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Redescription of *Symphurus diabolicus*, a Poorly-Known, Deep-Sea Tonguefish (Pleuronectiformes: Cynoglossidae) from the Galápagos Archipelago

Thomas A. Munroe[1] and John E. McCosker[2]

[1]National Marine Fisheries Service National Systematics Laboratory, National Museum of Natural History, Washington, DC 20560-0153 FAX: 202-357-1896
email: munroe.thomas@nmnh.si.edu

[2]California Academy of Sciences, Golden Gate Park, San Francisco, CA 94118-4599

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Abstract: *Symphurus diabolicus*, previously known only from the holotype collected in 501 m west of Isla San Cristobal (Chatham Island), Galápagos Archipelago, is re-described based on the holotype (112.6 mm SL) and 19 additional specimens (61.1-123.5 mm SL) recently collected from deep waters around the Galápagos Archipelago. *Symphurus diabolicus* is characterized by: an elongate body; narrow head with pointed snout; 1-3-2 ID pattern; 106-110 dorsal-fin rays; 89-96 anal-fin rays; 12 caudal-fin rays; 57-59 total vertebrae; 5 hypurals; extremely small scales; no pupillary operculum; large, prominent eyes, with migrated eye near dorsal margin of head; relatively short postorbital head length; relatively long snout and predorsal lengths; black peritoneum visible through abdominal wall on both sides of body; uniform olive green to dark brown ocular-side coloration with series of prominent, darker brown, elliptical to rectangular, blotches (not usually forming crossbands) along body at bases of dorsal and anal fins; and uniformly whitish or light yellow blind side. *Symphurus diabolicus* appears to be endemic to the Galápagos Archipelago, and is relatively common (captured at 16 different localities) at depths of 308 to 757 m (observed as shallow as 245 m) in this region. Examination of this expanded series of specimens confirms the validity of *S. diabolicus* and provides characters to distinguish it from *S. microlepis* Garman, a similar species known only from the holotype taken at approximately 530 m off Pacific Panama.

Keywords: New species, description, taxonomy, *Symphurus*

Symphurus diabolicus Mahadeva and Munroe 1990 was described based on a single specimen (112.6 mm SL) collected by the US Steamer *Albatross* in 1888 on white sand west of Isla San Cristobal (Chatham Island), Galápagos Islands (0º46'S, 89º42'W), Ecuador, in 501 m. Among congeners, *S. diabolicus* is most similar in meristic and some morphometric features to *S. microlepis* Garman, another eastern Pacific species known only from a holotype collected off the coast of Panama in 530 m. Based on the types, the only known specimens of these nominal species, Mahadeva and Munroe (1990) noted that these species have similar, overlapping meristic features, especially the 1-3-2 ID pattern, total number of vertebrae, numerous small scales in a longitudinal series and the same caudal-fin ray count. Despite similarities in meristic features, Mahadeva and Munroe nevertheless concluded that other features, particularly the elongate body shape and relative size and shape of the head, were substantially different between these specimens and beyond ranges of intraspecific variation normally encountered between

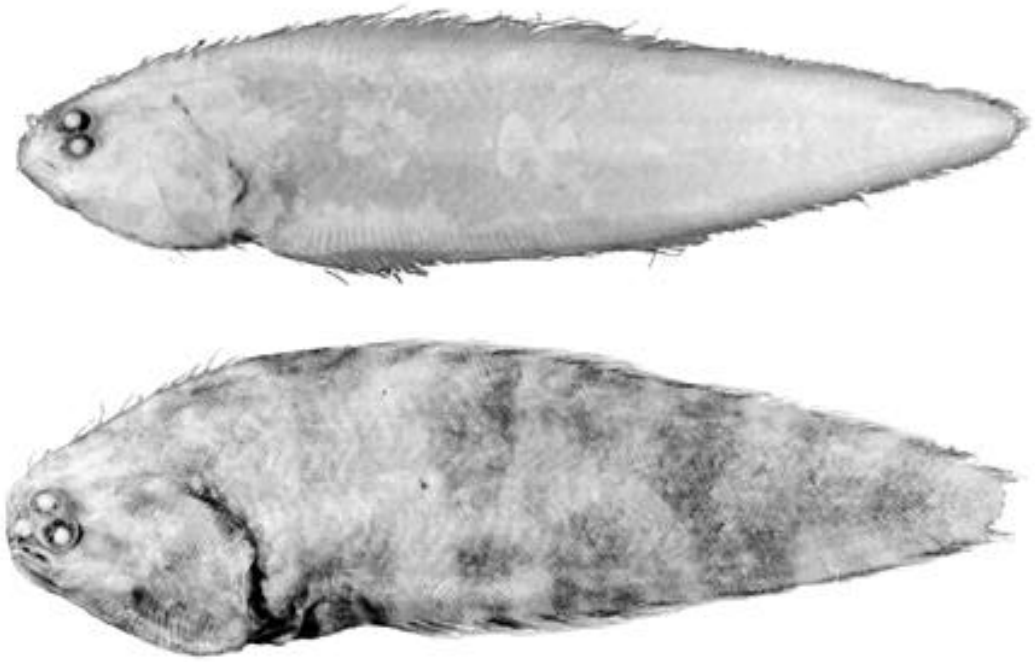

Fig. 1. Photographs of holotypes of two nominal species of Eastern Pacific tonguefishes. A (Top) *Symphurusdiabolicus*, USNM 135653; 112.6 mm SL; Galápagos Islands. B (Bottom) *Symphurus microlepis*, MCZ 28535; 99.5 mm SL; off Panama (7E32.6'N, 79E16'W).

species of *Symphurus.* They concluded that these two specimens represented different species.

Grove and Lavenberg (1997) questioned the status of *S. diabolicus* and thought it unlikely that two morphologically similar, deep-water species lived in such close proximity in the eastern Pacific. The questionable systematic status of *S. diabolicus* could not be resolved, however, until additional specimens of either this nominal species or *S. microlepis* were collected.

Recent exploration and collecting efforts by researchers using submersibles, trawls and rock dredges have resulted in the capture of a large number of previously unknown or poorly-collected fish species from the Galápagos Archipelago. Among this material are 19 specimens of *S. diabolicus.* Examination of these newly collected specimens now provides the opportunity to more fully evaluate purported differences between *S. diabolicus* and *S. microlepis*, and to re-assess the taxonomic status of *S. diabolicus*. Based on data associated with specimens observed and collected by submersible, greater detail can now also be provided on habitat depths and substrates inhabited by these poorly known deep-water tonguefishes.

METHODS AND MATERIALS

Methods for counts and measurements and general terminology follow Munroe (1998). Terminology for interdigitation patterns of proximal dorsal pterygiophores and interneural spines (ID pattern) follow Munroe (1992). All measurements refer to standard length, unless noted otherwise. Measurements were taken to the nearest 0.1 mm with dial calipers or ocular micrometer.

Pigmentation descriptions are based on

TABLE1.

Selected meristic features for 20 specimens of Symphurus diabolicus *taken at deep-water locations in the Galápagos Archipelago. Abbreviations defined in text.*

ID Pattern			Caudal-fin rays		Dorsal-fin rays				
1-3-2	1-2-3	1-3-3	11	12	106	107	108	109	110
16	3	1	3	17	3	3	2	8	4

Anal-fin rays								Total Vertebrae			Head Scales				
89	90	91	92	93	94	95	96	57	58	59	28	29	30	31	32
1	—	3	—	3	10	1	2	6	11	3	3	3	6	4	1

Transverse Scales								
48	49	50	51	52	53	54	55	56
1	—	—	3	5	3	3	—	1

Longitudinal Scale Count																	
118	119	120	121	122	123	124	125	126	127	128	129	130	131	132	133	134	135
1	1	2	1	1	1	—	1	1	1	3	1	3	2	—	—	—	1

fishes fixed in formalin and stored in ethyl or isopropyl alcohol, and from live specimens videotaped or photographed in situ. Maturity was estimated by macroscopic examination of the extent of posterior elongation of the ovary and presence of developing ova in the ovaries (both easily observed using light transmitted through the body). Because no obvious differences in sizes of testes between immature and mature males were apparent, estimates of maturity were based entirely on females. Institutional abbreviations follow Leviton et al. (1985). Comparative material for eastern Pacific and western Atlantic species of *Symphurus* were included in Munroe (1990, 1998) and Munroe et al. (1997). Depth of capture information is the capture depth reported with specimens, or is the estimated mean depth when a range of depths is reported. Galápagos island names follow those of Woram (1989).

Symphurus diabolicus Mahadeva and Munroe, 1990
Figs. 1-5, Tables 1-2

Symphurus diabolicus Mahadeva and Munroe, 1990:949 (Original description with figure). Munroe et al., 1997:1047. (Based on Mahadeva and Munroe; species account; figure; in key). Grove and Lavenberg, 1997:619. (Questionable status; species account based on Mahadeva and Munroe).

Diagnosis.—A *Symphurus* with a 1-3-2 ID pattern; 106-110 dorsal-fin rays; 89-96 anal-fin rays; 12 caudal-fin rays; 57-59 total vertebrae; 5 hypurals; extremely small scales, 118-135 in longitudinal series and 48-56 in transverse row; scales on blind side with fewer ctenii than those on ocular-side (a feature not observed in other eastern Pacific *Symphurus*); no pupillary operculum; large, prominent eyes, with narrow interorbital space and with migrated eye situated close to dorsal margin of head; upper jaw reaching vertical just posterior to anterior margin of lower eye; well-developed dentition on ocular-side jaws; origin of dorsal fin at point between verticals through anterior margin and mid-point of pupil of upper eye; head length nearly equal to or slightly larger than body depth; relatively short postorbital head length; relatively long snout and predorsal lengths; black peritoneum visible through abdominal wall on both sides of body; uniformly olive to dark brown ocular-side coloration featuring series of prominent elliptical to rectangular dark blotches along bases of dorsal and anal fins; dorsal and anal fins with alternating series of dark brown blotches and unpigmented areas of nearly equal size; and caudal fin with dark proximal half

TABLE 2.

*Morphometrics for 20 specimens of S*ymphurus diabolicus *(16 for CFL only) and the holotype of* S. microlepis.[1]

	Symphurus diabolicus			*Symphurus microlepis*
Character	Range	Mean	SD	Holotype
1. SL	61.1-123.5			99.5
2. BD	211-260	238	15.2	279
3. PAL	230-286	254	18.1	271
4. HL	204-269	234	20.5	248
5. HW	194-262	225	19.7	275
6. POL	130-170	148	14.8	176
7. LHL	103-181	137	20.9	170
8. UHL	92-135	107	9.2	110
9. CFL	94-112	103	6.3	—-
10. HW/HL	0.88-1.13	0.96	0.07	1.11
11. POL	597-665	634	19.4	708
12. UHL	386-527	459	44.1	441
13. LHL	440-705	587	69.8	684
14. UJL	224-266	240	10.2	231
15. SNL	185-245	221	19.6	154
16. ED	108-190	155	18.6	130
17. PDL	251-346	298	27.2	134

[1]Abbreviations defined in text; SL in mm; characters 2-9 in thousandths of SL; 11-17 in thousandths of HL.

and unpigmented distal half.

Description.—Frequency distributions of selected meristic features are presented in Table 1. ID pattern 1-3-2, occasionally 1-2-3 or 1-3-3. Caudal-fin rays 12, occasionally 11. Dorsal-fin rays 106-110. Anal-fin rays 89-96. Pelvic-fin rays 4. Total vertebrae usually 58, less frequently 57 or 59; abdominal vertebrae 9 (3+6). Hypurals 5 (all specimens). Scales on head posterior to lower orbit 28-32. Transverse scales 48-56. Longitudinal scale rows approximately 118-135.

Summaries of morphometric features appear in Table 2. A medium-sized *Symphu - rus* (61.1-123.5 mm SL), with relatively elongate body. Greatest body depth (BD) usually between anus and point about equal with 5th-8th anal-fin ray and depth continuing almost uniformly over large part of mid-body (to approximately anal-fin rays 60-70); body taper anterior and posterior of mid-body region smooth and gradual (Figs. 1Aand 3A). Anterior curvature of body not pronounced. Preanal length (PAL) usually larger than body depth. Head relatively long, usually slightly greater than body depth. Head length (HL) usually greater (13/20 individuals) than head width (HW). Postorbital length (POL) 60-

Fig. 2. *Symphurus diabolicus*, photographed *in situ* at 685 m off Cabo Rosa, Isabela Island, Galápagos Archipelago.

67% of head length. Lower head lobe slightly larger than upper head lobe (LHL/UHL = 1.00-1.77). Snout long and pointed, with a few small ctenoid scales present to distal tip. Dermal papillae evident on some specimens on blind-side snout and chin and extending posteriorly to about posterior nostril. Anterior nostril relatively long, but not reaching lower eye when depressed posteriorly. With 6-8 rows of 2-4 tiny and flimsy scales behind posterior nostril and in narrow interorbital region to posterior margin of eyes. Upper aspects of eyes covered with 4-8 rows of small scales. Mouth relatively large, upper-jaw length (UJL) usually greater than snout length (SNL); upper jaw reaching to point between verticals through anterior margin and mid-point of lower eye. Lower eye (ED) large, 11-19% HL; eyes usually only slightly subequal with upper in advance of lower, occasionally with eyes in equal position; migrated eye situated close to dorsal margin of head; interorbital space small with eyeballs nearly touching. Pupillary operculum absent. Dorsal-fin origin reaching vertical through point between anterior margin and mid-point of pupil of upper eye; predorsal length (PDL) relatively long. Blind sides of dorsal and anal fins without scales. Anal-fin origin approximately at vertical between bases of 14th and 18th dorsal-fin rays. Pelvic fin with 4 rays. Caudal-fin length (CFL) 9-11% SL, with four or five rows of tiny scales on caudal-fin base.

Teeth well developed on both jaws. Blind-side dentary with 5-6 rows of strong teeth across middle of crescentic tooth band. Arms of crescent tapering to fewer rows, ending in single tooth. Blind-side premaxilla with tooth band as broad posteriorly as middle of lower jaw crescent, but narrowing anteriorly to fewer rows, terminating in single tooth. Ocular-side premaxilla with single row of prominent teeth usually extending along anterior 3/4ths of bone. Ocular-side dentary usually with complete row of teeth extending posteriorly to point below anterior margin of lower eye.

Scales small (smallest among eastern Pacific tonguefishes), numerous, ctenoid on both sides of body. Scales on blind side with fewer ctenii than those on ocular-side (a feature not observed in other eastern Pacific

Fig. 3. Three species of *Symphurus* occurring in the Galápagos Archipelago. A (Top). *Symphurus diabolicus* (CAS 86424; 109.7 mm SL) collected by submersible in the Galápagos Archipelago at 557 m. B (Middle). *Symphurus atra - mentatus* photographed *in situ* at night, 20 m, Tagus Cove, Isla Isabela (Photograph by P. Humann©). C (Bottom). Freshly-captured *Symphurus varius* (USNM 361935; 104.7 mm SL), collected at 125 m, Wolf Island (Photograph by J. McCosker).

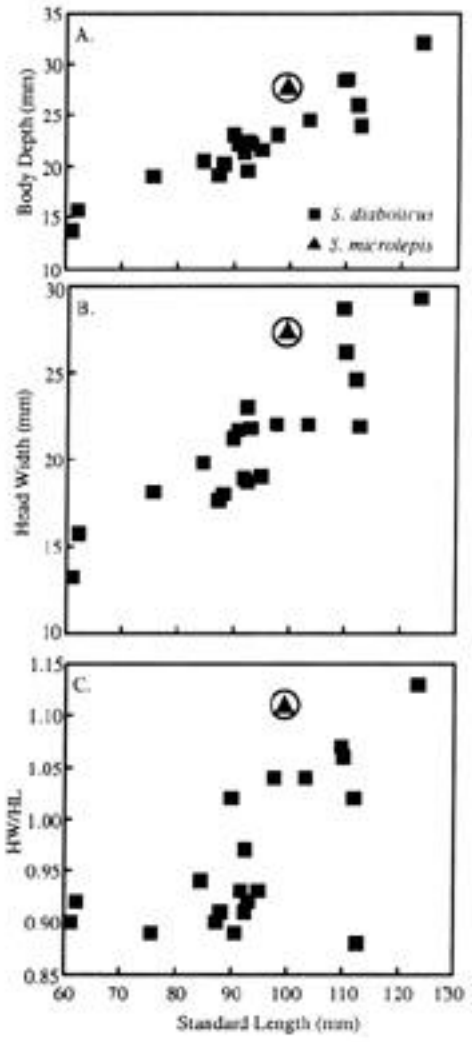

Fig. 4. Comparison of morphometric features of two, deepwater, Eastern Pacific species of *Symphurus.* A. Body Depth to Standard Length. B. Head Width to Standard Length. C. Head width (HW) by Head Length (HL) ratio to Standard Length.

Symphurus).

Pigmentation.—The holotype is pale and uniformly yellowish throughout without visible signs of any distinctive pigmentation (Fig. 1A). This uniform yellowish color is apparently unique to the holotype, and probably results from bleaching of natural pigment during fixation and long-term storage of this specimen.

Ocular-side background coloration of preserved specimens (Fig. 3A) uniformly olive green to dark brown, with a series of prominent, darker brown, elliptical to rectangular, blotches along body at bases of dorsal (6-9, usually 8 blotches) and anal fins (5-7, usually 7 blotches) beginning on posterior head and extending throughout length of body. Blotches generally extending medially from fin bases to, or slightly across, body midline, and situated either parallel across, or arranged in alternating sequence, from those of opposite fin. Blotches generally not conjoining at body mid-region, except occasionally one just posterior to mid-body; all specimens with posteriormost blotch on caudal region forming complete crossband. Region overlying abdominal cavity more darkly pigmented than remainder of body in preserved specimens, less so in live specimen. Head with similar pigmentation to that on body, except snout mostly unpigmented. Outer opercular surface with dark brown blotch on ventral aspect; opercular blotch very prominent in live specimen. Inner linings of opercles on both sides of body unpigmented; occasional specimen with scattering of faint melanophores on inner linings of either ocular- or blind-side opercle. Isthmus usually unpigmented on either side; few specimens with faint spotting on ocular-side isthmus, occasional specimen also with faint spotting on blind-side isthmus. Upper jaw usually with prominent dark “moustache” and lower jaw frequently spotted in most specimens; sometimes with dark “moustache” on both upper and lower jaws. Blind side uniformly whitish or light yellow, with occasional scattered dark blotches on caudal region of some specimens. A median series of subdermal melanophores along vertebral column sometimes evident on midline of midbody region. Peritoneum dark black, showing through abdominal wall on both sides of body.

Dorsal and anal fins of preserved specimens usually with series of dark brown blotches (2-6 fin-rays wide) alternating with unpigmented areas of about equal size. Fin blotches not always aligned with those on

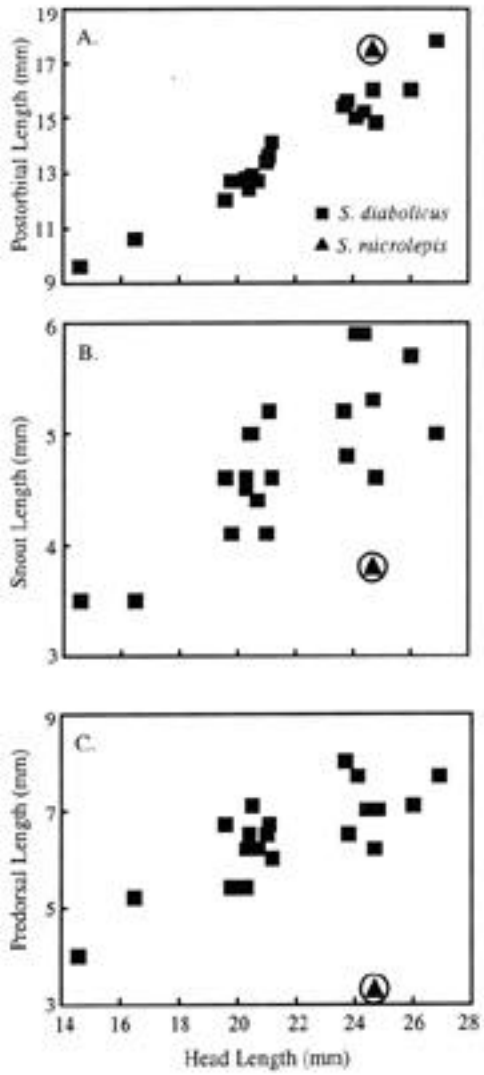

Fig. 5. Comparison of morphometric features of two, deepwater, Eastern Pacific species of *Symphurus*. A. Postorbital Length to Head Length. B. Snout Length to Head Length. C. Predorsal Length to Head Length.

body; those in posterior third of body usually darker than anterior blotches, especially in live specimen. Blotches on posterior dorsal and anal fins coalescing with pigment band on proximal caudal fin forming continuous dark band across posterior body and base of caudal fin. Distal tips of dorsal- and anal-fin rays, and distal half of caudal fin, unpigmented in preserved specimens. Pelvic fin of preserved specimens usually unpigmented.

Live specimens (Fig. 2) with uniformly light-brown ocular-side background coloration, with four, prominent, wide, dark black, sharply contrasting, equally spaced, complete crossbands. Anterior crossband on body immediately posterior to head, two other crossbands on mid-body, and posteriormost crossband situated across caudal peduncle and on caudal-fin base. Snout dark, but without conspicuous markings. Outer surface of ocular-side opercle with dark blotch on ventralmost aspect. Dorsal and anal fins with series of broad, dark blotches, corresponding in color and location with crossbands on body, alternating with conspicuous, sharply contrasting, bright white blotches of nearly equal width. Pelvic fin white. Proximal 3/4ths of caudal fin black; distal tip white.

Size and Maturity.—*Symphurus diabolicus* is a medium-sized species attaining maximum lengths of about 124 mm SL. Males (9, 62.2-123.5 mm SL) and females (11, 61.1-112.0 mm SL) reach similar sizes. Based on females, this species matures at sizes around 80-84 mm SL. Two females, 61.1 and 75.6 mm SL, were immature with ovaries just undergoing posterior elongation. Nine females (84.5-112.0 mm SL) were mature with elongated ovaries and some with small ova evident. None of the females were gravid.

Distribution.—Apparently endemic to deepwater areas in the Galápagos Archipelago. This species was poorly known until recently, but appears to be relatively common at depth throughout the Archipelago. Submersible observations and other captures record this species from at least 16 different locations in this region. Twenty specimens with depth of capture information were collected between 300-757 m, with most (N= 16) taken between 425-650 m, and direct observations record this species as shallow as 245 m. *Symphurus diabolicus* occurs on a variety of substrates. The holotype was collected on white sand; other specimens were taken on a variety of soft substrates ranging in

color from dark black to green or brown.

Observations.— Due to the cryptic appearance and sand-submergence demeanor of tonguefishes, as well as the nearly uniform disinterest of scuba-diving ichthyologists in exploring such soft-sediment habitats, it is not surprising that little is known of tonguefish behavior. Because most shallow-water tonguefishes apparently lie buried in the substrate during daylight, most observations of *Symphurus* have occurred at night when the fish are exposed. The shallow-water Galápagos species, *S. atramentatus* (Fig. 3B), was observed by the second author while nightdiving (between ca. 2100-2400 hr) with scuba at coldwater locations, primarily Tagus Cove, Isla Isabela, between 15-30 m. It occupied sand, small rubble, and mud habitats. Individuals were never seen in close proximity to each other. The two deep-water Galápagos species, *S. varius* (Fig. 3C) and *S. diabolicus*, were seen during daytime submarine dives using the *Johnson Sea-Link* (with the advantage of its bright searchlights and disadvantage of its 13-cm-thick curved viewing port) indicating that natural light levels at that depth (below ca. 100 m) are low enough such that during daytime, those tonguefishes do not bury themselves in the substrate until frightened. Individuals were rarely seen in close proximity to each other (concerted efforts were not made to pursue this information), however during one dive at 245 m two *S. diabolicus* were seen and videotaped within a few centimeters of each other. While attempting to capture specimens with the submersible's suction hose, the tonguefish were often frightened and able to escape. Typically, they rapidly swam a short distance (a few meters at most) and quickly buried themselves in the sand substrate; even then, their eyes remained exposed and it was not difficult to find and ultimately capture them using the bright lights and suction device of the sub. Few dives were made at the depths occupied by *S. varius*, and only two individuals were seen during four dives. Many more dives were made at depths occupied by *S. diabolicus* and several individuals were seen during every dive.

Comparisons.—*Symphurus diabolicus* is the fourth known eastern Pacific *Symphurus* with the following combination of characters: a 1-3-2 ID pattern, 12 caudal-fin rays, and a black peritoneum. Other eastern Pacific species characterized by this combination of characters include *S. microlepis*, *S. gorgonae* Chabanaud and *S. oligomerus* Mahadeva and Munroe. *Symphurus diabolicus* differs strikingly from *S. gorgonae* and *S. oligomerus* in vertebral counts (total vertebrae 57-59 versus 46-49 in *S. gorgonae* and 48-52 in *S. oligomerus*); numbers of dorsal-fin rays (106-110 versus 80-89 in *S. gorgonae* and 85-97 in *S. oligomerus*); numbers of anal-fin rays (89-96 versus 63-74 in *S. gorgonae* and 71-83 in *S. oligomerus*); and body shape (relatively elongate with gradual posterior taper in *S. diabolicus* versus much deeper body with greatest body depth in anterior third of body and rapid posterior taper in *S. gorgonae* and *S. oligomerus*). *Symphurus diabolicus* differs further from *S. gorgonae* in having 5 hypurals (versus 4) and in its much larger size (to 123.5 mm versus adults smaller than 70 mm).

Despite some similarities in meristic and morphometric features, *S. diabolicus* differs from *S. microlepis* in several morphometric characteristics (Figs. 4-5). Most notably, *S. diabolicus* is more elongate (compare Figs. 1A, 3Awith 1C; see also Fig. 4A) with a slender head and pointed snout. Its body shape features a relatively smooth, gradual posterior taper with greatest depth (21.1-26.0% SL; Table 2) occurring slightly posterior to the anus and with body depth diminishing only slightly throughout the mid-body region. By contrast, *S. microlepis* has a slightly deeper body (27.9% SL; Table 2) with greatest depth occurring at the anus and having a more pronounced posterior taper in the mid-body. *Symphurus diabolicus* also has a narrower head (Fig. 4B), smaller postorbital length (Fig. 5A), longer snout (Fig. 5B) and longer predorsal length (Fig. 5C) than *S. microlepis* at a comparable size (see Table 2). *Symphurus diabolicus* also has a more elliptically

shaped eye, while that of *S. microlepis* is nearly spherical, although this feature is difficult to quantify. Also, the migrated eye is situated closer to the dorsal margin of the head in *S. diabolicus*; in *S. microlepis*, it is more medially placed.

Mahadeva and Munroe (1990) reported that the head length of the holotype of *S. diabolicus* is shorter (HL =22.0% SL) than that of the holotype of *S. microlepis* (24.8% SL). However, this difference does not appear species specific because head length measurements of 20 specimens of *S. diabolicus* are 20.4-26.9% SL, values which encompass that for the holotype of *S. microlepis*. Based on data presented in Figure 5A, it is more likely that the difference noted by Mahadeva and Munroe in head length is attributable to differences in relative lengths of the postorbital region of the head. Another difference reported by Mahadeva and Munroe was that *S. diabolicus* has a head that is longer than wide (HW/HL=0.88), whereas that of *S. microlepis* is wider than long (HW/HL 1.11). Based on the new information, these two species indeed differ in this character as indicated in Figure 4C. Likewise, Mahadeva and Munroe noted that relative size of the lower head lobe (only 0.94 the width of upper head lobe) in the holotype of *S. diabolicus* was much smaller than that in *S. microlepis* (1.6 times larger than upper head lobe). However, this difference cannot unequivocally separate these two nominal species because head lobe ratios (LHL/UHL) for 20 specimens of *S. diabolicus* range from 1.00-1.77 (Table 2). However, the head lobe ratio of only 1/20 specimens of *S. diabolicus* was greater than 1.6, and only 3/20 specimens had ratios greater than 1.5. Mahadeva and Munroe also thought species-specific differences might be apparent in eye diameter. However, eye diameter measurements (108-190 HL) of the 20 *S. diabolicus* specimens overlap that of the holotype of *S. microlepis* (about 130 HL). Noteworthy is that only two specimens of *S. diabolicus* had eye diameter values <135 HL.

The Atlantic species of *Symphurus* possessing a 1-3-2 ID pattern, 12 caudal-fin rays, and black peritoneum have fewer vertebrae and fin-rays than *S. diabolicus*.

Other species in the genus with meristic features similar to *S. diabolicus* include two rarely collected Indian Ocean deep-water species, *S. macrophthalmus* Norman and *S. fuscus* Brauer. *Symphurus macrophthalmus* is a large-eyed, deep-water species known only from the holotype and a single paratype collected in the Gulf of Oman near the Persian Gulf (Norman 1939). Large eye size, black peritoneum, and a generally slender body are the only similarities these otherwise distinctive species share with *S. diabolicus*. *Symphurus diabolicus* has a different ID pattern than that observed in *S. macrophthalmus* (1-3-2-2-2 versus 1-2-2-1-2); fewer caudal-fin rays (12 versus 14); and some higher counts (total vertebrae 57-59 versus 48; 106-110 versus 87 dorsal-fin rays and 89-96 versus 75 anal-fin rays). Certain similarities exist in meristic features of *S. diabolicus* and those observed for *S. fuscus*, known only from the holotype collected off the east coast of equatorial Africa. Both species have 58 total vertebrae and similar numbers of dorsal- (109 in *S. diabolicus* versus 105 in *S. fuscus*) and anal-fin rays (94 versus 93). However, *S. diabolicus* differs from *S. fuscus* primarily in ID pattern (1-3-2-2-2 versus 1-2-2-1-2) and caudal-fin ray counts (12 versus 14).

Remarks.—*Symphurus diabolicus*, one of three tonguefish species collected in the Galápagos Archipelago, is the only one apparently endemic to this region. Other species collected at localities in the Galápagos Archipelago include *S. atramentatus* (Fig. 3B), a relatively widespread species occurring at depths usually less than 80 m throughout the tropical and subtropical eastern Pacific from the outer coast of Baja California and Gulf of California to Islas Lobos de Afuera, Peru, and also at Cocos Island (Grove and Lavenberg 1997), and *S. varius* (Fig. 3C), a relatively deepwater species (between 70 and 200 m) restricted to the equatorial eastern Pacific, at Cocos, Malpelo,

and Galápagos islands (Garman 1899, Munroe *et al.* 1997, Grove and Lavenberg 1997).

In describing *S. diabolicus*, Mahadeva and Munroe (1990) concluded that the only specimen of this nominal species available to them was sufficiently distinct from other *Symphurus* to warrant recognition as a valid species. New morphological information derived from recently collected specimens reveals significant differences between this species and the morphologically similar, *S. microlepis.* Given the differences between these nominal species in body shape and other morphometric features discussed above, they both should be considered valid.

Material examined (all specimens from Galápagos Archipelago): USNM 360113 (1, 90.7 mm), 01º42.0'N, 92º00.0'W, Darwin Is., 349-436 m, 18 Jul 1998. CAS 86520 (1, 88.1 mm), 01º23.169'N, 91º 47.231'W, Isla Wolf, 637 m, 23 Nov 1995. USNM 360111 (1, 62.2 mm), 00º24.0'N, 90º26.5'W, Marchena, 471 m, 21 Jul 1998. USNM 360112 (1, 92.4 mm), 00º24.0'N, 90º26.5'W, Marchena, 435-560 m, 20 Jul 1998. USNM 360115 (1, 87.3 mm), 00º22.8'N, 90º26.5'W, Marchena. 556-585 m, 22 Jul 1998. CAS 86538 (1, 94.8 mm), 00º15.973'S, 91º36.619'W, Roca Redonda, 549 m, 19 Nov 1995. USNM 360114 (1, 112.0 mm), 00º17.4'S, 91º39.0'W, Cabo Douglas, Isla Fernandina, 610 m, 16 Jul 1998. USNM 360116 (2, 91.7-103.3 mm), 00º17.4'S, 91º39.0'W, Cabo Douglas, Isla Fernandina, 558-640 m, 16 Jul 1998.

CAS 86512 (1, 84.5 mm), 00º21.792'S, 89º58.189'W, Isla Genovesa (Tower), 462 m, 24 Nov 1995. CAS 86519 (1, 93.0 mm), 00º22.404'S, 90º 16.302'W, east of Isla Seymour, 488 m, 27 Nov 1995. CAS 86424 (1, 109.7 mm), 00º28.004'S, 91º37.487'W, Cabo Hammond, Isla Fernandina, 557 m, 15 Nov 1995. CAS 86427 (1, 92.4 mm), 00º31.580'S, 90º13.008'W, Islas Plazas, 390 m, 4 Nov 1995. USNM 135653 (holotype, male, 112.6 mm), *Albatross* Sta. 2817, 00º46'S, 89º42'W, west of Isla San Cristóbal (Chatham Island), 501 m, 15 Apr 1888.

CAS 86507 (1, 97.6 mm), 01º04.736'S, 91º11.076'W, Cabo Rosa, south of Isla Isabela, 757 m, 11 Nov 1995. CAS 86421 (1, 61.1 mm), 01º05.981'S, 89º12.235'W, Seamount SE of Isla San Cristóbal, 486 m, 5 Nov 1995. SIO 90-70 (1, 89.9 mm), 01º11.38'S, 89º06.6'W, 234-640 m, 29 Jan 1990. USNM 360110 (1, 75.6 mm), 01º22.2'S, 89º49.2'W, Española, 250-366 m, 7 Jul 1998. SIO 90-71 (2, 110.1-123.5 mm), 01º37.73'S, 90º10.7'W, 310-965 m, 29 Jan 1990.

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RESUMEN

Se redescribe *Symphurus diabolicus* con base en nuevo material. Esta especie parece ser endémica de las

Galápagos (245-757 m de profundidad) y difiere morfológicamente de *S. microlepis* Garman., del Pacífico de Panamá.

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