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A new genus and two new species of tripterygiid fishes from Costa Rica *

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Abstract: The triplefin blenny, *Axoclinus cocoensis*, sp. nov. is described from 1307 specimens collected at numerous localities around Isla del Coco, Costa Rica. Another tripterygiid is described and placed in the genus *Lepidonectes*, gen. nov. Rosenblatt, *clarkhubbsi*, sp. nov. The latter is described from 379 specimens collected along the entire Pacific coastline of Costa Rica; the species is also known from western Panama and possibly has a larger distribution in Central America.

Key words: New species, eastern Pacific, Pisces, Tripterygiidae

The blennioid family Tripterygiidae contains at least 110 valid species of small shore fishes of circumtropical distribution (Nelson 1976). Three species of triplefin blennies, *Axoclinus lucillae* Fowler, *Enneanectes sexmaculatus* (Fowler) and an undescribed genus and species are known from Pacific coastal waters of Costa Rica (López & Bussing 1982); another undescribed species of *Axoclinus* occurs at Isla del Coco, Costa Rica. The present paper describes *Axoclinus cocoensis,* sp. nov. and *Lepidonectes clarkhubbsi*, gen. et sp. nov. in order to make the names available to workers dealing with eastern Pacific fishes.

The genus *Axoclinus* is one of several little-known genera of tripterygiids confined to the Pacific and Indian Oceans. This genus with five known species, three of which are undescribed, is restricted to the eastern tropical Pacific (Rosenblatt 1959). One of the latter is *A. cocoensis*, sp. nov., endemic to Isla del Coco and is described herein. In addition to the latter, *Axoclinus lucillae* Fowler is known from central Mexico to Colombia, *A. carminalis* (Jordan & Gilbert) known from northern Mexico and two other undescribed species are known from the Gulf of California and the Islas Revillagigedo respectively (Rosenblatt 1959). The genus *Axoclinus* contains quite small species (<35 mm) distinguished primarily by the presence of ctenoid scales, a complex lateral line (pored scales anteriorly, notched scales posteriorly), each pelvic fin with two separate rays, two anal-fin spines, vomerine teeth and no palatine teeth.

Another eastern Pacific tripterygiid, in a genus which contains at least three larger (50-75 mm) triplefin species, is *Lepidonectes*, gen. nov. It was first recognized and described in a dissertation by R. H. Rosenblatt (1959). Therefore, authorship of this new generic name is credited to R. H. Rosenblatt. The new genus includes the genotype, *Enneapterygius corallicola* (Kendall & Radcliffe) (=*Lepidonectes corallicola*) known only from the Islas Galápagos, *L. clarkhubbsi,* sp. nov. from Central America and an undescribed species from México (Thomson *et al.* 1979). *Lepidonectes* is primarily distinguished by the presence of a discontinuous lateral line (a long upper portion and short posterior section), ctenoid scales, except cycloid on belly,

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Fig. 1: *Axoclinus cocoensis*, sp. nov., LACM 44851-1, male holotype, 32.1 mm from Isla del Coco, Costa Rica.

pelvic-fin rays partially connected by a membrane, two anal-fin spines and palatine teeth. Methodology follows Rosenblatt (1960). Institutional acronyms follow Leviton *et al.* (1985).

Axoclinus cocoensis, new species
(Fig. 1)

Axoclinus cocosensis , Rosenblatt, 1959 (unpublished manuscript).

Holotype: LACM 44851-1, a male 32.1 mm, collected on E side of Isla del Coco, 850 m N of Cabo Atrevida, 1.2 km S of Punta Ulloa. Taken with ichthyocides at 7-8 m depth on 26 Mar. 1978 by R.J. Lavenberg and W.A. Bussing aboard "Jubilee" (ex UCR 1156).

Paratypes, Isla del Coco, Costa Rica: LACM 44851-2, 549 (14-33), same data as holotype. LACM 32283-16, 50 (16-30), Wafer Bay, mid bay, 11 m, 6 Apr. 1972. LACM 32256-12, 142 (14-32), Chatham Bay, E of Punta Pacheco, 6 m, 1 Apr. 1972. LACM 32259-4, 7 (16-28), W. Side of Isla Manuelita, 29 m, 2 Apr. 1972. LACM 32271-13, 18 (15-25), Isla Iglesias, S of islet, 31 m, 4 Apr. 1972. LACM 32275-6, 3 (16-22), Wafer Bay off Punta Gissler, 24 m, 5 Apr. 1972. LACM 32272-14, 18 (15-31), Wafer Bay, SE Isla Gissler, 5 m, 4 Apr. 1972. LACM 32260-15, 47 (15-26), SE of Isla Pájara, 12 m, 2 Apr. 1972. LACM 22643, 1 (20), Chatham Bay, 14 Jan. 1938. LACM W64-46-4, 76 (15-35), Chatham Bay, 2-7 m, 9 Mar. 1964. LACM W64-45-3, 27 (14-28), Chatham Bay, 2-3 m, 8 Mar. 1964. UCR 711-13, 62 (15-28), Chatham Bay, N of Punta Quirós, 11 m, 31 Mar. 1972. UCR 741-13, 5 (15-16), Wafer Bay, mid bay, 11 m, 6 Abr. 1972. UCR 863-10, N side of island near Roca Pan de Azúcar, 10 m, 19 Abr. 1975. UCR 859-4, 8 (16-25), Wafer Bay, S side of Peninsula Presidio, 1-2 m, 18 Apr. 1975. UCR 867-12, 6 (17-22), Bahía Weston, S of Isla Pájara, 21 m, 21 Abr. 1975. UCR 857-19, 32 (15-30), Wafer Bay, S of Roca Gissler, 7 m, 17 Apr. 1975. UCR 1154-25, 183 (15-30), Bahía Iglesias off Isla Muela, 7-10 m, 23 Mar. 1978. UCR 1155-26, 39 (15-35), E side of island,300 m SW of Cabo Descubierto, 20 m, 24 Mar. 1978. UCR 1157-29, 17 (16-22), NE side of Wafer Bay, 0.3 m, 27 Mar. 1978. UCR 2108-6, 1 (18), Bajo Alcyone, 1.4 km SE of Bahía Iglesias, 37 m, 27 Mar. 1989. UCR 2111-1, 3 (16-23), E side of Isla Manuelita, 13-20 m, 27 Mar. 1989. UCR 2112-1, 1 (16), Isla Manuelita, 26 m, 22 Mar. 1989. UCR 2116-1, 1 (17), Bajo Alcyone, 20-28 m, 23 Mar. 1989. UCR 2117-1, 4 (15-24), Isla Dos Amigos, 13-33 m, 23 Mar. 1989. UCR 2119-1, 1 (24), Isla Montagne, 23-30 m, 29 Mar. 1989. UCR 2120-1, 2 (15-30), Weston Bay, 13 m, 21 Mar. 1989. UCR 2121-2, 2 (15-17), E side of Isla Manuelita, 20 m, 21 Mar. 1989.

Diagnosis: A species of *Axoclinus* which has: simple orbital tentacles, large scales on the upper sides, a scaled nape; 21-28 pored scales in the lateral line (usually 23); 12-14 second dorsal spines (usually 13); 17-18 anal-fin rays (usually 18) and 15-17 pectoral-fin rays (usually 16).

Axoclinus cocoensis differs from *A. lucillae* Fowler and *A. carminalis* (Jordan &

Gilbert) in possessing a scaled nape and higher modal fin-ray counts: pectoral rays 16 vs. 15, second dorsal rays 13 vs. 12 and anal rays 29 vs. 28. The new species and *A. lucillae* also have larger scales on the dorsum than *A. carminalis*.

Description: Body robust, greatest width at base of pectoral fins, slightly more than greatest depth at vertical below origin of first dorsal fin; body progressively more compressed posterior to origin of anal fin. Dorsal profile from first dorsal origin to third dorsal origin convex; straight or slightly concave posteriorly. Body depth at origin of anal fin 4.9-5.7 in SL; ventral body profile convex along base of anal fin, straight anteriorly. Least depth of caudal peduncle 10.4-12.8 in SL; length of caudal peduncle 7.7-10.7 in SL.

Head length 2.9-3.0 in SL; postorbital head length 2.0-2.2 in HL; head depth greatest at a vertical through posterior border of preopercle, 4.4-4.7 in HL; head width greatest between posterior margins of opercles and wider than body, 3.9-4.1 in HL. Eyes entering dorsal profile of head, forming an angle between steep snout and flat nape, horizontal eye diameter 2.8-3.3 in HL; bony interorbital space concave, 9.9-11.5 in HL. A thin triangular orbital tentacle on posterodorsal surface of eyeball. Snout profile steep, greater than eye diameter in largest specimen, equal or less than eye diameter in others, length 3.0-3.3 in HL. Upper surface of head with minute, close-set spinules.

Head canals of lateral line system generally with a double row of minute pores, a few larger pores also present. Circumorbital canal with an enlarged pore just below anteroventral margin of eye; pore on orbital rim just dorsal to posterior nostril; a pair of pores on each side of snout just above upper lip. Three enlarged pores on each side of mandible and a median pore behind symphysis of lower jaw.

Mouth oblique, upper jaw slightly in advance of lower jaw. Upper jaw to vertical below posterior margin of pupil, 2.0-2.3 in HL. Premaxillaries with an outer row of enlarged caniniform teeth, medial ones largest; medially a wide inner band of small pointed teeth becoming one or two rows laterally. Dentary teeth similar, anterior canines much enlarged, less so posterolaterally; two or three enlarged canines in an innermost row behind medial band of smaller teeth on each dentary. Vomerine tooth patch V-shaped with one or two rows of moderate-sized teeth. Tongue broad and truncate. Posterior nostril on anterodorsal margin of orbit not produced. Anterior nostril tubular with a simple tentacle. Gill rakers consisting of low nodules with several spinules each; holotype 2 + 6, paratypes one or two rakers on upper limb; five or six on lower limb, anteriormost two rakers located on medial face of limb.

TABLE 1
Comparison of meristic counts for three species of the genus Axoclinus

	Second D spines				Third D rays		
	11	12	13	14	8	9	10
cocoensis		3	26	1		1	29
lucillae	2	28			1	26	3
carminalis	1	27	2			12	18

	Anal fin rays			Pectoral fin rays		
	16	17	18	15	16	17
cocoensis		1	29	4	55	1
lucillae	2	27	1	60		
carminalis		17	3	60		

	Lateral line scales		
	34	35	36
cocoensis	3	23	4
lucillae	30		
carminalis	6	24	

Nape and body with strong ctenoid scales; ventrum and anterior base of anal fin without scales. Longitudinal scales of holotype 35; paratypes 34 (3), 35 (23), 36 (4) (cf. Table 1). Pored scales of lateral line on holotype 25; paratypes 21 (1), 22 (7), 23 (12), 24 (4), 25 (4), 26 (1), 27 (0), 28 (1). Notched scales of holotype 10; paratypes 8 (1), 9 (1), 10 (3), 11 (4), 12 (13), 13 (8). A row of three greatly enlarged cycloid scales on base of caudal fin. Vertebral formula for paratypes 10 + 24 = 34 (12), 10 + 23 = 33 (2). Three dorsal fins present; first fin with three spines, first spine longest and with minute spinules on anterior surface, length 2.3-3.4 in HL. Second dorsal-fin spines of holotype 13; paratypes 12-14. Dorsal-fin rays of holotype 10; paratypes 9 or 10. Predorsal distance (first dorsal fin) 3.5-3.7 in SL.

TABLE 2

Proportional measurements in percent of SL for the holotype and five paratypes (UCR 1155-26, LACM 44851-2) for Axoclinus cocoensis

	Holotype	Paratypes				
SL (mm)	32.1	34.5	29.7	26.7	23.8	20.7
Head length	34.0	33.3	33.0	34.1	33.2	33.3
Head depth	21.8	21.7	21.2	22.9	22.3	21.7
Head width	24.9	25.8	25.9	25.1	25.2	24.6
Postorbital length	16.5	16.5	14.8	15.7	16.0	15.5
Eye diameter	10.3	10.4	10.8	10.5	11.8	12.1
Bony interorbital	3.1	2.9	3.0	3.0	3.4	3.4
Snout length	10.9	11.3	10.8	11.2	10.1	10.6
Upper jaw length	16.2	16.5	15.5	16.1	15.6	14.5
Body depth at A	18.1	19.1	19.2	20.6	17.7	19.8
C peduncle depth	8.7	7.8	9.1	9.0	8.4	9.7
C peduncle length	9.4	11.6	12.5	11.6	12.6	13.0
Pre D distance	27.4	27.5	28.0	28.5	28.6	29.0
Pre A distance	49.5	52.5	51.2	49.8	51.3	53.1
First D spine length	11.8	9.9	13.5	14.6	14.7	11.6
P_1 fin length	37.4	38.6	35.7	37.8	37.8	39.1
P_2 fin length	23.4	21.5	23.9	23.6	25.2	26.6

Holotype and 30 paratypes with two anal-fin spines. Anal-fin rays of holotype 18, paratypes 17 or 18. Preanal distance 1.9-2.0 n SL. Other dorsal, anal and pectoral fin counts presented in Table 1. Pectoral - fin rays of holotype 16 on each side; paratypes 15-17. Length of pectoral fin 2.6-2.8 in SL. Pelvic fin with two rays joined near base by low membrane, length of longest ray 3.8-4.7 in SL. Caudal fin of holotype with 13 segmented rays; paratypes 13 (3), 14 (2), branched rays of holotype 9; paratypes 9 (4), 10 (1).

Ground color of alcohol-preserved specimens light straw color. Body crossed by four wide bars subject to considerable variation in intensity; dark coloration of bars produced by black scale margins to give a crosshatched appearance. First bar originating under first spine of second dorsal fin, but on some individuals may be continuous with darkened nape. Second bar under posterior half of second dorsal fin and may almost merge with first bar. Third bar under anterior half of third dorsal fin. Fourth bar on caudal peduncle; most intense in males. Only last two bars usually reaching ventr al midline. Several dark markings on head: a bar at midposterior border of orbit, an oblique bar from eye to lower margin of cheek, an oblique bar between eye and expanding on upper lip. Posterior border of preopercle black; opercle mostly dusky. Snout and upper margin of eye dusky.

Coloration of fins sexually dimorphic. All fins of females colorless. Males with interradial membranes between spines of first dorsal fin black, membrane behind third spine clear; second dorsal fin clear with some melanophores marginally; third dorsal and anal fins dusky. Base of caudal fin of males with narrow white bar contrasting with dark fourth crossbar and jet black remainder of caudal fin. Females with pale fourth crossbar and unpigmented caudal fin. Paired fins of both sexes colorless.

Color of four freshly collected males, possibly in breeding coloration: body intensely black, scale margins jet black leaving only a small white center portion. First two or three cross bars merging, a pale interspace discernible between third and fourth bars. Posterior four-fifths of caudal fin and anal fin jet black. First and third dorsal fins black and dusky respectively. Second dorsal fin and rays of pectoral and pelvic fins red. Upper head red-orange with black markings. Upper margin of orbit and iris bright red. Pale orange below head. Belly with blue-green sheen.

An underwater photograph of a live female: white ground color, crossbars visible as orange and red blotches and some dark crosshatching. First two bars each formed by two orange

blotches at dorsal midline and orange coloring and brown crosshatching along middle of flanks. A wide white interspace separating second and third crossbars. Third crossbar divided into two bright red bars with some crosshatching. Peduncular bar and caudal fin bright red, a slightly paler bar at base of caudal fin. Head mostly white with dark facial bars and red spots on upper margin of eyes and on dark bar behind eye. Small yellow spots sprinkled over nape and most of body, most visible at pale interspaces and on nape. All dorsal fin elements red. Base of pectoral fin dusky yellowish, subproximally a large white blotch; distal three-quarters of fin with red rays above, yellow rays below.

Other comparisons: Lateral line counts for *A. lucillae* (UCR 978-20, 1673-7, 840-23, Costa Rica), pored scales 20 (3), 21 (16), 22 (9), 23 (2); notched scales 11 (2), 12 (9), 13 (16), 14 (3). Counts for *A. carminalis* (LACM W67-88, Mexico), pored scales 22 (2), 23 (5), 24 (9), 25 (4), 26 (5), 27 (4), 28 (1); notched scales 7 (1), 8 (5), 9 (6), 10 (2), 11 (9), 12 (6), 13 (1). Vertebral counts for *A. lucillae* 10 + 24 = 34 (15); *A. carminalis* 10 + 24 = 34 (12), one specimen with 23 caudal vertebrae, number of precaudal vertebrae not discernible on radiograph.

Etymology: Named for Isla del Coco, Costa Rica, only known locality.

Distribution: The species is endemic to Isla del Coco, Costa Rica. Collected intertidally to depths of 37 m.

Lepidonectes, gen. nov., Richard H. Rosenblatt

Lepidonectes, Rosenblatt, 1959 (unpublished manuscript).

Type species: *Enneapterygius corallicola* Kendall and Radcliffe, 1912.

Diagnosis: Lateral line interrupted, consisting of a long upper portion, which originates at the upper end of the shoulder girdle, follows the contour of the back, and ends under the third dorsal, and a short posterior section along the midline, composed of scales with notched rear margins. Scales moderate; 3-4/33-38/7-8. Pectoral base scaled. A triangular patch of ctenoid scales on the basal part of the pectoral fin. Belly covered with cycloid scales. Opercle covered with ctenoid scales. Cheek and snout scales. Top of head spiny. Margin of preopercle and one-third of opercular margin spiny. Suborbital ring and nasal bones spiny. Anterior and posterior orbital flanges well developed. Lateral line canals on suborbital ring and preopercle not covered by bone. Palatine teeth present. Number of dorsal fin elements low: III - XIII or XIV -10 to 13. Most of the third-dorsal rays branched in adults. Anal fin elements II, 18-23. Pelvic rays connected by a membrane.

The genus *Lepidonectes* has much in common with *Norfolkia*, but differs in several characters. Besides the features mentioned in the diagnosis above, there is a marked difference in the shape of the orbital tentacle. In *Lepidonectes* the orbital tentacle is slender and whip-like, and is half or three-fourths as long as the eye diameter, whereas in *Norfolkia* the orbital tentacle is short, flap-like and fringed.

Lepidonectes and *Enneanectes* are similar in that the head is spiny and partly scaled and some of the dorsal rays are branched. In addition to the characters of presence or absence of palatine teeth and of a membrane connecting the pelvic rays, *Lepidonectes* differs in having a long pored lateral line, much better developed head squamation, and a greater number of rays in the anal and third dorsal fins.

From the Greek *lepidotos*, scaly and *nectes*, swimmer, in reference to the scaled patch on the pectoral fin and the well-scaled head and body.

Lepidonectes clarkhubbsi, new species
(Fig. 2)

Lepidonectes clarkhubbsi, Rosenblatt, 1959 (unpublished manuscript).

Holotype: LACM 44828-2, a male 49.0 mm, taken off Isla San José, Islas Murciélagos, Costa Rica. Collected with ichthyocides between 10-14 m depth on 7 Dec. 1969 by W. Bussing, R. Nishimoto, C. Stone (ex UCR 382-5).

Paratypes, Costa Rica: LACM 32492-33 41 (13-53), Isla Cocinero, Islas Murciélagos, 18 m, 16 Feb. 1972. LACM 32551-27, 66 (11-57), pinnacle 2 Km NW of Isla del Caño, 21 m,

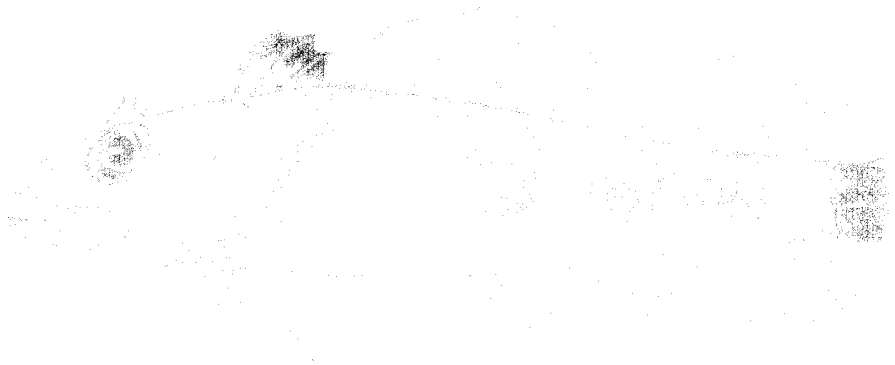

Fig. 2: *Lepidonectes clarkhubbsi*, gen. et sp. nov., LACM 44828-2, male holotype, 49.0 mm from Isla San José, Islas Murciélagos, Costa Rica.

16 Mar. 1972. LACM 32499-3, 21 (21-54), Cabo Santa Elena, 18 m, 18 Feb. 1972. LACM 32566-33, 37 (19-47), pinnacle 2 km NW of Isla del Caño, 15 m, 19 Mar. 1972. LACM 32527-24, 4 (43-52), Bahía Herradura, 17 m, 10 Mar. 1972. LACM 32479-23, 3 (43-54), Punta Isla, Bahía Santa Elena, 8 m, 13 Feb. 1972. LACM 32490-31, 5 (42-55), Bahía Jobo, S of Bahía Salinas, 5-11 m, 15 Feb. 1972. LACM 32493-33, 6 (13-47), Isla Cocinero, Islas Murciélagos, 9 m, 16 Feb. 1972. LACM 32494-19, 4 (26-49), Islas Las Golondrinas, Islas Murciélagos, 20 m, 17 Feb. 1972. LACM 32500-34, 1 (43), Bahía Los Huevos, 6 m, 18 Feb. 1972. LACM 32506-34, 4 (28-51), Punta Penca, N of Bahía Potrero, 9 m, 20 Feb. 1972. LACM 32524-33, 9 (42-53), Bahía Herradura, 20 m, 9 Mar. 1972. LACM 32546-32, 5 (15-46), Isla del Caño, 8-9 m, 14 Mar. 1972. LACM 32547-33, 1 (30), Isla del Caño, 9-15 m, 14 Mar. 1972. LACM 32548-35 27 (25-47), Isla del Caño, 12-15 m, 15 Mar. 1972. LACM 32549-39, 5 (28-48), Isla del Caño, 14 m, 15 Mar. 1972. LACM 32557-24, 2 (24-28), pinnacle 2 km NW of Isla del Caño, 40 m, 18 Mar. 1972. LACM 32562-30 6 (30-38), 9 m, 18 Mar. 1972. UCR 14-36, 2 (47-48), Playas del Coco, 5 m, 21 Feb. 1966. UCR 203-10, 1 (47), Playas del Coco, 3 m, 10 Sep. 1967. UCR 310-34, 1 (26), Playas de Manuel Antonio, Quepos, 6 m, 18 Jan. 1969. UCR 357-17, 2 (41-46), Isla San José, Islas Murciélagos, 2 m, 14 Sep. 1969. UCR 382-8, 27 (37-57) same data as holotype. UCR 432-7, 22 (25-52), Isla San José, Islas Murciélagos, 17 m, 12 Sep. 1970. UCR 433-9, 21 (31-51), Cabo Santa Elena, 23-27 m, 14 Sep. 1970. UCR 423-75, 3 (20-27), Isla del Caño, 3 m, 13 Mar.-12 Abr. 1970. UCR 623-5, 14 (23-58), Islas San Pedrito, Islas Murciélagos, 8 m, 17 Feb. 1972. UCR 693-18, 36 (19-46), pinnacle 2 km NW Isla del Caño, 15 m, 19 Mar. 1972. UCR 1573-45, 1 (50), Ocotal, S of Playas del Coco, 4 m, 18 Mar. 1984.

Diagnosis: A species of *Lepidonectes* which has: 10 or 11 dorsal-fin rays, 18-20 anal-fin rays, 33 or 34 longitudinal scale rows and 24-27 pored scales in the lateral line. The only other described congener, *L. corallicola* (Kendall & Radcliffe), has 12 or 13 dorsal-fin rays, 21 or 22 anal-fin rays, 35-38 longitudinal scale rows and 26-30 pored scales in the lateral line.

Description: Body robust, greatest width immediately behind head, tapering evenly to base of caudal fin. Greatest body depth (usually at origin of second spinous dorsal fin) 4.7-5.7 in SL, slightly greater than greatest body width. Body depth at origin of anal fin 5.2-5.7 in SL. Body profiles convex except for slightly concave body contour along base of third dorsal fin. Least depth of caudal peduncle 12.0-13.1 in SL; length of caudal peduncle 9.1-10.7 in SL.

Head length 2.8-3.0 in SL; postorbital head length 2.1-2.2 in HL; greatest head depth 5.1-5.4 in SL; head width greatest between posterior margins of opercles and greater than body width, 4.0-4.7 in SL. Eyes at dorsal profile of head, nape flat, with minute spinules, continuing dorsal profile of body. Horizontal eye diameter 3.2-3.9 in HL; bony interorbital space concave, 10.2-11.3 in HL. A long thin orbital

tentacle projecting from posterodorsal border of eyeball. Snout long, usually longer than eye diameter, length 3.1-3.6 in HL.

Head canals of lateral line system with minute pores along circumorbital and preopercular branches. Circumorbital canal also with an enlarged pore on snout beyond anteroventral margin of eye, another large pore on orbital rim just dorsal to posterior nostril. Minute pores on snout and one enlarged pore just on either side and two or three laterally just above upper lip. Four enlarged pores on each side of mandible and a median pore behind symphysis of lower jaw.

Mouth nearly horizontal, terminal or upper jaw projecting slightly. Lips enlarged. Upper jaw to vertical below anterior margin of pupil or to middle of eye, 2.2-2.4 in HL. Premaxillaries with single outer row of enlarged caniniform teeth anteriorly, smaller antrorse or inward-curving canines posteriorly, wide band of minute sharp-pointed teeth anteriorly, tapering to two or three inner rows posterior. Dentary teeth similar, canines widely spaced anteriorly, largest teeth at anterolateral sector of jaw, smaller posteriorly; wide inner band restricted anteriorly. Vomerine tooth patch V-shaped, small elongate tooth patch on palatines. Tongue pointed. Long multifid tentacle on posterior border of anterior nostril, posterior nostril not produced. Gill rakers short, club-shaped with terminal spinules; holotype 2 + 6, paratypes with two rakers on upper limb and 6-8 on lower limb.

Body, opercles and upper pectoral rays proximally with strong ctenoid scales; anterior two-thirds of ventrum naked. Longitudinal scale rows of holotype 34, paratypes 33 or 34 (cf. Table 3). Lateral line discontinuous; an upper series of pored scales, a lower series of notched scales posteriorly. Pored scales of lateral line on holotype 25; paratypes 24-27. Notched scales of holotype 11, paratypes 10-14. Vertebral formula of paratypes 11 + 24 = 35 (4), 10 + 24 = 34 (1). Vertebral formula of *L. corallicola* (LACM W64-21, Islas Galápagos) 10 + 28 = 38 (9), 10 + 27 = 37 (1).

Three dorsal fins present; first fin with three spines, first spine usually the longest, 2.3-3.1 in HL. Second dorsal-fin spines of holotype and five paratypes 13. Dorsal-fin rays of holotype 11, paratypes 10 or 11 (cf. Table 3). Predorsal distance (first dorsal fin) 3.6-3.8 in SL. Anal-fin rays of holotype 19, paratypes 18-20. Preanal distance 1.9-2.1 in SL. Pectoral-fin

TABLE 3

Comparison of meristic counts for the two described species of the genus Lepidonectes

	Third D rays				Anal-fin rays				
	10	11	12	13	18	19	20	21	22
clarkhubbsi	14	21			4	30	1		
corallicola			6	23				7	22

	Longitudinal scale rows					
	33	34	35	36	37	38
clarkhubbsi	26	9				
corallicola			1	14	12	2

	Pored scales							Notched scales				
	24	25	26	27	28	29	30	10	11	12	13	14
clarkhubbsi	4	11	19	1				6	19	7	2	1
corallicola			1	5	13	9	1	4	15	4	5	

rays of holotype 17, on each side, paratypes 17 (9), 18 (1). Length of pectoral fin 3.4-3.7 in SL. Pelvic fin of holotype and five paratypes with two rays joined near base by low membrane, length of medial ray 4.1-5.0 in SL. Segmented caudal fin-rays of holotype 14, paratypes 13 (2), 14 (3); branched rays of holotype 9; paratypes 8 (1), 9 (4).

Ground color of alcohol-preserved specimens pale straw color. Five large brown bars or oblique blotches on upper body; markings most intense along midline of body, usually reaching dorsal midline as paler brown "saddles", but only last bar extending onto lower sides and ventrum. First and second bars each often appearing as closely approximated double bars. First bar below first dorsal and anteriormost rays of second dorsal fin. Second bar below posterior half of second dorsal fin. Third bar under anterior one-third of third dorsal fin. Fourth bar centered below third dorsal fin. Fifth bar most intense, forming circular blotch on caudal peduncle and basal scales of caudal fin. Several dark markings on head: an oval spot behind eye and more diffuse blotch below eye, a dusky patch mostly along border of preopercle and more prominent blotch on lower opercle, scaled area at base of pectoral rays dusky. Proximal half of orbital tentacle dark.

First dorsal fin of large males bicolor (Fig. 2), distal third jet black contrasting with two proximal white (red in life) spots, base of fin dusky; first dorsal of females and young dusky. Some diffuse spotting on second and third dorsal fins of males; more distinct spotting on females arranged to form oblique bars especially

TABLE 4

Proportional measurements in percent of SL for the holotype and five paratypes (UCR 382-8, UCR 693-18) for Lepidonectes clarkhubbsi

	Holotype	Paratypes				
SL (mm)	49.0	57.5	49.7	43.1	34.6	25.6
Head length	33.1	33.6	36.0	33.6	35.0	35.2
Head depth	18.6	18.6	19.7	19.5	18.8	19.5
Head width	24.7	22.6	25.2	21.4	22.8	21.5
Postorbital length	15.5	15.5	16.1	15.6	15.6	16.4
Eye diameter	8.8	8.7	9.5	8.6	9.8	10.9
Bony interorbital	3.1	3.3	3.4	3.3	3.2	3.1
Snout length	10.8	10.6	11.5	10.7	10.1	9.8
Upper jaw length	15.3	14.8	15.3	14.2	15.9	14.8
Body depth at A	18.6	19.1	18.3	17.6	17.6	18.4
C peduncle depth	8.4	7.7	7.9	7.9	8.1	7.8
C peduncle length	10.4	9.4	9.5	9.5	11.0	10.9
Pre D distance	26.1	26.4	27.6	26.2	26.3	28.1
Pre A distance	49.8	49.7	53.7	52.0	51.5	48.4
First D spine length	11.4	10.8	13.5	13.9	13.9	15.2
P_1 fin length	28.4	27.1	29.2	28.5	26.9	27.7
P_2 fin length	20.4	20.0	20.1	21.4	22.3	24.2

above dorsal saddles. Both sexes with dusky anal and caudal fins, four faint vertical bars on some caudal fins of either sex.

Color of three freshly collected males: general head and body coloration orange anteriorly, red-orange posteriorly. Lips yellow-orange, upper lip with two white spots. Isthmus, branchiostegal membranes, breast and pelvic fins yellow. Head orange-brown with three irregular white markings on snout; two curvilinear white lines on preopercle forming an incomplete circle around an orange pupil-sized spot; a small diffuse white spot near ventral margin of opercle. Orbital tentacle and iris mostly red-orange. Bright red-orange borders of scales overlying dark bar/saddle markings of body giving a crosshatched appearance. Last bar on caudal peduncle intense black.

Pectoral fins orange. First dorsal fin with two striking red-orange spots proximally and three minute spaced red spots along first spine, rest of fin black. Second dorsal fin with bright red dots on each spine forming five horizontal rows. Third dorsal fin with red spots on each ray forming 6-8 oblique rows. Caudal-fin rays with dusky red spots irregularly placed or forming 5 or 6 vertical bars.

Etymology: Named for Clark Hubbs, who was the first to characterize the family Tripterygiidae, in recognition of his contributions to the study of blennioid fishes.

Distribution: Known from the entire Pacific coastline of Costa Rica and also collected in the Gulf of Chiriquí, Panama (J. McCosker, *pers. comm.*).

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RESUMEN

Se describen dos especies nuevas de la familia Tripterygiidae. La descripción de *Axoclinus cocoensis* se basa en 1307 ejemplares de la Isla del Coco, Costa Rica. Otra especie y género

nuevo, *Lepidonectes clarkhubbsi*, se describe de 379 ejemplares colectados a lo largo de la costa Pacífic de Costa Rica; se conoce esta segunda especie en Panamá y posiblemente tiene una distribución mayor en América Central.

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