3rd to 5th branched pelvic-fin rays. Pelvic fin with 1 simple and 20-21 branched rays reaching anal-fin origin. Branched pectoral- and pelvic-fin rays increasing in length posteriorly. In large specimens, branched pelvic-fin rays 7-19 compressed, forming a sharp, dorsoposteriorly projecting keel of hypertrophied lepidotrichia. Axillary pelvic lobe present. Caudal fin truncate, lower lobe longer than upper one with 7+7 branched rays. Caudal peduncle about 0.9-1.4 (mean 1.1) times longer than deep. Distance between anus and anal-fin origin 0.6-2.3 (mean 1.5) times horizontal eye diameter. No skin fold between oropectoral membrane and ventral surface of head.

Scales on body increasing in size from predorsal area to caudal peduncle. Anterior scales with regularly rounded margin, posterior ones crenulated. Lateral line complete, reaching caudal-fin

base, perforating 49-54 scales on body and 2 on caudal-fin base. Transverse scale count $\frac{1}{2}5/1/5\frac{1}{2}$ on caudal peduncle. Predorsal midline scaleless. No scales on ventral side in front of anus. Vertebral count 22-23+8-9 (total = 31-32, n=4). Small tubercles on head and predorsal part of body, most prominent on dorsal and ventral sides of snout. Lower lip fleshy with tubercles, free from lower jaw and continuous with skin of throat.

Sexual dimorphism. Males with soft elevated patches of fine tubercles on anterior part of simple and branched pectoral-fin rays 1-6, absent in females. Tubercles on head larger in males.

Coloration. Head and body pale grey in preserved and live specimens. Dorsum of head, body and paired fin bases with numerous dark brown to black lines forming a reticulated pattern. Col-

Table 1. Morphometric data of *S. albisuera* (holotype: ZFMK 32913; paratypes: ZFMK 32910-32912; AMNH 231609; AMNH 231611; AMNH 231616; AMNH 231622; n=18).

	holotype	paratypes			
		mean	SD	min	max
SL (mm)	44.3	43.5	–	32.7	64.0
in percents of SL					
Dorsal head length (HL)	26.8	26.5	1.1	25.2	29.3
Lateral head length	26.2	24.8	1.0	22.0	26.2
Pre-dorsal length	51.2	49.0	1.6	46.5	52.4
Pre-pectoral length	14.9	16.6	1.5	14.5	19.8
Pre-pelvic length	44.4	44.4	2.3	40.1	47.7
Pre-anus length	78.5	75.4	2.2	71.6	79.0
Pre-anal length	85.8	83.5	1.5	80.5	85.8
Body depth at dorsal-fin origin	18.8	16.1	1.8	13.3	18.8
Depth of caudal peduncle	11.3	11.1	0.5	10.1	12.2
Length of caudal peduncle	7.8	9.8	1.6	7.5	12.8
Body width at dorsal-fin origin	28.3	25.9	1.8	23.0	30.1
Body width at anal-fin origin	7.9	7.9	0.9	6.1	9.5
Dorsal fin depth	20.6	20.0	2.0	15.9	23.2
Caudal fin length	24.9	26.2	1.8	23.3	30.6
Anal fin depth	16.9	17.0	0.6	15.6	18.2
Pelvic fin length	44.1	40.1	2.7	35.7	44.1
Pectoral fin length	47.0	44.6	1.8	41.6	47.6
in percents of HL					
Head depth at eye	45.7	42.9	3.4	37.9	50.2
Head depth at nape	55.6	52.0	3.5	46.3	58.6
Snout length	56.0	52.1	2.6	46.2	56.0
Maximum head width	108.9	104.9	7.3	83.7	115.4
Eye diameter	18.9	18.4	1.8	15.0	22.8
Interorbital width	41.0	40.7	2.9	35.3	46.5
Mouth width	18.4	16.5	1.9	13.5	21.6
Gill opening width	8.9	9.2	1.4	6.7	11.8

our pattern on dorsum dark with whitish dots in some specimens. Faint, dark grey axial stripe on body covering three scale rows. Skin around lateral line pores whitish. Pectoral and pelvic fins with thin whitish distal margin and 5-7 faint, dark annular bands. Anal fin hyaline to grey with 1-2 dark grey spots on each branched ray. Caudal fin whitish, with numerous dark spots on each ray forming 4-6 bars. Dorsal fin hyaline with 3-4 dark spots on each ray forming 3-4 bars in some specimens.

Distribution. *Sewellia albisuera* was collected in the catchment of the River Thu Bon (Quang Nam Da Nang Prov.) whose estuary is located close to the city of Hoi An on the coast of Central Vietnam (Fig. 3).

Etymology. From the Latin *albus*, white, and *sure*, to sew, in reference to the white skin around lateral line pores of the species, looking like a sewn line. A noun in apposition.

Notes on biology. *Sewellia albisuera* seems to be more specialised than other species of the genus and has been found in very strong current velocity exceeding $1\text{ m}\cdot\text{s}^{-1}$ in upper River Thu Bon (Fig. 4), which was about 80 m wide, with turbid water. This habitats consist of successions of rocky rapids and deep pools over sandy substrate. The AMNH team had also collected this species in rocky pools isolated from the main river.

Remarks. Using the key in Freyhof & Serov (2000), *S. albisuera* keys out as *S. speciosa* from Laos. *Sewellia albisuera* is distinguished from *S. speciosa* by the following characters: faint, dark axial stripe on body covering three scale rows (vs. absence of lateral stripe); dorsum with fine reticulation (vs. dorsum with dark spots); absence of dark blotches on dorsum (vs. dark blotches at dorsal-fin origin and on postdorsal part of body); and 20-21 branched pelvic-fin rays (vs. 19). *Sewellia albisuera* is further differentiated from its syntopic congener *S. lineolata* by the following characters: presence of faint dark stripe along the lateral line (vs. bold); whitish skin around lateral-line pores (vs. dark brown); dark stripe along the lateral line covering three scale rows (vs. one); one lateral stripe (vs. 3-5); absence of bold submarginal bands on paired fins (vs. presence); 20-21 branched pelvic-fin rays (vs. 17-19); and 49-54+2 scales in lateral line (vs. 38-49+1-2).

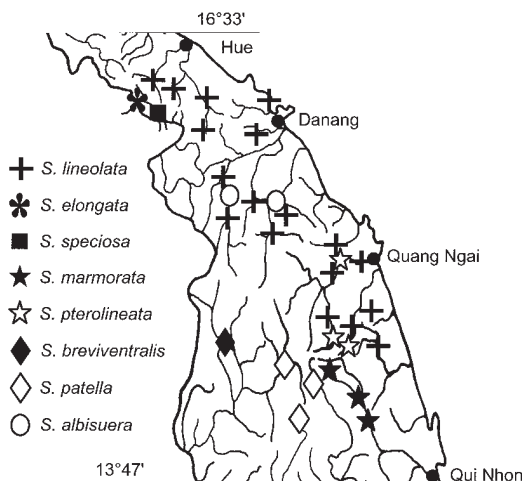


Fig. 3. Distribution of *Sewellia* in Vietnam. One symbol may cover several locations.

Comparative material examined. *Sewellia lineolata*: ZFMK 20811-20851, 41, 33.3-48.0 mm SL; Thua Thien Hue Prov.: stream at Khe Vinh An near Nam Dong village, about 40 km south of Hue; $16^{\circ}11.50'N$ $107^{\circ}43.76'E$. *S. speciosa*: MNHN 1997-3, 10 paratypes, 22.6-52.5 mm SL; Laos: lower part of River Xe Nam Noi 1.5 km downstream from the bridge on route 232 to Attapeu, 26 km by road from Ban Nam Tang. – ZFMK 27600-27602, 3, 31.4-40.0 mm SL; Thua Thien Hue Prov.: River Sesap 10 km west of A Luoi; $16^{\circ}12.31'N$ $107^{\circ}17.41'E$.

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Fig. 4. Habitat of *S. albisuera*; Vietnam: River Thu Bon (ZFMK 32910-32913).

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