

A new species of eleotridid, *Eleotris tecta*, from Pacific slope streams of tropical America (Pisces: Eleotrididae)*

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Abstract: The "pygmy sleeper" of the family Eleotrididae, *Eleotris tecta*, is described as new on the basis of the values of several counts, differences in neuromast patterns on the head and differences in fin coloration. The eight known specimens were taken in small freshwater streams close to the sea in southern Costa Rica, and in Colombia (mainland and Isla Gorgona). The new species is more similar to *E. tubularis*, an endemic in streams on Isla del Coco, than with its congener *E. picta*, which is known from California to Peru and is reported here for the first time from Isla del Coco.

Key words: New species, new record, freshwater eleotridids, Pisces, Costa Rica, Isla del Coco, Colombia.

Fishes of the genus *Eleotris* Bloch & Schneider, are found worldwide in tropical and semitropical fresh and brackish waters. A strong antrorse spine, which is embedded in the skin at the posteroventral angle of the preopercle, is diagnostic for two eleotridid genera: *Eleotris* and *Erotelis*. *Erotelis* is distinguished from *Eleotris* by its elongate body and much higher lateral scale count (90-110). The body is robust, the head depressed, there are two well-separated dorsal fins and no vomerine teeth.

More than a dozen species of *Eleotris* occur in different parts of the world and are principally distinguished by meristic values and especially by the superficial neuromast patterns of the head (Akihito 1967). Three American species are currently recognized: *Eleotris pisonis* (Gmelin in Linn.) found from Florida to Brazil, *E. amblyopsis* (Cope) known from

Mexico to Surinam and the West Indies, and *E. picta* Kner & Steindachner, occurring from California to Peru. However, *E. belizanus* Sauvage from Belice, *E. carvalhonis* Starks from Brazil and *E. perniger* (Cope) from the Antilles may be valid species as well (E. Murdy pers. comm.). A fourth species in the eastern Pacific, *E. tubularis* Heller & Snodgrass, is endemic to Isla del Coco. *Eleotris isthmensis* Meek & Hildebrand was synonymized with *E. amblyopsis* by Gilbert & Kelso (1971). The nominal species *Eleotris macrolepis* Meek was found to be a synonym of *Leptophilypnus panamensis* Meek & Hildebrand (Grey 1947).

While collecting in small streams emptying into Golfo Dulce in southern Costa Rica, several *Eleotris* were collected along with numerous other, mostly brackish-water fishes. In the laboratory it was noted that three specimens taken together had larger scales than *E. picta*. A search of all UCR *Eleotris* revealed another specimen also from a Golfo Dulce tributary. Additional specimens from Colombia were

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located at LACM. This paper describes the new species and compares its meristic values and neuromast patterns with the other American *Eleotris*. Methodology follows Hubbs & Lagler (1958) except where otherwise specified. Institutional acronyms follow Leviton et al. (1985). Specimens are deposited at LACM and UCR.

***Eleotris tecta*, new species**

(Fig. 1, 2a, 3a)

Eleotris sp., Bussing 1987 (photograph, keys, descrip.)

Holotype: LACM 45893-1, 61.6 mm SL male, Quebrada Banegas, small tributary of Río Rincón, elevation <10 m, 3 air km SW of Rincón, upper Golfo Dulce (8°40'20" N; 83°31'10" W), ichthyocides, 1 Mar. 1968, N. Scott and J. Vandermeer (ex UCR 250-11).

Paratypes: UCR 1318-8, 3 (52.1-60.4 mm SL), mouth of stream 2 km S of mouth of Río Esquinas, Golfo Dulce; ichthyocides, 14 Dec. 1979, W. Bussing et al. LACM 20052, 2 (48.9-58.3 mm SL), Colombia, Isla Gorgona, stream at Watering Bay, G.S. Myers, 24 Feb. 1938. LACM 20050, 1 (29.5 mm SL), Colombia, small stream at Port Utria; G.S. Myers, 25 Feb. 1938. LACM 20051, 1 (18.0 mm SL), Colombia, small stream at Port Utria, G.S. Myers, 25 Feb. 1938. Additional data are available through Gopher over Internet.

Diagnosis: A species of *Eleotris* with 56-61 lateral scales; 15-17 transverse scales, 23-26 scales around caudal peduncle and 16 or 17 pectoral fin-rays. Anterior nasal tubes are long, extending beyond the lip. Neuromast patterns are as follows: five transverse rows below the

eye, the 2nd, 3rd and 4th rows continue across the longitudinal row below them; the two oblique rows on the opercle unite at their posterior ends; six or seven transverse rows lie on each side of the upper snout and interorbital space. The largest of eight specimens is 61.6 mm SL, so this may be a diminutive species.

Description: *Eleotris tecta* does not deviate from the standard conservative morphotype of its two eastern Pacific congeners, nor from other *Eleotris* around the world. Proportional measurements are given in Table 1.

First dorsal fin with six spines, not elongated in either sex. Second dorsal fin I,8 (5*); I,9 (2). Asterisk denotes holotype. Anal fin I,7 (3); I,8 (3*) and I,9 (1). Pectoral fin 16 (3*); 17 (4). Pelvic fin I,5 (8). Principal caudal rays 16 (2); 17 (5*). Gill rakers short, pointed, 0-2 + 6 or 7. Vertebrae 10 + 15 (including ural centrum) = 25. Spinous dorsal-fin pterygiophore formula 3-12210.

Lateral scale rows extending from first scale posterior to dorsal edge of pectoral fin base to end of hypural 56-(60*)-61. Transverse scale rows between origin of second dorsal fin and anal fin base 15-17*. Scale rows around caudal peduncle 23*-26.

Head broad and depressed, snout short. Maxillary extending slightly beyond a vertical through middle of eye. Anterior nostril tubular, extending anteriorly over lip. Teeth pointed, recurved in both jaws in irregular bands of about eight rows; inner and outer rows enlarged. Urogenital papillae of males more pointed than that of females. Two males, 52.1 and 60.4 mm SL, and one female, 53.1 mm SL (UCR 1313-8) with ripe gonads on dissection.

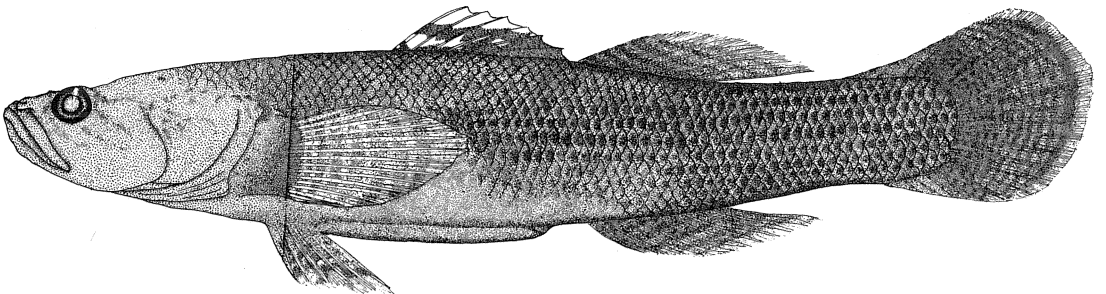


Fig. 1. *Eleotris tecta*, sp. nov., LACM 45893-1, holotype, 61.6 mm SL, from stream near Golfo Dulce, Costa Rica.

TABLE 1

Proportional measurements in percent of SL for three species of Eleotris

	Holotype	Paratypes		
	<i>E. tecta</i>	<i>E. tecta</i> (n = 6)	<i>E. tubularis</i> (n = 6)	<i>E. picta</i> (n = 7)
SL (mm)	61.6	29.5-60.4	40.2-93.5	46.0-93.1
Head length	31.0	30.9-33.1	32.0-33.8	33.1-35.5
Head width	22.7	20.9-22.8	23.1-25.6	22.5-26.3
Head depth	17.9	15.7-18.9	17.7-21.6	17.3-20.8
Eye diameter	5.7	5.7-6.9	5.8-7.7	5.5-6.7
Snout length	7.5	6.8-9.2	7.9-9.2	7.1-8.8
Interorbital distance	9.1	6.8-9.1	9.0-10.2	7.3-8.7
Upper jaw length	11.4	11.1-12.1	12.5-14.2	11.4-13.0
Greatest body depth	19.5	16.1-19.6	20.2-23.4	17.5-22.3
Caudal peduncle depth	12.8	11.5-13.0	13.9-15.3	11.0-12.1
Predorsal distance	40.9	40.9-44.1	42.6-43.9	41.3-44.4
Preanal distance	62.7	60.0-66.6	61.2-63.3	63.0-67.2
Length 1st dorsal base	18.0	15.4-19.7	16.0-18.4	15.6-18.1
Length 2nd dorsal base	15.8	12.5-15.8	16.0-18.8	15.0-16.8
Length anal fin base	14.8	11.3-14.8	13.9-16.6	12.6-14.3
Pectoral fin length	21.9	21.9-25.4	22.1-26.1	22.0-24.7
Pelvic fin length	17.1	16.9-18.6	18.1-20.7	17.9-19.8
Caudal fin length	23.7	23.1-30.0	21.7-26.8	25.2-28.5

Sensory papillae or neuromasts are most evident on the head where they lie in a complex network of mostly transverse (vertical) and longitudinal (horizontal) rows. Intraspecific variation is considerable and detection on large specimens, such as in *E. picta*, is difficult. The most conservative patterns which reveal interspecific differences with the species under study are described here (Fig. 2 and 3).

Five transverse rows directly below eye intersect with or transect a longitudinal row below; first suborbital row ends at upper edge of lip; second, third and fourth rows transect longitudinal row; fifth row ends at longitudinal row (Fig. 2a). Two other suborbital rows behind eye transect longitudinal row. An upper curvilinear row meets a lower longitudinal row at posteroventral angle of opercle. A discontinuous postorbital longitudinal row (double at one point) runs to dorsal extent of gill opening. A mandibular row with short ventral branches ends at edge of jaws, then continues around edge of preopercle.

Six or seven transverse rows lie on each side of dorsal surface of snout and interorbital region (Fig. 3a); these lie perpendicular to a medial longitudinal row. Two short transverse postorbital segments do not meet on midline.

Head and body dark brown in seven paratypes; holotype yellowish tan (not known if natural color or due to preservation). Scale centers darkest on lateral rows creating a faint striped effect (Fig. 1). Dorsal and anal fins with numerous dark brown spots, margins clear; first dorsal fin also with clear proximal region. Caudal and paired fins with alternate clear and dark spotting forming irregular rows.

REMARKS

The new species is clearly most similar to *E. tubularis*, endemic to Isla del Coco, than to its mainland congener *E. picta*, although there are several distinctions. *Eleotris tubularis* differs from *E. tecta* in having lower lateral and trans-

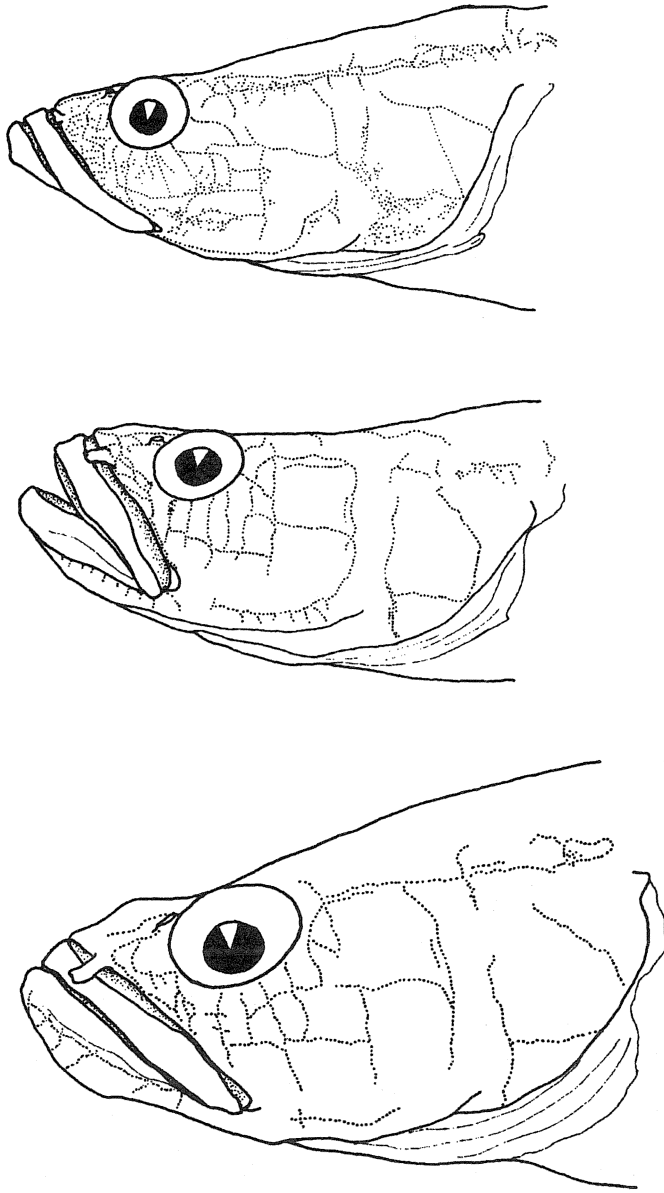


Fig. 2. Neuromast patterns of three species of *Eleotris* in lateral view: a. *E. tecta*, UCR 1313-8, 60.4 mm SL, affluent to Golfo Dulce, Costa Rica; b. *E. tubularis*, UCR 736-3, 72.8 mm SL, Isla del Coco, Costa Rica; c. *E. picta*, UCR 131-4, 66 mm SL, Río Mata Palo, Costa Rica.

verse scale counts (Table 2); only the second and fourth suborbital rows of neuromasts transect the longitudinal row below, and the two opercular rows do not meet on opercular margin (Fig. 2b). Small *E. tubularis* (<75 mm SL) are usually without spotting on the fins.

Eleotris picta differs from both *E. tecta* and *E. tubularis* in scale counts (Table 2) and in pectoral ray counts (usually 18 vs. <18 rays), a very different neuromast pattern: six rather than five suborbital rows, often with short intermediate rows (Fig. 2c); supplementary

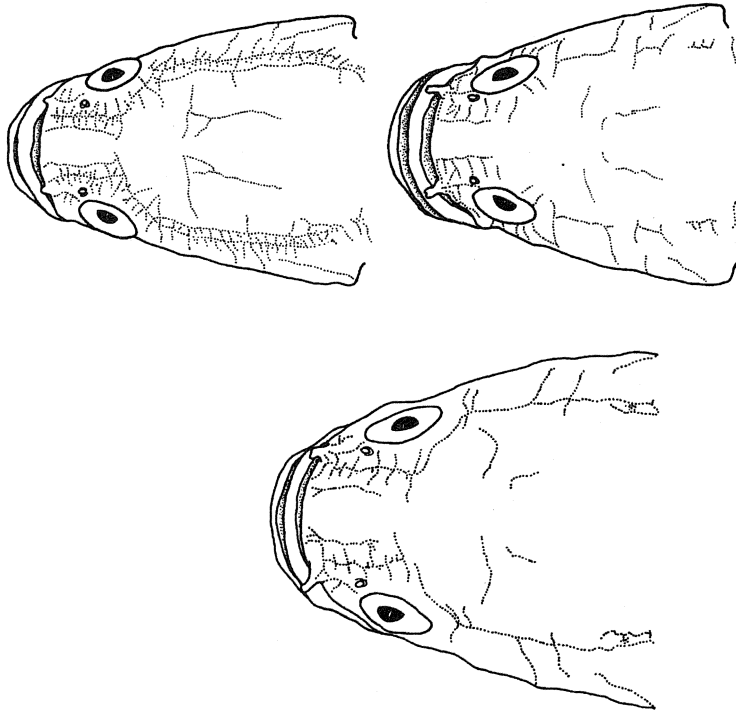


Fig. 3. Neuromast patterns of three species of *Eleotris* in dorsal view: a, b, c, see Fig. 2.

longitudinal rows on lower cheek; bifurcate upper opercular row; two postorbital longitudinal rows extending to above opercular opening; eight to eleven transverse rows on each side of upper snout (Fig. 3c); transverse postorbital segments long, closely approximated or touching. Coloration of *E. picta* similar to that of *E. tecta*.

Of the two Atlantic slope species, *E. amblyopsis* is quite similar to *E. tecta* in the principal neuromast groups except the two transverse postorbital rows which are much longer and nearly meet at the midline; it also has very different scale counts (Table 2). Unlike *E. tecta*, *E. pisonis* has six suborbital transverse rows with the first, second and fifth rows transecting the longitudinal row below, eight to ten transverse rows on each side of upper snout and two transverse postorbital segments continuous across the head; and has much higher scale counts.

Descriptions of eight other nominal species from the western Pacific and eastern Atlantic did not fit the combination of characteristics of *E. tecta*.

In the course of this study it was discovered that all the large specimens (to 340 mm SL) of *Eleotris* collected at Isla del Coco were *E. picta* rather than the smaller endemic *E. tubularis* (<100 mm SL). This is the first record for the wide-ranging *E. picta* from Isla del Coco.

Etymology: From the Latin *tectus* meaning concealed, disguised, in reference to its apparent scarcity and the fact that it has not been distinguished until recently from its congener, *E. picta*; to be treated as an adjective.

Distribution: Known from drainages flowing into Golfo Dulce in southern Costa Rica to Port Utria and Isla Gorgona, Colombia. Taken only in small freshwater streams

TABLE 2

Frequency distribution of selected scale counts for five species of Eleotris

	Lateral scale counts																									
	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68
<i>amblyopsis</i>	1	3	3	6	10	4	3																			
<i>tubularis</i>						6	9	4	5	1	1															
<i>tecta</i>														2	1	2	1	1	1							
<i>pisonis</i>																	4	4	12	6	1	2		1		
<i>picta</i>																		2	4	7	7	3	4	1		2

	Transverse scale counts														
	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26
<i>amblyopsis</i>	1	4	19	6											
<i>tubularis</i>		3	8	15											
<i>tecta</i>				1	3	4									
<i>pisonis</i>							6	17	5	2					
<i>picta</i>										5	3	11	4	6	1

	Scales around caudal peduncle																			
	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
<i>amblyopsis</i>	4	6	7	12	1	1														
<i>tubularis</i>	2	2	1	11	7	2														
<i>tecta</i>			3		2	3														
<i>pisonis</i>								1		9	6	4	7		2	1				
<i>picta</i>												3	3	6	7	2	5	3	1	

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RESUMEN

Se describe como nuevo el "pez perro enano" de la familia Eleotrididae, *Eleotris tecta*. Se distingue con base en diferencias de esquamación, de patrones de neuromastos cefálicos y en coloración. Se encontraron los únicos ocho ejemplares en pequeños riachuelos cerca del mar en el sur de Costa Rica, y en Colombia, en tierra firme y en la Isla Gorgona. La especie nueva es más afín a *E. tubularis*, una especie endémica de las quebradas de Isla del Coco, que con su congénero *E. picta* que se conoce desde California hasta el Perú y por

primera vez, en este informe, de la Isla del Coco.

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