Three New Species of Triplefins (Pisces: Tripterygiidae) from Malpelo and Socorro Islands, in the Tropical Eastern Pacific

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Abstract

Three new species of tripterygiids are described from islands of the tropical eastern Pacific. *Axoclinus rubinoffi*, new species, is described from four specimens, 20.0-28.8 mm SL, collected at Isla Malpelo, Colombia. It is very similar in appearance to *Axoclinus* cocosensis that is endemic to Isla del Coco. Males of these species have a black caudal fin, but that of *A. cocosensis* species has a narrow white bar between the caudal fin and black pedcuncular bar, a feature lacking in the Malpelo fish. *Axoclinus multicinctus*, new species, is described from three specimens, 18.2-21.9 mm SL, collected at Islas Socorro, Isla Revillagigos. It has a distinctive colour pattern consisting of three sets of «double» brown bars on the side of the body. *Lepidonectes bimaculata*, new species is described from three specimens, 32.8-54.0 mm SL, collected at Isla Malpelo. It is closely related to *L. clarkhubbsi* Bussing from Panama and Costa Rica. However, the two species exhibit significant colour differences.

Introduction

Recent fish collections by **D.R. Robertson** at Isla Malpelo, Colombia and Isla Socorro, Mexico yielded several undescribed species including three tripterygiids that are described herein. Tripterygiidae contains small benthic fishes that occur on rock and coral reefs in tropical and warm temperate seas. It is estimated there are at least 120 species in about 20 genera, although the family is in critical need of revision. Most species inhabit the vicinity of coral reefs in the Indo-Pacific region. The present paper is the second in a series describing new tripterygiids from the tropical eastern Pacific. **Allen** and **Robertson** (1991) described two new genera and four new species from the Gulf of California and Panama.

Type specimens of the new species are deposited at the Instituto de Ciencias Naturales del Museo de Historia Natural of the Universidad Nacional de Colombia, Bogora (ICNMNH); National Museum of Natural History, Washington, D.C. (USNM); and the Western Australian Museum, Perth (WAM). Counts and morphometric proportions in parentheses refer to the range for paratypes if different than the holotype.

Axoclinus rubinoffi n. sp.

Fig.1

Holotype: ICNMNH 1786, female, 28.8 mm SL, collected with quinaldine in 1-2 m at Isla Malpelo, Colombia (approximately 4° 00' N and 81° 31' W), by **D.R. Robertson** on 11-12 April 1991.

Paratypes (collected with the holotype): ICNMNH 1787, female, 20.0 mm SL; USNM 321175, female, 25.3 mm SL; WAM P.30389-001, male, 22.2 mm SL.

Diagnosis

Dorsal rays III-XII-10, all segmented rays unbranched except last branched at base; anal rays II,17-18; pectoral rays 15; lateral line with 22-23 tubed scales followed by 13 notched scales; total scales in longitudinal series 35-36; a short, narrow, pointed cirrus posteriorly on upper edge of eye; vertical limb of preopercular margin with a few microscopic serrae; scales absent on head, breast, belly and base of pectoral fin; body with three broad brown to blackish bars and blackish band on caudal peduncle, bars narrowly margined with pearl white, particularly posterior ones; narrower pale brownish bars between dark bars; male with blackish caudal fin that is confluent with dark peduncular band.

Description

Dorsal rays III-XII-10, all segmented rays unbranched except last branched at base; anal rays II,18 (17-18), all segmented anal rays unbranched except last branched at base; pectoral rays 15, uppermost and lower seven unbranched; pelvic rays I,2; segmented caudal rays 14 (13), the middle nine branched; lateral line with 23 (22) tubed scales followed by 13 notched scales; total scales in longitudinal series 36 (35); scale rows above lateral line to base of first segmented dorsal ray 5; scale rows below lateral line to base of middle anal rays 4; circumpeduncular scales 11-12; gill rakers on first arch rudimentary, 1 + 5.

Body elongate, depth 5.2 (4.5-5.0) in SL, and compressed, the width tapering posteriorly, maximum width 1.1 (1.0-1.3) in greatest depth; head 3.6 (3.5-3.6) in SL; snout short and blunt, it length 3.5 (3.3-3.7) in head; eye diameter 3.2 (2.8-2.9) in head; interorbital narrow, its least width 5.0 (5.0-5.5) in diameter of eye; jaw extending to below posterior part of pupil, its length 2.6 (2.4-2.5) in head; caudal peduncle depth 3.7 (3.2-3.9) in head; caudal peduncle length 2.4 (2.2-2.3) in head; pectoral fins extending to end of middle dorsal fin, its length 0.8 (0.8-0.9) in head; pelvic fins 1.2 (1.2-1.3) in head; caudal fin truncate or slightly rounded, its length 1.4 (1.3-1.4) in head.

Anterior nostril opening in a short tube with lanceolate posterior flap, not reaching posterior nostril when depressed; a short, narrow, pointed cirrus posteriorly on upper edge of eye; vertical limb of preopercular margin with a few microscopic serrae; cranium and suborbital with very fine microscopic spinules. A dense band of teeth in each jaw, the outermost row in upper jaw enlarged and somewhat canine-like; outer row teeth in lower jaw only slightly larger than the teeth behind. Scales ctenoid; scales absent on head, breast, belly and base of pectoral fin.

Colour in alcohol: four broad, dark brown saddle-like bars on side of body between pectoral and caudal fin bases, these terminating on lower side except for posteriormost, which is usually continuous around tail base; spaces between bars pale tan or whitish with dusky scale margins, sometimes a hint of a diffuse intermediate bar; ventral portion of side and ventral surface of head and body whitish; top of head and front of jaws and snout dusky

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brown; a short brown bar across cheek below eye; a brown spot or short bar immediately behind lower posterior corner of eye; a brown blotch or diffuse bar covering most of opercle; fins mainly translucent or whitish except first dorsal slightly dusky and caudal fin of 22.2 mm SL paratype (the only male) black with narrow white margin; pectoral-fin base with dusky brown bar and diffuse dusky markings on basal part of fin.

Fig. 1. - *Axoclinus rubinoffi*, male, about 30 mm TL, underwater photograph at Isla Malpelo, Colombia.
Axoclinus rubinoffi, mâle, environ 30 mm LT, photographie sous-marine à l'Ile Malpelo, Colombie.

Fig. 2. - *Axoclinus cocosensis*., male, about 30 mm TL, underwater photograph at Isla del Coco, Costa Rica.
Axoclinus cocosensis, mâle, environ 30 mm LT, photographie sous-marine à l'Ile Cocos, Costa Rica.

Remarks

This species is most closely related to *A. cocosensis* Bussing (1991) from Isla del Coco (Fig. 2). The two species are nearly identical in overall morphology and colour pattern. Although males of both species have a black caudal fin, the Cocos fish differs in having a narrow white bar that separates the black peduncular bar and the caudal fin. In *A. rubinoffi* the peduncular bar is confluent with the black caudal fin. Moreover, in preserved specimens the bars on the Malpelo fish are darker and the narrow, dusky intermediate bars are not as well developed. *A. multicinctus* (described below) has a different colour pattern consisting of distinct «double» bars and the caudal fin of males is apparently much lighter.

This species was relatively common on relatively bare rock surfaces in very shallow (1-2 m) depths.

Named *rubinoffi* after **Ira Rubinoff,** Director of the Smithsonian Tropical Research Institute, for his continuing support of our studies of eastern Pacific fishes.

Axoclinus multicinctus n. sp.
Fig.3

Holotype: USNM 321176, female, 21.9 mm SL, Isla Socorro, Islas Revillagigedos (approximately 18° 48' N, 111° 02' W), quinaldine, **D.R. Robertson**, 20-21 February 1991.

Paratypes (collected with holotype): USNM 321177, 2 male specimens, 18.2-18.6 mm SL.

Diagnosis

Dorsal rays III-XII-9 or 10, all segmented rays unbranched except last branched at base; anal rays II,18; pectoral rays 15; lateral line with 23-24 tubed scales followed by 11-12 notched scales; total scales in longitudinal series 34-35; a short, narrow, pointed cirrus posteriorly on upper edge of eye; vertical limb of preopercular margin smooth or weakly crenate; scales absent on head, breast, belly and base of pectoral fin; body with three sets of «double» reddish-brown bars and intense black band on caudal peduncle; pale interspaces between bars with narrow, faint brown bar through its centre; a small dark brown spot just posterior to upper pectoral base; outer half of first dorsal fin and caudal fin of males dusky blackish.

Fig. 3. - *Axoclinus multicinctus*, male, about 28 mm TL, underwater photograph at Isla Socorro, Islas Revillagigedos.
Axoclinus multicinctus, mâle environ 28 mm LT, photographie sous-marine à l'Ile Malpelo, Colombie.

Description

Dorsal rays III-XII-9 (10), all segmented rays unbranched except last branched at base; anal rays II,18, all segmented anal rays unbranched except last branched at base; pectoral rays 15, uppermost and lower seven unbranched; pelvic rays I,2; segmented caudal rays 14, the middle nine branched; lateral line with 24 (23) tubed scales followed by 11 (11-12) notched scales; total scales in longitudinal series 35 (34-35); scale rows above lateral line to base of first segmented dorsal ray 5; scale rows below lateral line to base of middle anal rays 4-5; circumpeduncular scales 12; gill rakers on first arch rudimentary, 1 + 5.

Body elongate, depth 4.9 (4.9-5.1) in SL, and compressed, the width tapering posteriorly, maximum width about equal to body depth; head 3.0 (3.4-3.6) in SL; snout short and blunt, it length 3.0 (3.8-4.3) in head; eye diameter 3.5 (2.5-2.6) in head; interorbital narrow, its least width 4.2 (5.0-7.0) in diameter of eye; jaw extending to below middle of pupil, its length 2.3 (2.6-2.7) in head; caudal peduncle depth 4.4 (3.6-3.8) in head; caudal peduncle length 2.8 (2.3-2.4) in head; pectoral fins extending to end of middle dorsal fin, its length 1.0 (0.9-1.0) in head; pelvic fins 1.3 (1.2-1.3) in head; caudal fin truncate or slightly rounded, its length 1.3 (1.2-1.3) in head. Anterior nostril opening in a short tube with lanceolate posterior flap, not or just barely reaching posterior nostril when depressed; a short, narrow, pointed cirrus posteriorly on upper edge of eye; vertical limb of preopercular margin smooth or weakly crenate; interorbital and posterior edge of eye (circumorbitals) with very fine microscopic spinules. A dense band of teeth in each jaw, the outermost row in upper jaw enlarged and somewhat canine-like; outer row teeth in lower jaw only slightly larger than the teeth behind. Scales ctenoid; scales absent on head, breast, belly and base of pectoral fin.

Colour in alcohol: holotype overall pale yellowish tan with three diffuse brown bars extending about half way down on side and dark brown to blackish spot or bar at base of caudal fin; first bar below front part of second dor-

sal fin, second bar below rear part of second dorsal fin, and third bar below front half of third dorsal fin; a small intense dark brown spot immediately behind upper pectoral-fin base and just below lateral line; snout and front of upper jaw dusky brown; a very faint brown bar on cheek below eye and a faint oblique band slanting from rear margin of eye toward dorsal fin origin; fins plain translucent except first dorsal fin with melanophores, especially concentrated towards outer edge. The male paratypes have very little pigmentation except for the dark spot or bar at the caudal fin base. This marking is intensely dark on one of the specimens, which also a slightly dusky blackish caudal fin with faint indications of three white cross-bars.

Remarks

Named *multicinctus* («many bands») from the Latin in reference to the three sets of double brown bars and alternating pale bars between (and each of these with a faint intermediate brown bar). This feature distinguishes it from other *Axoclinus*.

Lepidonectes bimaculata n. sp.

Figs. 4 and 5

Holotype: ICNMNH 1788, male, 54.0 mm SL, collected with quinaldine in 15 m at Isla Malpelo, Colombia (approximately 4° 00' N and 81° 31' W), by **D.R. Robertson** on 11-12 April 1991.

Paratypes (collected with the holotype): ICNMNH 1789, 32.8 mm SL; USNM 321178, female, 53.0 mm SL.

Diagnosis

Dorsal rays III-XIII-10-11; anal rays II, 19; pectoral rays 17 lateral line with 24-26 tubed scales followed three rows lower by 8-11 notched scales, total scales in longitudinal series 35; a lanceolate cirrus posteriorly on upper edge of eye; vertical limb of preopercular margin with microscopic serrae; cranium, frontal, preorbital, circumorbitals, and upper opercular margin densely covered with small spinules; also small spinules on surface of first five dorsal spines; scales strongly ctenoid except cycloid ventrally in front of anus and on side of belly; opercle covered with small ctenoid scales; cheek with small ctenoid scales extending ventrally to about level of lower margin of eye; ctenoid scales also present on basal portions of pectoral and caudal fins; colour in life whitish with dark brown to bright red with 4 broad bars on side, these joined to form wide midlateral stripe; a dark brown to red band at base of caudal fin; a pair of brilliant pearl white saddles on back on posterior half of body; fins mainly pale except male first dorsal fin black with two pale spots basally.

Description

Dorsal rays III-XIII-11 (10-11), all segmented rays branched except first (first two and penultimate ray unbranched is smallest paratype); anal rays II, 19, all segmented rays unbranched except last branched at base (last two branched in largest paratype); pectoral rays 17, upper three and lower seven unbranched (smallest paratype with upper two and lower seven rays unbranched); pelvic rays I,2; segmented caudal rays 14, the middle nine branched; lateral line with 24 (25-26) tubed scales followed three rows lower by 11 (8-11) notched scales, the notched scales not in consecutive series (holotype and largest paratype with second scale in series unnotched and smallest paratype with several unnotched scales in between notched scales); total scales in longitudinal series 35; scale rows above lateral line to base of first segmented dorsal ray 2; scale rows below lateral line to base of middle anal rays 6; circumpeduncular scales 11; gill rakers on first arch rudimentary, 2 + 6 (2-3 + 6-7).

Fig. 4. - *Lepidonectes bimaculata*, female, about 65mm TL, underwater photograph at Isla Malpelo, Colombia.
Lepidonectes bimaculata, femelle, environ 40 mm LT, photographie sous-marine à l'île Malpelo, Colombie.

Fig. 5. - *Lepidonectes bimaculata*, juvenile, about 40 mm TL, underwater photograph at Isla Malpelo, Colombia.
Lepidonectes bimaculata, juvénile, environ 40 mm LT, photographie sous-marine à l'île Malpelo, Colombie.

Body elongate, depth 5.6 (5.1-5.2) in SL, and compressed, the width tapering posteriorly, maximum width about equal to greatest body depth; head 3.1 (3.0-3.2) in SL; snout somewhat elongate and relatively pointed, it length 3.1 (3.4-3.7) in head; eye diameter 3.6 (2.7-3.5) in head; interorbital narrow, its least width 3.1 (3.3-4.8) in diameter of eye; jaw extending to below middle of pupil, its length 2.2 (2.1-2.3) in head; caudal peduncle depth 4.6 (3.8-4.1) in head; caudal peduncle length 3.6 (3.1-3.4) in head; pectoral fins extending to nearly end of middle dorsal fin, its length 1.1 (1.0-1.1) in head; pelvic fins 1.6 (1.5-1.7) in head; caudal fin slightly rounded, its length 1.4 (1.3-1.6).

Anterior nostril opening in a short tube with relatively broad posterior flap or cirrus with a few short finger-like projections, not reaching posterior nostril when depressed; a lanceolate cirrus posteriorly on upper edge of eye, its length about two-thirds eye diameter; vertical limb of preopercular margin with microscopic serrae; cranium, frontal, preorbital, circumorbitals, and upper opercular margin densely covered with small spinules; also small spinules on surface of first five dorsal spines. A dense band of teeth in each jaw, the outermost row in upper jaw enlarged and canine-like; outer row teeth in lower jaw enlarged and conical, somewhat recurved, but smaller than outer row teeth of upper jaw. Scales strongly ctenoid except cycloid ventrally in front of anus and on side of belly; opercle covered with small ctenoid scales; cheek (preopercle) with small ctenoid scales extending ventrally to about level of lower margin of eye; ctenoid scales also present on basal portions of pectoral and caudal fins.

Colour in alcohol: male holotype dusky brown on head and upper half of sides, whitish on lower sides and ventral surface of head; a black spot, nearly equal to eye size, covering upper two-thirds of caudal fin base; Head markings include a dark brown patch covering most of operculum, a narrow whitish bar along preopercular margin, and white bar across middle of upper jaw; first dorsal fin black with two pale spots basally; remaining fins mainly translucent, although slightly dusky with very faint dark speckling (forming 3-4 definite cross-bars on pectoral). The large female paratype is similar but the brown coloration on the upper sides is not as dark, nor as well contrasted with the whitish ventral parts; also the dark spot at the caudal fin base is not nearly as distinct. In addition, the first dorsal fin is mainly whitish with dark spines and dark area on the outer margin. The smallest paratype has five intensely dark brown bars (including peduncular spot) on the upper half of the sides that are expanded and joined midlaterally to form a continuous horizontal band; dorsally, along the back, there is a large light brown saddle-like spot between each dark brown bar.

Fig. 6. - *Lepidonectes corallicola*, about 50 mm TL, underwater photograph at North Seymour Island, Galapagos.
Lepidonectes corallicola, environ 50 mm LT, photographie sous-marine à North Seymour Island, Galapagos.

Remarks

The genus *Lepidonectes* was recently described by **Bussing** (1991). The type species, *L. clarkhubbsi* Bussing, occurs on Pacific reefs of Costa Rica and Panama. Unaware of **Bussing's** work, **Allen** and **Robertson** (1991) described this same fish as *Taboguilla signata*.Although both papers were published in 1991. **Bussing's** names have priority as they appeared several months earlier. Therefore *Taboguilla* is relegated to the synonymy of *Lepidonectes* and *T. signata* is a junior synonym of *L. clarkhubbsi*. In addition to *L. bimaculata* and *L. clarkhubbsi*, the genus contains a third species, *L. corallicola* (Kendall and Radcliffe) from the Galapagos Islands. The genus is characterised by 24-30 tubed lateral-line scales anteriorly and a series of notched scales 2-3 scale rows below on the posterior part of the body, a well developed orbital cirrus, enlarged canines on the outer row of teeth in the upper jaw, and spinules covering much of the dorsal part of the head and margin of the eyes and opercular bones. *T. corallicola* has slightly higher segmented dorsal ray and tubed lateral-line scale counts than the other species (12-13 and 27-29 versus 10-11 and 24-26 respectively). It also has a different colour pattern, consisting of a four H-shaped or «double» bars on the side of the body (Fig. 6). *L. bimaculata* and *L. clarkhubbsi* are generally similar in shape and meristic features, but differ significantly with regards to colour pattern. Preserved specimens of *L. clarkhubbsi* have distinct dark bars on the sides, a feature lacking in *L. bimaculata*. Unfortunately we have no information on live coloration of male *L. bimaculata*, but females and juveniles are clearly separable from their counterparts of *L. clarkhubbsi* (see Figs 4-8).

Fig. 7. - *Lepidonectes clarkhubbsi*, male, about 55 mm TL, underwater photograph at Isla Uva, Gulf of Chiriqui, Panama.
Lepidonectes clarkhubbsi, mâle, environ 55 mm LT, photographie sous-marine à l'Ile Uva, Golfe de Chiriqui, Panama.

Fig. 8. - *Lepidonectes clarkhubbsi*, female, about 45 mm TL, underwater photograph at Perlas Islands, Gulf of Panama.
Lepidonectes clarkhubbsis, femelle, environ 45 mm LT, photographie sous-marine à l'Archipel des Perles, Golfe de Panama.

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RÉSUMÉ

Trois nouvelles espèces de Tripterygiidés (Triplefins) des îles Malpelo et Socorro dans le Pacifique oriental tropical

Après la description de deux nouveaux genres *(Crocodilichthys* et *Taboguilla)* et de quatre nouvelles espèces du Pacifique oriental tropical (ce périodique, 18 (3) : 79-82), les auteurs consacrent cette seconde note à l'étude de trois espèces inédites de «Blennies à trois nageoires» récoltées par l'un d'eux (**D.R. Robertson**) à l'île Malpelo, Colombie et à l'île Socorro, Mexique. Deux espèces appartiennent au genre *Axoclinus* et une au genre *Lepidonectes*, synonyme ancien de *Taboguilla*, dont elle est le troisième représentant.