

SYMPHURUS ARAWAK, A NEW CYNOGLOSSID
FISH FROM THE CARIBBEAN SEA, WITH NOTES
ON *SYMPHURUS RHYTISMA* AND
*SYMPHURUS OMMASPILUS*¹

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ABSTRACT

A new dwarf species of tonguefish, *Symphurus arawak*, is described from peripheral areas of the Caribbean Sea. It and *S. minor*, *S. parvus*, and *S. pelicanus* form a species group in the genus. All are small species but the group is neither closely allied to *S. rhytisma* nor to *S. ommaspilus*, two species recently described from the Bahamas. The known range of *S. rhytisma* is extended to Curaçao and an additional Bahaman record of *S. ommaspilus* is discussed.

INTRODUCTION AND ACKNOWLEDGMENTS

The tonguefishes of the Western Atlantic are placed in the single and variable genus *Symphurus* which has been competently reviewed by Ginsburg (1951). Recently, Böhlke (1961) described two small species from shallow waters of the Bahamas. We now describe a dwarf species from peripheral areas of the Caribbean Sea and provide new information on *Symphurus rhytisma* Böhlke, previously known from the unique type from Wood Cay, off Grand Bahama Island. An additional Bahaman record of *Symphurus ommaspilus* Böhlke is reported.

We are indebted to Carter R. Gilbert of the University of Florida for the loan of material from the Cayman Islands and to Robert Rush Miller and Reeve M. Bailey for checking specimens at the University of Michigan Museum of Zoology. Aspects of this study were discussed at various times with James E. Böhlke of the Academy of Natural Sciences, Philadelphia.

***Symphurus arawak*, new species**
CARIBBEAN TONGUEFISH

Figure 1a

Diagnosis.—Dorsal rays 69-75 (usually 72-73), anal rays 56-61 (58-60) + a papilla, caudal rays 12, (rarely 11, 13 or 14); lateral scale rows (counted from the upper end of the gill opening to the caudal-fin base) 55-63 (usually 55-58).

¹Contribution No. 612 from The Marine Laboratory, Institute of Marine Science, University of Miami, and from The Institute of Marine Biology, University of Puerto Rico.

Body fairly deep, the greatest depth 28-35 per cent of standard length.

Color pattern conspicuous, vertical fins becoming dark posteriorly, all scales on eyed side with numerous melanophores, eyed side with 6-10 large and variably positioned dark blotches.

Description.—Frequency distributions of fin-ray counts are presented in Table 1, morphometric data are given in Table 2. The following abbreviations are used in Table 2: SL, standard length; HL, head length; S-D, tip of snout to insertion of dorsal fin; S-A, tip of snout to insertion of anal fin; A-C, insertion of anal fin to caudal-fin base; S, snout length; E, horizontal diameter of left eye; De, greatest depth of body; and C, length of caudal fin. The general body form is best determined by reference to Figure 1a.

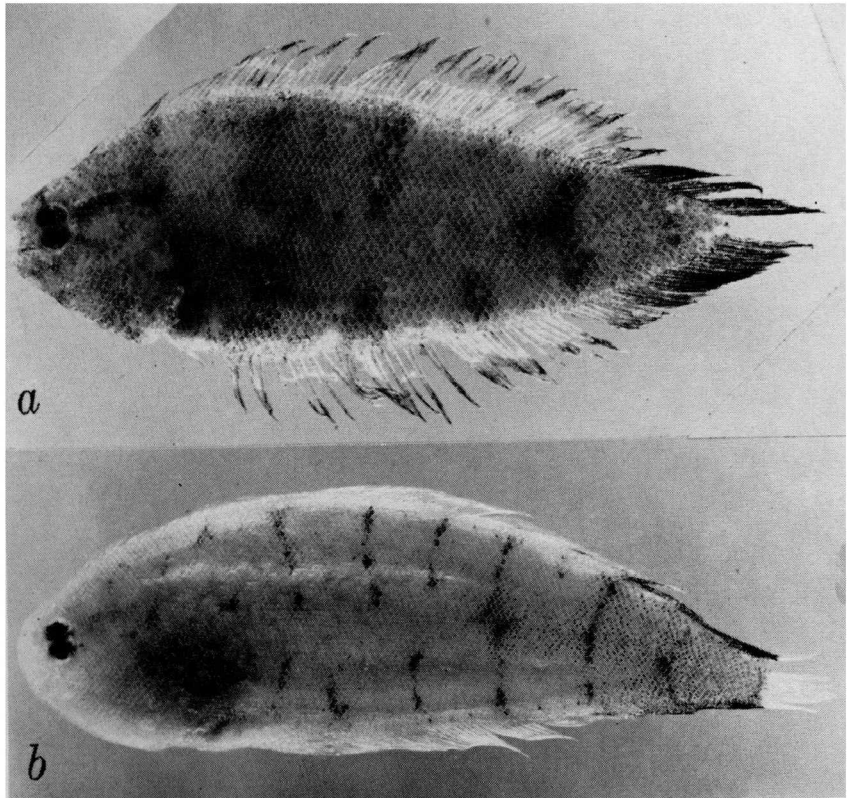


FIGURE 1. Upper: Holotype of *Symphurus arawak*, a mature female, 33.7 mm in standard length, from Curaçao; ANSP 101985.—Lower: *Symphurus rhytisma*, 32.7 mm in standard length, from Curaçao; UMML 14379.

S. arawak is conspicuously, if variably, marked. The vertical fins have melanophores along each ray with the fins becoming darker posteriorly. The caudal fin and neighboring parts of the dorsal and anal fins are black. There is no spotted pattern in the fins. Each scale on the head and body is marked by numerous small melanophores but the ground color is pale in contrast to the dark blotches on the body. In addition, the body is blotched with dark. Characteristically, there are 3 or 4 blotches (rarely large round spots) along the dorsal and ventral thirds of the eyed side. The posterior-most pair usually runs together to form a dark V or Y on the side at about the one-third point between the caudal-fin base and the gill opening. A narrow dark vertical bar extends from the upper (right) eye to the dorsal profile. Finally, a small dark spot is always present at the upper end of the gill opening.

Teeth are present on both sides of the mouth but are best developed on the blind side. In the upper jaw the teeth are in a single row on the eyed side and this row extends posteriorly for more than half the length of the maxilla. The dentary teeth on the eyed side are also arranged in a single row that extends posteriorly beyond the corresponding maxillary teeth. Both the maxillary and dentary teeth of the blind side are longer than those of the eyed side and they are arranged in patches of several rows that extend the length of the mouth. The jaws are distinctly more arched in the blind side.

The left pelvic fin consists of 4 rays and is oriented along the mid-isthmial line. The last ray is connected, throughout its length, to the body by a membrane. As in other species of *Symphurus*, the right pelvic fin is absent.

The anterior nostril on the eyed side opens through a long pigmented tube that is about equal to half the eye diameter. The tube on the anterior nostril of the blind side is much shorter. The posterior nostril is in front of the upper margin of the lower (left) eye and is covered by a flap formed by a raised rim. It is best located by being a non-pigmented area.

The scales are strongly ctenoid; the ctenii are about equally developed on scales from both sides of the fish. The scales extend forward to the snout tip. They are not much imbedded; in fact they are quite deciduous for a *Symphurus*.

S. arawak is a small species (largest specimen about 40 millimeters in standard length) of stocky build (greatest body depth about one third the standard length).

Name.—Arawak, an Indian stock that colonized the Caribbean islands.

Range.—*S. arawak* is known from Curaçao, the Virgin Islands, Puerto Rico, Haiti, and the Cayman Islands. Its known depth range is from 10-60 feet with most from 40-60 feet. The abundance of stations in this depth

range in the Bahamas and Florida suggests that *S. arawak* is absent from these more northern areas.

Material examined.—(Letter designations are for use with Table 2.)

Holotype.—ANSP 101985, a mature female (spec. i), 33.7 mm in standard length, collected at Curaçao, Lagoen in 45 feet by John E. Randall on November 25, 1962.

Paratypes.—USNM 198200 (2, spec. f and h, 29.8-31.1 mm) and UMML 15491 (2, spec. c and j, 27.4-37.2 mm) collected with the holotype. UMML 15492 (2, spec. e and k, 29.1-39.6 mm) Haiti, St. Marc Bay (¼ mi. N of St. Marc) in 10-30 feet, J. E. Randall, H. Randall, T. Chess, J. Durocher, on December 22, 1959 UPR 2313 (1, spec. b, 26.7 mm) Puerto Rico, Mayagüez, El Negro Reef, in 50 feet, J. E. Randall on December 3, 1961. UMML 15490 (2, spec. a and d, 23.3-28.5 mm) Virgin Islands, St. John, 6 mi. SE of Lameshur, in 60 feet, V.I. Sta. 143, February 5, 1960, J. E. Randall. UF 12269 (1, spec. g, 30.2 mm) Grand Cayman Island, Paradise Rocks in 50 feet, G64-34, October 22, 1964, C. R. Gilbert and J. C. Tyler.

Symphurus rhytisma Böhlke

Figure 1b

Symphurus rhytisma Böhlke, 1961: 3-4, fig. 2 (type locality: W of Wood Cay off Grand Bahama Island in 50 feet).

A second specimen of this recently described species was collected at Lagoen, Curaçao, in 45 feet on November 25, 1962, by John E. Randall. The species should occur in suitable habitat throughout the Caribbean region.

Data for this specimen, UMML 14379, standard length 32.7, (measurements are expressed in per cent of standard length) are: head length, 21; tip of snout to insertion of dorsal fin, 10; tip of snout to insertion of anal fin, 9; insertion of anal fin to caudal-fin base, 74; snout length, 4; horizontal diameter of left eye, 4; greatest depth of body, 36; caudal-fin length, 12; dorsal-fin rays, 86; caudal-fin rays, 12; anal-fin rays, 70; lateral scale rows, 89.

In all morphometric features and in color pattern the Curaçao specimen agrees well with the holotype. The barred pattern is better developed but this probably reflects the larger size of the Curaçao fish. The darker posterior portion of the body is less extensive and less well-defined anteriorly, suggesting that this feature may characterize the juveniles only. There is a diffuse dark spot in the posterior end of the dorsal and anal fins. This feature does not show in the published figure of the holotype.

Symphurus ommaspilus Böhlke

Symphurus ommaspilus Böhlke, 1961: 2-3, fig. 1 (type locality: W side of the southern of the two Long Bay Cays, Andros Island, Bahamas, in 4 feet).

A third specimen, UMML 12813, standard length 34.0 mm was collected along the E shore of Oyster Cay in the Exuma Chain, Bahama Islands, CRR-BWI-44, on August 20, 1963 by Feddern, Staiger, Devany, and Pierce.

Data for this specimen (measurements are given as per cent of standard length) are: head length, 22; tip of snout to insertion of dorsal fin, 8; tip of snout to insertion of anal fin, 28; insertion of anal fin to caudal-fin base, 74; snout length, 5; horizontal diameter of left eye, 5; greatest depth, 30; caudal-fin length, 14; dorsal-fin rays, 76; caudal-fin rays, 10; anal-fin rays, 62; lateral scale rows, 60.

TABLE 1
FREQUENCY DISTRIBUTIONS OF FIN-RAY AND LATERAL-SCALE COUNTS
FOR THE TYPE SERIES OF *Symphurus arawak*

Dorsal rays												
69	70	71	72	73	74	75						
1	2	—	3	3*	—	2						
Anal rays						Caudal rays						
56	57	58	59	60	61	11	12	13	14			
1	2	3	2*	2	1	1	8*	1	1			
Lateral-scale rows												
55	56	57	58	59	60	61	62	63	64	65	66	67
3	1	2	3*	—	—	—	—	1	—	—	—	1

(* = Holotype)

TABLE 2
MORPHOMETRIC DATA EXPRESSED IN PERCENTAGE OF STANDARD LENGTH
FOR THE TYPE SERIES OF *Symphurus arawak*^{1, 2}

	a	b	c	d	e	f	g	h	i*	j	k
SL	23.3	26.7	27.4	28.5	29.1	29.8	30.2	31.1	33.7	37.2	39.6
HL	24	23	23	24	23	24	25	24	24	24	22
S-D	12	12	12	10	10	12	13	12	12	12	11
S-A	34	32	31	34	33	35	35	32	33	32	31
A-C	67	70	70	68	70	70	69	73	70	73	74
S	6	6	4	7	5	6	5	6	5	6	7
E	4	4	4	5	—	4	5	5	4	5	4
De	30	28	33	31	36	33	31	29	34	35	36
C	16	17	18	17	16	16	18	16	18	15	18

¹Definitions of abbreviations for measurements are given in text.

²Origin of specimens a-k is given in material-examined section.

(* = Holotype)

DISCUSSION

The new species will be identified with *S. pelicanus* Ginsburg when run

through the key to *Symphurus* (in Ginsburg, 1951: 191) but *arawak* differs in its body color pattern and in having fewer dorsal and anal rays, and fewer scales (there is overlap here). See Ginsburg (1951: tables 2-4) for comparative figures. *S. pelicanus* also differs in its proportions, especially in the length of the anal-fin base (a reflection of the increased number of rays); its preanal-fin distance is 26-30 per cent of the standard length (31-35 in *arawak*) and its postanal-fin distance is 75-78 per cent of the standard length (67-74 in *arawak*). Actually *arawak* looks most like *S. minor* Ginsburg and the fin-ray and scale counts of *minor* are completely encompassed in the range of variation of *arawak*. The one important exception is in numbers of caudal-fin rays, for *minor* has 10 (one specimen in sixteen has 11) in contrast to the 12 (11-14) in *arawak*. This is a relatively stable and reliable character in the genus. Quite possibly *arawak* and *minor* represent one (*arawak*—Caribbean; *minor*—Florida to Nova Scotia) and *parvus* and *pelicanus* (*parvus*—southeastern Florida; *pelicanus*—Texas and Trinidad) a second North-South species pair.

All four species seem to be related closely and their differentiation may have resulted from repeated latitudinal fluctuations in the fish fauna during glacial and interglacial periods (see Walters & Robins, 1961: 14-20).

Symphurus arawak and each of the two species described by Böhlke represent divergent lines within *Symphurus*; however, they share the feature of small size and each lives in clear water on sand bottoms near coral reefs. Such areas are not rich in flatfishes, either in terms of species or of individuals. Unfortunately, few fish collections have been made in open sand stretches because of the impoverished fauna of such areas. Therefore the occurrence of these little flatfishes near reefs and their apparent absence from sand flats may merely result from the much greater collecting effort in the reef habitat. Nevertheless, we believe these areas to be the preferred habitat of the three dwarf soles mentioned here. Small size may be an important factor in exploiting such a habitat where predator pressure is apt to be large; at least one other group (the Ophidiidae) is represented in these areas by small species (Robins & Böhlke, 1959: 1). Study of the biology of these and other dwarf species should be undertaken. Most seem very sensitive to changes in bottom type, water clarity and local current conditions and they may prove to be valued indicators of microhabitats even though such small bottom fishes are not readily observed in life and are not always easily collected.

SUMARIO

Symphurus arawak, UN NUEVO PEZ CINOGLÓSIDO DE LA REGIÓN DEL CARIBE, CON ANOTACIONES SOBRE *Symphurus rhytisma*

Los peces lenguados del Atlántico Occidental están colocados en un sólo y variable género *Symphurus*, que fué competentemente revisado por

Ginsburg (1951). Recientemente, Böhlke (1961) describió dos pequeñas especies procedentes de aguas bajas de las Bahamas. Nosotros ahora describimos una especie enana procedente de áreas periféricas del Mar Caribe y damos nueva información sobre *Symphurus rhytisma* Böhlke que anteriormente era conocido por el único tipo procedente de Wood Cay, frente a la Isla Grand Bahamas. También se da un reporte adicional para las Bahamas de *Symphurus ommaspilus* Böhlke.

LITERATURE CITED

BÖHLKE, JAMES E.

1961. Two new Bahaman soles of the genus *Symphurus* (Family Cynoglossidae). *Notulae Naturae, Philad.*, 344: 1-4, 2 figs.

GINSBURG, ISAAC

1951. Western Atlantic tonguefishes with description of six new species. *Zoologica, N.Y.*, 36 (14): 185-201, 3 pls.

ROBINS, C. RICHARD AND JAMES E. BÖHLKE

1951. Studies on fishes of the family Ophidiidae. IV. Two new dwarf cusk-eels (genus *Ophidion*) from the tropical western Atlantic. *Notulae Naturae, Philad.*, 325: 1-9, 2 figs.

WALTERS, VLADIMIR AND C. RICHARD ROBINS

1961. A new toadfish (Batrachoididae) considered to be a glacial relict in the West Indies. *Amer. Mus. Novit.*, 2047: 1-24, 3 figs.