

A New Species of *Trinectes* (Pleuronectiformes: Achiridae), with Comments on the other Eastern Pacific Species of the Genus

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Abstract: A new eastern Pacific achirid, *Trinectes xanthurus*, has a distinctive yellow or light caudal fin, without pattern, to contrast with its relatively dark body. This species also has black, posterior margins of the dorsal and anal fins and 21-22 caudal vertebrae, versus 19-20 for its Pacific coast congeners. It usually is found in shallow, continental shelf waters on sand or mud bottoms and ranges from Colombia to El Salvador. The genus *Trinectes* is represented in the eastern Pacific by four species. A fifth species usually occurs in Pacific slope drainages (freshwater) in Panama. Of these species, only *Trinectes fonsecensis* is found throughout the tropical eastern Pacific, while the other three coastal species are confined to tropical waters south of the Golfo de Tehautepec.

Key words: New species, *Trinectes*, Achiridae, Pleuronectiformes, Pisces, identification key

There are four species of the New World genus *Trinectes* in the coastal waters of the eastern Pacific: *T. fimbriatus* (Gunther), *T. fonsecensis* (Gunther), *T. opercularis* (Nichols & Murphy), and a new species, described herein, *T. xanthurus*. An additional species, *T. fluviatilis* (Meek & Hildebrand), appears to be confined almost exclusively to freshwater, in Pacific slope drainages in Panama and is included in this analysis. The three congeneric species in the western Atlantic are *T. inscriptus* (Gosse), *T. maculatus* (Bloch & Schneider), and *T. paulistanus* (Ribeiro) (Dawson 1978). In addition, *T. maculatus*, *T. xanthurus*, *T. paulistanus*, and *T. fonsecensis* occasionally occur in freshwater. This paper describes the new species and provides characters useful in distinguishing the eastern Pacific species. Meristic tables, photographs,

and a key are provided as aids to identification and to show variation.

MATERIALS AND METHODS

Counts and measurements generally follow those of Hubbs & Lagler (1958). Vertebral and some caudal-fin ray counts were made from radiographs. All pigmentation notes were made from alcohol-preserved specimens. Institutional abbreviations follow Leviton *et al.* (1985). Standard length (SL) is used throughout unless otherwise stated.

Trinectes xanthurus, new species
(Fig. 1)

Trinectes sp. Krupp 1995: 847, 850.

Holotype: SIO 63-292, 75.4 mm, Panama, Bahia

San Miguel, ca 8°15'N, 78°25'W, 1959 (no other data available).

Paratypes: 230 specimens (18.5-95 mm). Colombia: UCLAW53-20 (1). Panama: SIO 63-292 (30); SIO 63-293 (23); SIO 63-295 (1); SIO 64-965 (3); SIO 69-386 (5); UCLA W53-275 (28); UCLA W53-317 (4); UCLAW58-55 (3); UCLAW58-304 (41); UCLAW58-305 (40); LACM W53-331 (1); GCRL V72-9100 (1); GCRL V72-9101 (2); GCRL V72-9106 (1); USNM 361978 (3), formerly SIO 63-292. Costa Rica: UCR 970.005 (12); UCR 136.083 (3); UCR 296.007 (7); UCR 1216.002 (1); LACM 9754-14 (1); LACM 30714-14 (3); LACM 30715-4 (1); LACM 30716-6 (1); LACM 30745-4 (3); LACM 32542-6 (2); LACM 33805-27 (6). Nicaragua: UCR 360.005 (1). El Salvador: SIO 73-276 (2).

Diagnosis: A relatively small species of *Trinectes* (maximum length examined, 95 mm) characterized by the following: caudal fin yellow or light brown, without pattern; posterior dorsal and anal fins black to dark brown; dorsal-fin rays usually 57-60; anal-fin rays usually 43-46; pelvic-fin rays usually 5-5; caudal vertebrae usually 21-22; dorsal and anal fins without light or dark spots or blotches; pectoral fins usually absent; opercular flap of blind side mostly scaled; no ring of cirri on margin of anterior naris on ocular side.

Description: Dorsal-fin rays 54-61 (Table 1); anal-fin rays 41-48 (Table 2); vertebrae 8-10 + 20-22 = 29-31, holotype with 9+21; total caudal-fin rays 16, branched rays usually 12; pelvic-fin rays 5-5 (186 of 198 specimens, holotype with 5-5). Pectoral fins almost always absent, occasionally one ray on ocular side (6 of 198 specimens; holotype 0-0). Body depth 53.1-63.2% of SL; head length 27.6-33.1% of SL, slightly increasing with increasing SL; interorbital width 2.5-4.1% of

SL, decreasing with increasing SL; upper eye length 4.5-6.8% of SL, decreasing with increasing SL. Scales ctenoid; enlarged scales on anterior head region of ocular side, enlarged scales and tufts of cirri over much of head and area above pelvic fins on blind side; scales along most of the lengths of the dorsal, anal-, and caudal-fin rays. Anterior dorsal (ca. 20-24) and anal- (ca. 8) fin rays of blind side with cirri for most of their lengths. Pelvic fins more or less symmetrical, that of ocular side connected to anal fin by a thin membrane; cirri on all pelvic-fin rays of blind side, smaller cirri on anterior rays of ocular side. Caudal fin rounded posteriorly. Lateral line nearly straight on both sides, with a slight rise over area of opercular opening. No cirri on nostrils; cirri on lip of lower jaw, ocular side only. Upper eye slightly in advance of lower. Mouth small, reaching to a vertical through anterior portion of lower eye; teeth tiny, villiform, in multiple rows in upper and lower jaws of blind side; few, if any, teeth on ocular side.

Overall background color of ocular side light to medium brown, occasionally with 5-11 thin, approximately vertical, interrupted bars and numerous dark spots; dorsal and anal fins without light or dark spots or blotches; anterior dorsal and anal fins usually matching body color; blind side usually almost devoid of pigment, but occasionally with the posterior one-third to one-half of body lightly to moderately pigmented; posterior dorsal and anal fins of both sides matching body color

TABLE 1
Frequency distributions of dorsal-fin rays in Pacific species of *Trinectes*.

	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64
<i>T. fimbriatus</i>	5	6	12	31	34	17	12	4	2								
<i>T. fluviatilis</i>								1	2	5	8	7	4	3			
<i>T. fonsecensis</i>							1	6	19	42	54	69	50	30	20	10	1
<i>T. opercularis</i>				1	2			1									
<i>T. xanthurus</i>							4	8	16	41	49*	47	21	12			

* count of holotype.

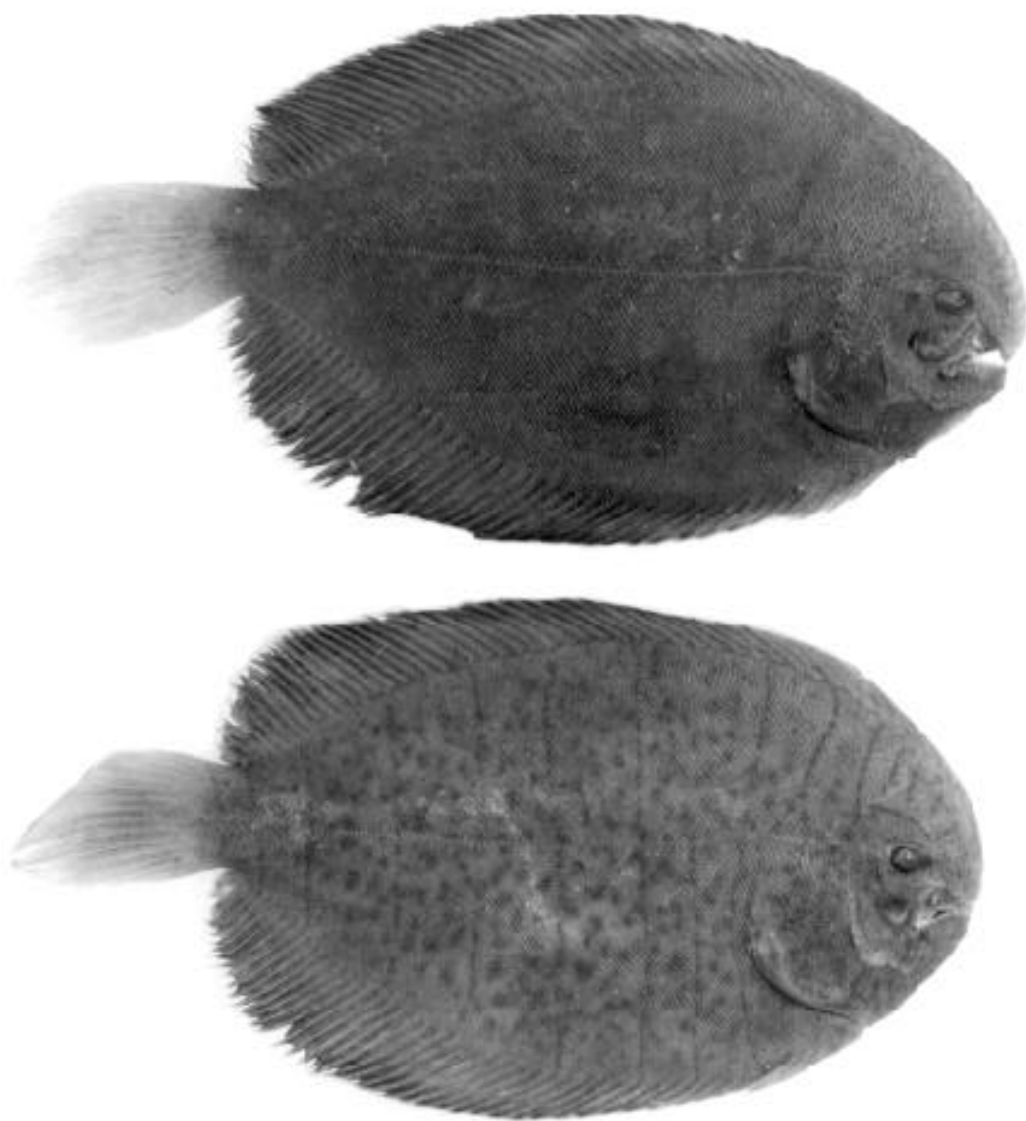


Fig. 1. *Trinectes xanthurus*, SIO 63-292, upper: 75.4 mm, Holotype; lower: 73 mm, Paratype.

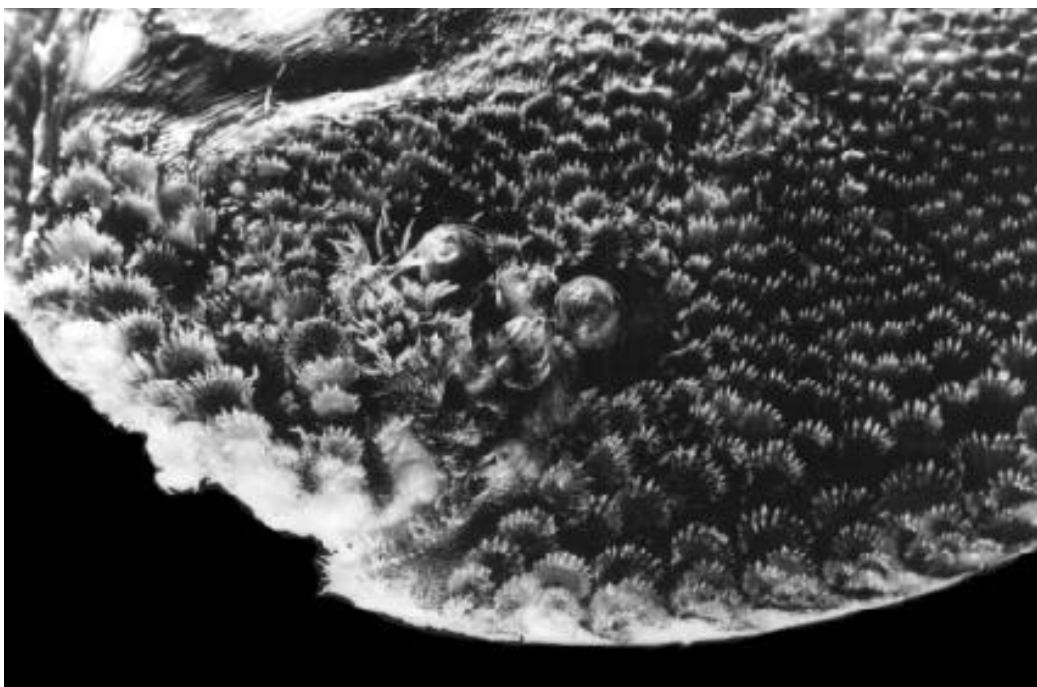


Fig. 2. *Trinectes fimbriatus*, Uncatalogued, 71 mm total length, Chiapas, Mexico, 6 Sep 1966, showing a ring of cirri on the margin of the anterior naris.

proximally, but much darker distally; caudal fin pale yellow, yellow in life (Krupp 1995), to light brown with no markings; pigmentation on ocular-side pelvic fin matching that on anal fin, blind-side pelvic fin without pigment; peritoneum and opercular cavity lightly to moderately punctate on ocular side and usually lacking pigment on blind side; mouth devoid of pigment.

Etymology: From the Greek, *xanthos*, yellow, plus *oura*, tail, for the pale yellow or light brown caudal fin.

Distribution: From the mouth of the Orapu River, Colombia, ca. 4°34'N, 77°20'W, to the Golfo de Fonseca, El Salvador, ca.13°06'N, 87°59'W. Found on sand or mud bottoms in rivers (occasionally) and shallow coastal waters of 2-40 m, but usually less than 18 m.

Comparisons: *Trinectes xanthurus* can be distinguished from all other congeners, except *T. fluviatilis*, in having 21-22 (vs. 19-20) caudal vertebrae. It has a plain or unpatterned caudal fin in contrast to the banded

TABLE 2.

Frequency distributions of anal-fin rays in Pacific species of Trinectes.

	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48
<i>T. fimbriatus</i>	1	3	16	33	41	21	6	2								
<i>T. fluviatilis</i>											6	7	8	8		
<i>T. fonsecensis</i>							1	7	27	56	85	66	37	20	5	1
<i>T. opercularis</i>			1	1	3											
<i>T. xanthurus</i>									7	8	35	59*	62	19	4	3

* count of holotype.

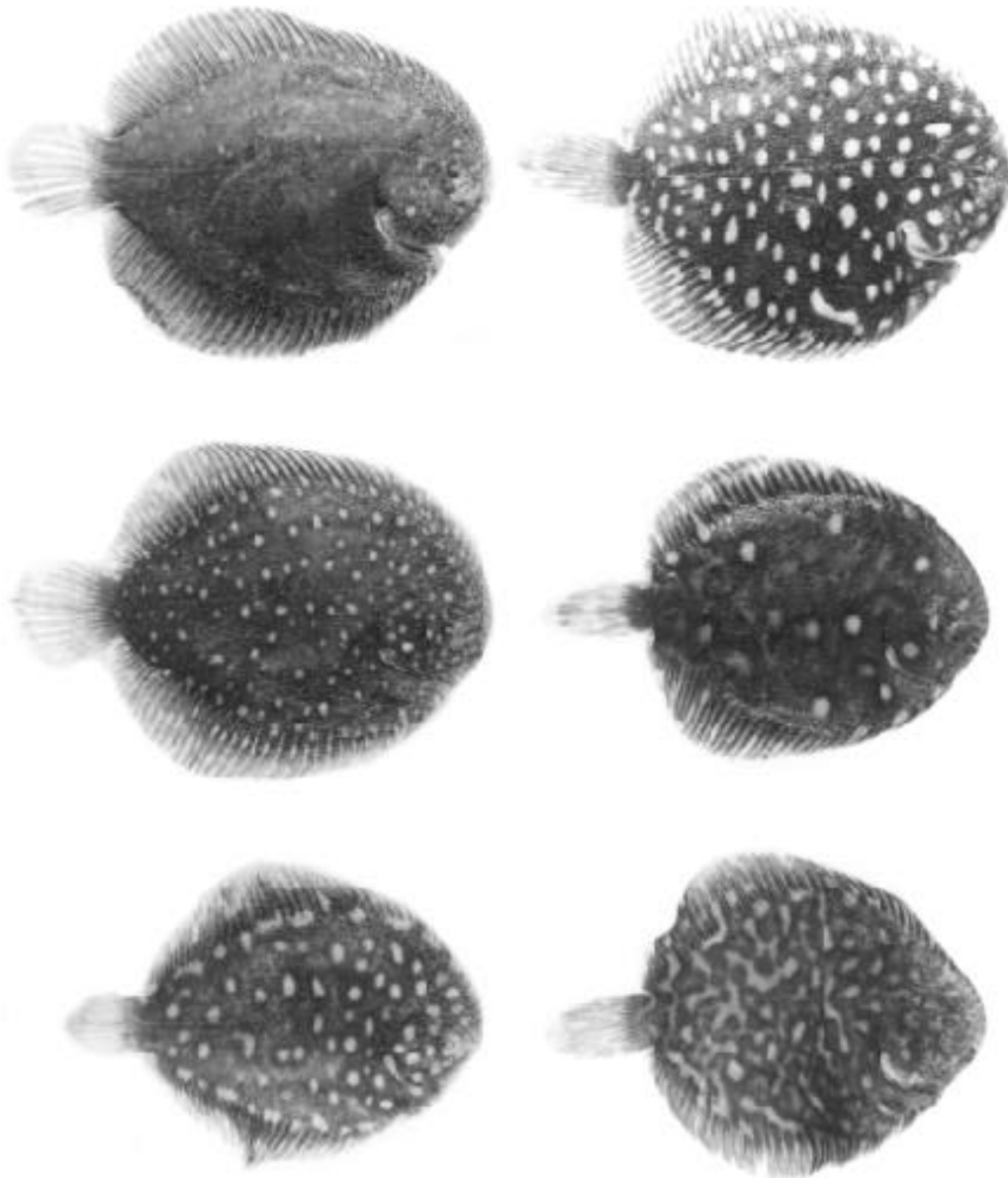


Fig. 3. *Trinectes fimbriatus*, UCR 136.038, 6(60-68.5 mm), illustrating variation in this species.



Fig. 4. *Trinectes opercularis*, UCLAW51-283, 52.5 mm.

Key to the eastern Pacific species of *Trinectes*

- 1A. Ring of cirri on margin of anterior naris of ocular side (Fig. 2); anal-fin rays usually 35-38; opercular flap of blind side mostly naked 2
- 1B. No cirri on anterior naris of ocular side; anal-fin rays usually 41-46; opercular flap of blind side mostly scaled 3
- 2A. Body and vertical fins with white or pale spots on ocular side . . . *T. fimbriatus* (Peru to Chiapas, Mexico; Fig. 3)
- 2B. Body and fins without spots, head occasionally with spots on posterior operculum *T. opercularis* (Equador to Colombia; Fig. 4)
- 3A. Posterior dorsal and anal fins black to dark brown; caudal fin without distinct pigment pattern; pectoral fins usually absent (192 of 198 specimens) *T. xanthurus* (Colombia to El Salvador; Fig. 1)
- 3B. Dorsal and anal fins spotted or light brown; caudal fin usually spotted or barred; pectoral fin, when present, with one to three rays on ocular side 4
- 4A. Pectoral fin usually present (272 of 304 specimens); ocular side with fairly distinct, dark bars; caudal vertebrae 19-20 (202 of 215 specimens) *T. fonsecensis* (Panama to Agiabampo, Mexico; Fig. 5)
- 4B. Pectoral fins usually absent (19 of 30 specimens); ocular side with indistinct, dark bars and small spots or large blotches; caudal vertebrae 21 (16 of 17 specimens) *T. fluviatilis* (Panama to Costa Rica, almost always found in freshwater; Fig. 6)

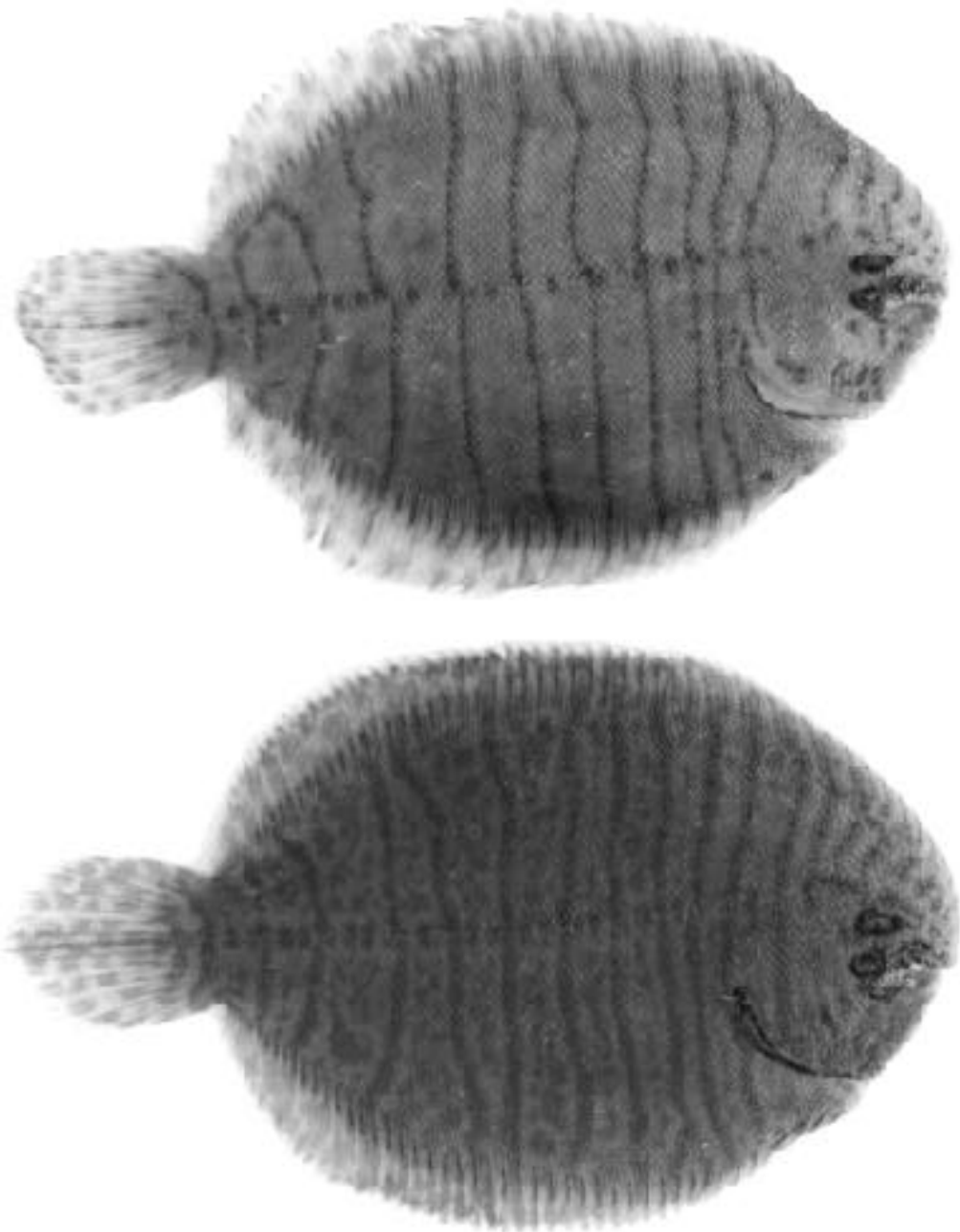


Fig. 5. *Trinectes fonsecensis*, SIO 62-39, upper: 85 mm; lower: 84 mm.



Fig. 6. *Trinectes fluviatilis*, USNM 81668, 6(30-39 mm).

caudal-fin pattern of *T. fluviatilis* and also has a greater body depth and smaller eyes. *Trinectes fimbriatus* and *T. opercularis* have fewer anal-fin rays than *T. xanthurus* and also possess a ring of cirri on the margin of the ocular-side anterior naris. *Trinectes fimbriatus* also has conspicuous white or pale spots on its ocular side. In contrast to *T. xanthurus*, *T. fonsecensis* usually has at least one or two ocular-side pectoral-fin rays and pigment patterns on the vertical fins. *Trinectes inscriptus* (western Atlantic) is unique in having one or more pectoral-fin rays on the blind side and at least two, usually three or more, on the ocular side. It also has a distinctive network of dark lines on a brown to gray background. *Trinectes maculatus* (wA) usually has 4-4 (vs. 5-5) pelvic-fin rays, distinguishing it from all other species in the genus, and has a variable

pattern of caudal-fin pigment to distinguish it further from *T. xanthurus*. *Trinectes paulistanus* (wA) can appear quite similar to *T. xanthurus*, but has much smaller eyes, and usually a shorter head, shallower body depth, and narrower interorbit.

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RESUMEN

Se describe una nueva especie, *Trinectes xanthurus*, de aguas someras del Pacífico desde Colombia hasta El Salvador. El género *Trinectes* tiene cuatro especies en el Pacífico Oriental más una de agua dulce en Panamá. Solo *Trinectes fonsecensis* existe en todo el Pacífico Oriental.

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