REVIEW OF THE DEEP-SEA FISH GENUS *SCOPELENGYS* (NEOSCOPELIDAE) WITH A DESCRIPTION OF A NEW SPECIES, *SCOPELENGYS CLARKEI*, FROM THE CENTRAL PACIFIC

JOHN L. BUTLER[1] AND ELBERT H. AHLSTROM[2]

ABSTRACT

Scopelengys has been known previously from a few widely scattered collections. Recent collections by the Scripps Institution of Oceanography in the Pacific, the RV *Walther Herwig* in the Atlantic, and the International Indian Ocean Expedition have made possible a critical study of this genus. No significant differences were found in either morphometric characters or meristic counts between specimens of *S. tristis* Alcock from the eastern North Pacific (lat. 16° to 33°N, long. 117° to 126°W) and those from the eastern South Pacific (lat. 5° to 16°S, long. 77° to 90°W). When Pacific Ocean specimens were compared with those from the Atlantic and Indian oceans, no significant differences were found in morphometric characters, and although differences in average meristic counts were somewhat larger between oceans than among Pacific specimens, such differences exceed one for only one meristic character (gill rakers), and the ranges for all counts from all oceans almost completely overlapped.

Scopelengys clarkei is described from the central North Pacific. It differs from *S. tristis* mainly in pectoral ray count (2.5 average difference), average counts of vertebrae (3.3 average difference), deeper caudal peduncle, narrower maxillary, and in a differently pigmented larva.

In 1890, Alcock described a new genus and species, *Scopelengys tristis*, from a single denuded specimen collected in the Arabian Sea. Although there was no evidence of photophores, Alcock placed his new genus in the family Scopelidae (=Myctophidae) allowing that the "exact position among the Scopelidae cannot be accurately defined at present." Garman (1899) described *S. dispar* from two specimens collected in the Gulf of Panama. Garman distinguished *S. dispar* from *S. tristis* by its lower dorsal- and anal-fin ray counts. *Scopelengys dispar* was considered a junior synonym by Parr (1928), Bolin (1939), and Norman (1939). Until 1963, *Scopelengys* was known only from the Indian and Pacific oceans. Its discovery in the Caribbean Sea by Mead (1963) resulted in the description of a third species, *S. whoi* Mead.

A recent survey of mid-water fishes conducted by the California Cooperative Oceanic Fisheries Investigations (CalCOFI) provided us with specimens which indicated that two species of *Scopelengys* were present in the Pacific Ocean. Additional specimens made available to us by Thomas A. Clarke of the Hawaiian Institute of Marine Biology (see in this regard Clarke 1973), confirmed that the second form was an undescribed species. Study of *Scopelengys* from the Atlantic, Pacific, and Indian oceans indicates that *S. dispar* and *S. whoi* Mead are synonyms of *S. tristis* Alcock.

METHODS AND MATERIALS

Measurements were made following Hubbs and Lagler (1958). Measurements are given in percent of standard length (SL), unless indicated otherwise. Only lath-shaped gill rakers on the first gill arch are included in gill raker counts. Vertebral counts were determined from radiographs; the urostyle was included as one vertebra.

Morphometric and meristic data were obtained from 211 specimens from the Atlantic, Pacific, and Indian oceans. Subsamples equal to the smallest N (32 in the Atlantic) were randomly taken from the Indian Ocean, the eastern North Pacific between lat. 16° and 33°N and long. 117° to 126°W, and the eastern tropical Pacific between lat. 5° and 16°S and long. 77° to 90°W. Morphometric data were compared by analysis of covariance. Meristic data were compared by Tukey's multiple comparison procedure at the 5% level (Rothschild 1963).

Material was examined from the following collections: Scripps Institution of Oceanography

[1]Smithsonian Institution, Southwest Fisheries Center, National Marine Fisheries Service, NOAA, La Jolla, CA 92038.
[2]Southwest Fisheries Center, National Marine Fisheries Service, NOAA, La Jolla, CA 92038.

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(SIO); University of Southern California (USC); Institut für Seefischerei, Hamburg (ISH); Museum of Comparative Zoology (MCZ); U.S. National Museum (USNM); International Indian Ocean Expedition (IIOE); and Field Museum of Natural History (FMNH).

GENUS *SCOPELENGYS* ALCOCK 1890

Type-species *Scopelengys tristis* Alcock, by monotypy.

Description.—Head and body laterally compressed, eyes small, mouth large. Premaxillary, dentary, and palatines with bands of villiform teeth. Teeth absent at symphysis of upper and lower jaw. Vomer indented at head with teeth in two patches. Teeth on basihyal and on gill rakers. Anterior gill rakers reduced to toothed knobs. Maxillary extending past eye, expanded posteriorly. Supramaxillary present. Head and body covered with large deciduous, cycloid scales. Pectoral fins lateral, extending beyond bases of pelvic fins. Pelvic fins abdominal. Origin of dorsal fin about over base of pelvic fin. Anal fin completely behind dorsal. Base of adipose fin over posterior half of anal fin. No photophores. No swim bladder in adults.

D 11-13; A 12-14; P 12-17; V 8; Br 8; C principal 19 (1 + 17 + 1); procurrent C 6-9 dorsal and 7-8 ventral, hypurals (including parhypural) 4 + 3; epurals 3; uroneurals 2. Urostyle with two centra. As in all myctophiform fishes retaining two ural centra (personal observation reenforced by Rosen and Patterson 1969), the anterior ural centrum (labelled $PU_1 + U_1$ in Rosen and Patterson) supports both the parhypural and the 2 inferior hypurals, whereas the posterior ural centrum (U_2 in Rosen and Patterson) is associated exclusively with the 4 superior hypurals.

Scopelengys tristis Alcock

Scopelengys tristis Alcock 1890:302.
Scopelengys dispar Garman 1899:254, plate 54, fig. 2-2d.
Scopelengys lugubris Garman 1899:400, (synonym *Scopelengys dispar).*
Scopelengys whoi Mead 1963:255, fig. 1.

Description of Adult

Body moderately slender, maximum body depth at nape, tapering to a narrow caudal peduncle (Figures 1A, 2A); body depth at dorsal origin 11.7-19.8 (15.4); least depth at caudal peduncle 5.6-8.3 (6.8). Dorsal profile of head slightly concave; head length 24.4-33.9 (29.4); head depth 16.7-25.5 (20.2); eye small, orbit 3.1-4.2 (3.5); snout 7.5-10.1 (8.8). Width of maxillary as percentage of its length 29.9-36.7 (32.2). Snout to: dorsal fin origin 36.1-47.0 (41.9); anal fin origin 56.4-72.6 (66.4); ventral fin origin 34.7-48.0 (41.8).

Meristic Data.—D.11-13 (11.5); A 12-14 (13.0); P 14-17 (15.4); vertebrae 29-32 (30.8); total gill rakers 7-11 (8.5).

Larvae

Twenty-five specimens 3.5-10.3 mm were available from the eastern Pacific. Measurements and counts were given for two eastern Pacific (EASTROPAC) specimens (6.2 and 6.4 mm SL) by Okiyama (1974) and the smaller specimen illustrated. The larvae have a small round eye without choroid tissue, a snout as long proportionately as in adults, a gut terminating just forward of the anal fin, and a gas bladder, best seen on late preflection and flexion specimens, becoming obscured by overlying musculature in larger postflexion specimens.

Rays form early in the pectoral fins; a 3.5-mm specimen has large pectorals extending posteriad to the anus; caudal fin forms and notochord flexion occurs between ca. 5 and 7 mm; dorsal and anal fins form during flexion; pelvic buds appear between 6.5 and 7.0 mm; fin formation, including procurrent caudal rays, complete by about 10.0 mm. Pigmentation is scanty; pigment develops on dorsal margin of peritoneal cavity, spreading laterally on preflexion and flexion stage specimens but becoming obscured on postflexion larvae; preflexion larvae have a series of 6 or 7 small, inconspicuous spots along the ventral margin of the tail which are later obscured by the anal fin formation and lacking on late postflexion larvae; head pigment, best developed on postflexion specimens, consists of a striking horizontal bar extending from snout to eye and continuing behind the eye onto the operculum (Figure 3A).

Distribution

Records are from the tropical Atlantic, Pacific, and Indian oceans (Figure 4). The range is expanded poleward in the eastern part of the Pacific

FIGURE 1.—A: *Scopelengys tristis*, 126 mm, *Velero IV*, cruise 1238, stn. 18762/10. B: *S. clarkei*, 176 mm. SIO 73-160, holotype.

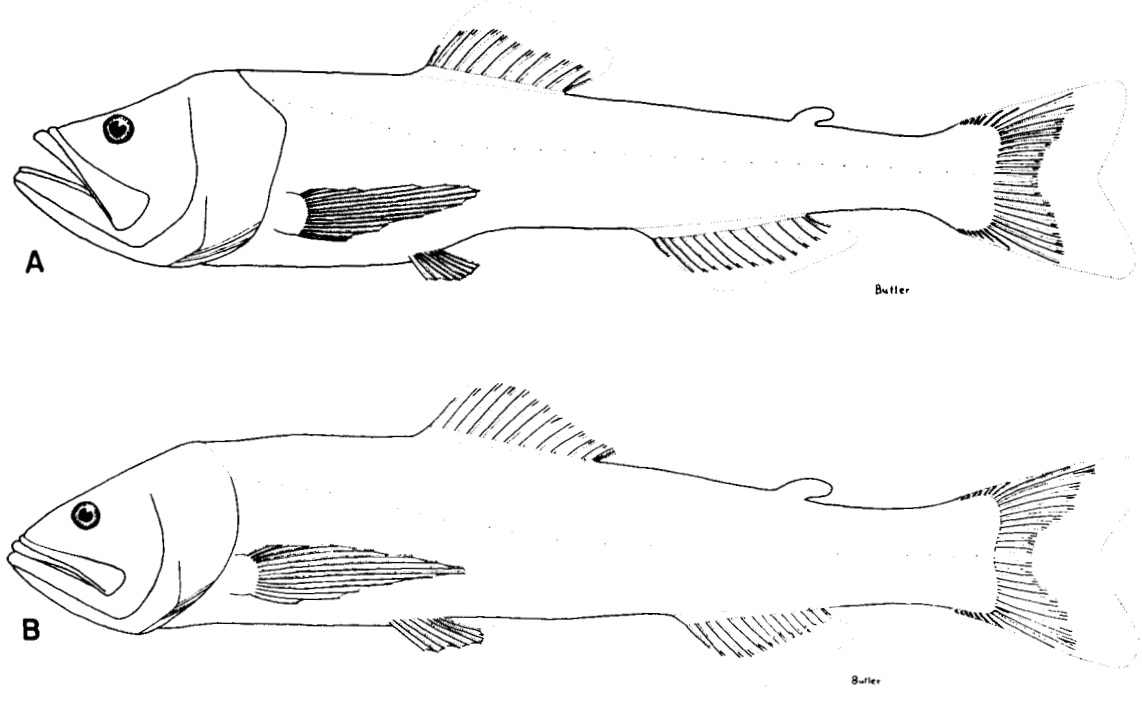

FIGURE 2.—A: *Scopelengys tristis*, 126 mm, *Velero IV*, cruise 1238, stn. 18762/10. B: *S. clarkei*, 176 mm. SIO 73-160, holotype.

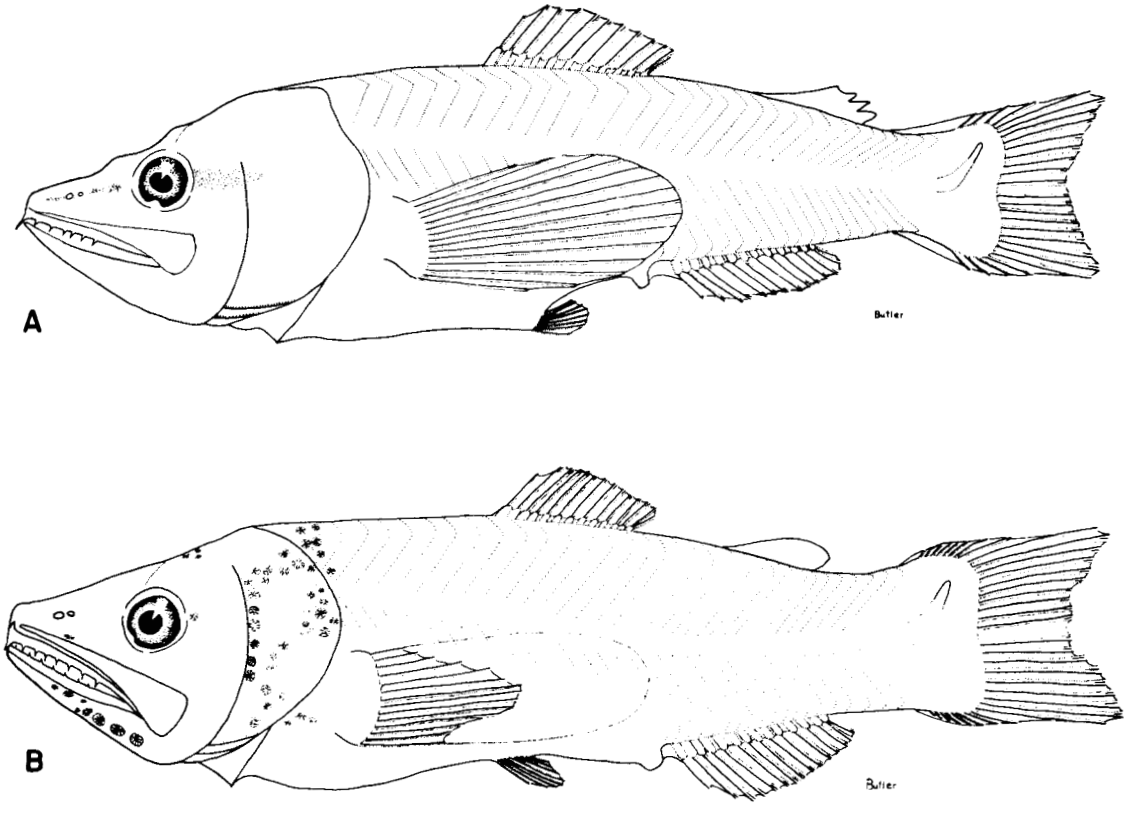

FIGURE 3.—A: *Scopelengys tristis*, 13.9 mm, from the western Indian Ocean. B: *S. clarkei*, 15.4 mm, from off Hawaii.

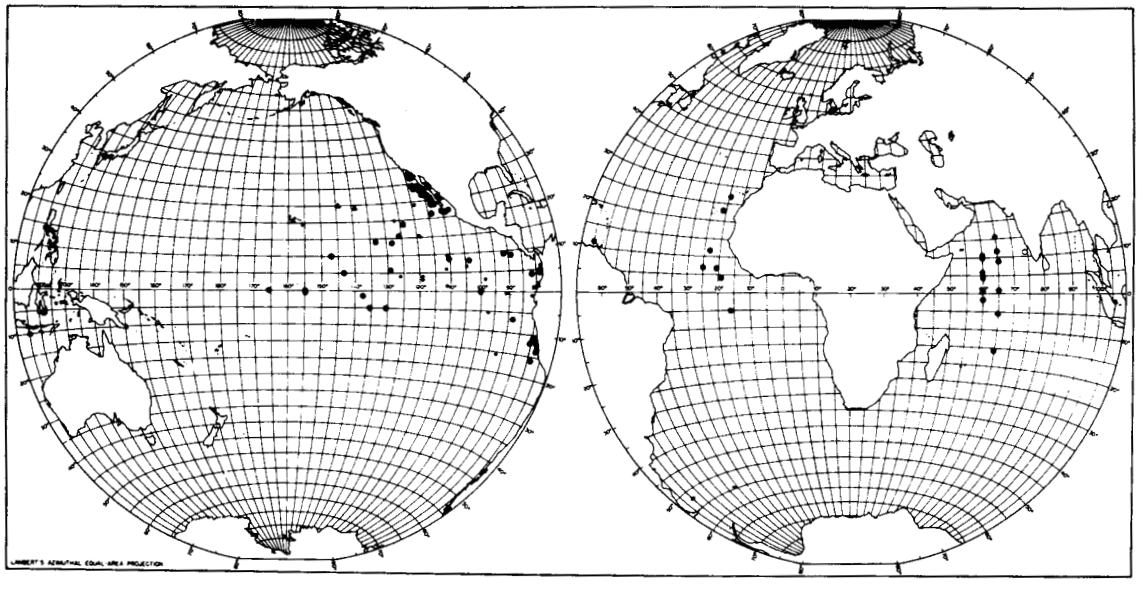

FIGURE 4.—Distribution of *Scopelengys tristis* (circles) and *S. clarkei* (triangles). Small symbols indicate larvae.

and Atlantic oceans and is narrowed along the equator to the west. In the western part of the Pacific and Atlantic, the species appears to be rare. Records of larvae from the Indian Ocean were presented by Nellen (1973).

Geographic Variation

Most of the specimens studied from each area were in poor condition, which added to the variability of body proportions (Table 1). No significant difference was found in any morphometric character between regions. Meristic characters of 32 specimens each from four areas are presented in Table 2. Samples from the two eastern Pacific areas showed no significant differences between means of any meristic character. Indian Ocean specimens differed from Pacific material in mean vertebral counts (30.4 vs. 30.9), pectoral-fin ray counts (15.2 vs. 15.7), and in gill raker counts (9.1 vs. 7.9). Atlantic material differed from Pacific material in dorsal-fin ray counts (12.0 vs. 11.4), in anal-fin ray counts (13.4 vs. 12.8), in gill raker counts (9.2 vs. 7.9), and in pectoral-fin ray counts (15.0 vs. 15.7). Atlantic material differed from Indian Ocean material in dorsal-fin ray counts (12.0 vs. 11.1), anal-fin ray counts (13.4 vs. 12.9), and vertebral counts (31.1 vs. 30.4). Although these differences are small, they are as marked between Indian and Atlantic ocean specimens as be-

TABLE 1.—Comparison of morphometric characters of *Scopelengys tristis* from four geographic areas (N = 32 for each area).

Character	Eastern North Pacific		Eastern tropical Pacific		Indian Ocean		Atlantic Ocean	
	Mean	Range	Mean	Range	Mean	Range	Mean	Range
Standard length (mm)	124.0	73.8-154.3	130.2	74.5-172.0	104.6	28.8-185.9	133.1	69.5-185.8
Head length	30.9	28.7- 33.9	28.5	28.2- 33.2	30.5	27.8- 33.5	27.6	24.4- 32.2
Head depth	20.2	18.6- 25.5	20.0	16.7- 22.5	20.9	17.2- 24.6	19.6	17.5- 21.7
Snout to origin of dorsal fin	42.7	39.6- 45.5	42.5	39.5- 46.2	41.9	36.1- 47.0	40.6	37.1- 43.6
Snout to origin of pelvic fin	41.7	39.4- 45.3	42.8	39.4- 48.0	41.2	34.7- 46.1	41.6	37.8- 46.9
Snout to origin of anal fin	66.3	63.0- 69.5	67.5	62.5- 72.1	65.2	56.4- 71.2	66.6	61.3- 72.6
Least depth of caudal peduncle	6.8	5.7- 8.1	7.0	6.1- 7.9	6.7	5.6- 8.3	6.9	5.9- 8.0
Body depth at origin of dorsal fin	16.0	13.3- 19.4	15.6	12.6- 19.3	14.5	11.7- 17.2	15.7	12.6- 19.8

TABLE 2.—Meristic data for *Scopelengys tristis* from the eastern North Pacific, eastern tropical Pacific, the Indian Ocean, and the Atlantic Ocean.

Meristic character Area	Numbers of character and frequency							N	Mean	Overall mean
Dorsal rays	10	11	12	13						
Eastern North Pacific		18	14					32	11.44	
Eastern tropical Pacific		21	11					32	11.34	
Indian Ocean		28	4					32	11.12	
Atlantic Ocean		2	29	1				32	11.97	11.47
Anal rays	11	12	13	14						
Eastern North Pacific		10	20	2				32	12.75	
Eastern tropical Pacific		8	22	2				32	12.81	
Indian Ocean		5	24	3				32	12.94	
Atlantic Ocean			19	13				32	13.41	12.98
Pectoral rays	14	15	16	17						
Eastern North Pacific		33	24	7				64	15.59	
Eastern tropical Pacific		20	32	12				64	15.88	
Indian Ocean	2	48	14					64	15.19	
Atlantic Ocean		62	2					64	15.03	15.42
Vertebrae	29	30	31	32						
Eastern North Pacific		5	28					32	30.88	
Eastern tropical Pacific		3	25	4				32	31.03	
Indian Ocean	1	20	9	2				32	30.38	
Atlantic Ocean	1	3	21	7				32	31.06	30.84
Gill rakers	7	8	9	10	11					
Eastern North Pacific	10	52	1					63	7.86	
Eastern tropical Pacific	17	39	4	3				63	7.89	
Indian Ocean	1	4	49	7	2			63	9.08	
Atlantic Ocean		2	47	12	2			63	9.22	8.51

tween specimens from these areas and from the Pacific. Because there is no clinal pattern in the variation and because of extensive overlap in all counts, no taxonomic importance was placed on the small meristic differences.

Garman distinguished *S. dispar* from *S. tristis* by the lower dorsal and anal-fin ray counts: D 11 vs. 12 and A 12-11 vs. 13 (Garman 1899). The types of *S. dispar* are in poor condition but the anal fins appear to have 12 or 13 rays (Robert Schoknecht pers. commun.). The counts of *S. dispar* are within the range of *S. tristis*. *Scopelengys dispar* has been correctly considered a junior synonym by Parr (1928), Bolin (1939), and Norman (1939). *Scopelengys lugubris* Garman 1899:400, the specific name regarded as a *lapsus calami* by Bolin (1939), is a synonym of *S. dispar*, hence of *S. tristis*. *Scopelengys whoi* was described from the Carribbean Sea (Mead 1963). The diagnosis was based on a shorter head, higher number of anal fin rays (14 vs. 12-13), and the insertion of the pelvic fin in advance of the origin of the dorsal. According to Mead (1963), however, the head length is ". . .a poor measurement because of the condition of the opercular flap." The anal-fin ray count is within the range of *S. tristis* (Table 3). The insertion of the pelvic fin is a variable character in *S. tristis*. In most specimens the fin is inserted below the origin of the dorsal fin but insertion in advance of the dorsal is not uncommon. Based on this study, we conclude that *S. whoi* is a junior synonym of *S. tristis*.

Study Material

PACIFIC OCEAN ADULTS.—SIO 51-186 1 (134); SIO 64-21 6(78-148); SIO 65-243 2(122-134); SIO 64-997 1(122); SIO 65-244 1(75); SIO 55-229 9(31-113); SIO 65-206 1(92); SIO 60-212 4(20-133); SIO 52-309 2(36-56); SIO 73-170 1(49); SIO 73-171 1(30); SIO 55-265 1(54); SIO 65-620 1(139); SIO 65-606 4(92-151); SIO 65-220 5(14-138); SIO 65-611 17(85-176); SIO 51-84 3(74-123); SIO 69-497 6(92-170); SIO 72-186 8(73-179); SIO 65-215 1(121); SIO 54-124 1(147); SIO 52-367 1(145); SIO 60-232 1(168); SIO 65-213 3(88-158); SIO 60-219 2(42-170); SIO 55-246 4(65-140); SIO 68-579 1(140); SIO 53-235 1(154); SIO 51-146 3(127-144); SIO 65-603 17(62-160); SIO 55-244 2(159-167); SIO 72-195 17(88-175); SIO 65-608 14(43-200); SIO 72-193 2(106-169); SIO 72-192 18(10.2-177); SIO 60-216 2(42-76); SIO 60-218 1(48); SIO 66-355 1(135); SIO 69-19 1(24); SIO 72-182 1(90); SIO 66-407 1(42); SIO 64-24 1(116); SIO 60-234 1(69); SIO 64-13 1(113); SIO 52-409 1(65); SIO 59-202 1(83); SIO 52-90 1(113); SIO 64-15 1(85); SIO 63-444 1(103); SIO 60-243 4(18-44); SIO 68-534 1(28); SIO 65-443 1(142); SIO 68-104 1(97); SIO 60-209 1(78); SIO 52-363 2(56-115); SIO 64-28 3(95-144); SIO 57-43 1(126); SIO 65-237 1(128); SIO 61-32 2(105-106); SIO 63-42 1(109); SIO 66-30 1(113); SIO 51-45 1(132); SIO 60-215 7(19-94); SIO 52-32 1(150); SIO 50-270 2(110-115); SIO 51-77 1(110); SIO 51-189 1(120); SIO 54-82 1(107); SIO 54-102 2(116-147); USC *Velero IV*, cruise 1238, stn. 18762/10; MCZ 41695 2(121-141); USNM 135842 1 (X-ray); MCZ 28058 1 (X-ray) (lectotype *S. dispar* Garman).

PACIFIC OCEAN LARVAE[3].—Larvae taken at 17 EASTROPAC stations and 2 CalCOFI stations as follows: EASTROPAC stations 11.282 1(4.8); 13.105 1(5.5); 13.172 2(6.4, 6.8); 20.018 1(5.5); 30.114 2(4.0, 4.5); 45.032 1(8.1); 45.073 1(6.0); 45.078 1(10.3); 45.293 1(6.6); 45.316 1(6.9); 46.034 1(6.2); 46.096 2(6.7, 6.9); 47.001 1(5.2); 47.005 4(3.5-4.3); 47.035 1(7.0); 47.040 1(5.3); 47.065 1(9.2); CalCOFI 7205-20.127 1(5.0); 4907-112 1(9.1).

ATLANTIC OCEAN.—MCZ 41638 1(X-ray)

[3]Station data in EASTROPAC Information Paper 6 and Ahlstrom (1972).

TABLE 3.—Means and differences among means of meristic counts of *Scopelengys tristis* from four areas (eastern North Pacific, ENP; eastern tropical Pacific, ETP; Indian Ocean, IO; and Atlantic Ocean, AO) and *S. clarkei*.

Meristic character	*S. tristis* Range	Overall mean	Mean ENP	Mean ETP	Mean IO	Mean AO	Greatest differences among regions	*S. clarkei* Range	*S. clarkei* Mean	Difference in counts between *S. clarkei* and *S. tristis*: Average difference	Least difference
Dorsal rays	11-13	11.47	11.4	11.3	11.1	12.0	0.9	13	13.0	1.5	1.0-AO
Anal rays	12-14	12.98	12.8	12.8	12.9	13.4	0.6	14	14.0	1.0	0.6-AO
Pectoral rays	14-17	15.42	15.6	15.9	15.2	15.0	0.9	12-13	12.9	2.5	2.1-AO
Vertebrae	29-32	30.84	30.9	31.0	30.4	31.1	0.7	34-35	34.1	3.3	3.0-AO
Gill raker	7-11	8.51	7.9	7.9	9.1	9.2	1.3	7-10	8.2	0.3	0.3-EP

(type *S. whoi* Mead); USNM 20678, 5(152-164), eastern tropical Atlantic, lat. 07°32'N, long. 20°54'W, 1813-2125, 12 April 1971, 1,300 m, 1,600-mesh Engels trawl, RV *Walther Herwig;* ISH 623/68, 7(73-162), eastern tropical Atlantic, lat. 12°07'N, long. 23°08'W, 30 January 1968, 2,000 m, 1,600-mesh Engels trawl, RV *Walther Herwig;* ISH 2095/71, 1(167), eastern tropical Atlantic, lat. 05°30'S, long. 16°28'W, 9 April 1971, 1,950 m, 1,600-mesh Engels trawl, RV *Walther Herwig;* ISH 2447/71, 12(86-160), eastern tropical Atlantic, lat. 04°38'N, long. 19°21'W, 13 April 1971, 756 m, 1,600-mesh Engels trawl, RV *Walther Herwig;* ISH 3099/71, 5(132-160), eastern tropical Atlantic, lat. 07°32'N, long. 20°54'W, 14 April 1971, 1,300 m, 1,600-mesh Engels trawl, RV *Walther Herwig;* ISH 2942/71, 2(134-155), eastern tropical Atlantic, lat. 23°47'N, long. 20°59'W, 19 April 1971, 2,100 m, 1,600-mesh Engels trawl, RV *Walther Herwig.*

INDIAN OCEAN[4].—IIOE 7001 *Anton Bruun* III, 16 (25-94); IIOE 7004 *Anton Bruun* III, 7 (32-120); IIOE 7012 *Anton Bruun* III, 2 (23-25); IIOE 7022 *Anton Bruun* III, 1 (113); IIOE 7027 *Anton Bruun* III, 1 (138); IIOE 7037 *Anton Bruun* III, 2 (40-87); IIOE 7046 *Anton Bruun* III, 3 (66-179); IIOE 7143 *Anton Bruun* VI, 1 (131); IIOE 7147 *Anton Bruun* VI, 28 (28-142); IIOE 7153 *Anton Bruun* VI, 4 (42-161); IIOE 7154 *Anton Bruun* VI, 12 (48-114); IIOE 7163 *Anton Bruun* VI, 12 (28-152); IIOE 7165 *Anton Bruun* VI, 3 (22-27); IIOE 7206 *Anton Bruun* VI, 1 (27); IIOE 7277 *Anton Bruun* VI, 2 (40-87).

Scopelengys clarkei n.sp.

Holotype

SIO 73-160, female (176 mm), central Pacific, lat. 29°56.0'N, long. 144°56.6'W, 0224-0556 h; 14 February 1973, 10-foot IKMT, 0-1,000 m, RV *Alexander Agassiz.*

Paratypes

USNM 210707, male (160 mm), central Pacific, lat. 21°20-30'N, long. 158°20-30'W, 1204-1637 h; 15 September 1970, 10-foot IKMT, 0-1,000 m, RV *El Pescadero I*; USNM 210706, male (156 mm), central Pacific, lat. 24°N, long. 139°W, 0049-0149 h; 29 November 1972, 50-foot Universal trawl, 0-494 m, RV *David Starr Jordan;* FMNH 76366, female (154 mm), central Pacific, lat. 22°N, long. 158°W, 1240-1645 h; 13 November 1969, 10-foot IKMT, 0-800 m.

Other Materials Studied

SIO 51-76, female (109 mm), southeast of Guadalupe Island, 17 March 1951, 10-foot IKMT, 0-549 m; FMNH 76367, juvenile (65 mm), central Pacific, lat. 21°20-30'N, long. 158°20-30'W, 0421-0600 h; 27 February 1971, ⅔ Cobb trawl, 0-150 m, RV *Townsend Cromwell;* FMNH 76368, juvenile (42 mm), central Pacific, lat. 21°20-30'N, long. 158°20-30'W, 2236-0105 h; 16-17 November 1969, 10-foot IKMT, 0-250 m, RV *Teritu*; T. Clarke, 71-3-9, larva (15 mm), central Pacific, lat. 21°20-30'N, long. 158°20-30'W, 1252-1645 h; 2 March 1971, 10-foot IKMT, 800-900 m, RV *El Pescadero I,* retained at the Southwest Fisheries Center.

Adult Morphology

Body proportions of the holotype are given first, followed, in parentheses, by range of values for holotype and three paratypes. Body slender; greatest body depth at origin of dorsal fin, 19.0 (18.4-19.0), tapering to a moderately deep caudal peduncle (Figures 1B, 2B), less than three in length of head, 9.4 (9.4-10.2). Head slightly concave in dorsal profile, head length 25.4 (24.5-26.4); head depth 17.6 (16.7-17.9); eye small, orbit 3.0 (2.9-3.6); interorbital width 8.7 (7.6-8.7); snout about one-third of head length, 8.3 (7.7-8.8); length of maxillary 11.3 (11.3-12.6), greatest width of maxillary 3.1 (2.8-3.6). Snout to: dorsal fin origin 43.5 (39.0-43.5); anal fin origin 68.6 (65.1-69.6); pelvic fin origin 40.2 (40.2-43.4). Length of dorsal fin base 17.3 (17.0-19.4); length of anal fin base 16.0 (16.0-17.9). Color dark brown, preserved in alcohol.

Meristic Data

Counts are based on all seven specimens. D 13 (7); A 14 (6), ? (1); P 13/13 (6), 13/12 (1); V 8/8 (7); principal C 10 + 9 (7), procurrent C 7-8/6-9; branchiostegal rays 8/8 (7); vertebrae 15 + 19 = 34 (6), 15 + 20 = 35 (1); gill rakers 1-2 + (6-8) = 7-10 (mean 8.2).

[4]Station data in Nafpaktitis and Nafpaktitis (1969).

Larvae

A single specimen was available, 15.4 mm SL (Figure 3B). Body shape similar to that of adults but with a relatively larger head—length 35.7 and depth 25.0; eye 5.5; snout 12.8; body depth 23.5; least depth of caudal peduncle, 14.6. Fin origins farther back on body than in adults. Snout to: dorsal fin origin 50.0; anal fin origin 72.8; pelvic base 53.6. Pigment confined to head and nape, extensively developed on the operculum and lower jaw; a small pigment patch on upper jaw behind eye; several melanophores on mid-brain; body pigment confined to nape and to a patch anterior to pectoral base.

Name

This species from the central North Pacific is named in honor of Dr. Thomas A. Clarke of the Hawaii Institute of Marine Biology.

COMPARISON OF *SCOPELENGYS CLARKEI* AND *SCOPELENGYS TRISTIS*

Scopelengys clarkei differs from *S. tristis* in meristic counts, in some morphometric characters, and in larval pigmentation.

For differences in meristic characters, refer to Table 3. Most marked differences are in average number of vertebrae—34.1 (*S. clarkei*) vs. 30.8 =3.3; average pectoral-fin ray count—12.9 (*S. clarkei*) vs. 15.4 =2.5; and average dorsal-fin ray count—13.0 vs. 11.5 =1.5. As regards morphometric characters, *S. clarkei* has a deeper caudal peduncle, a narrower maxillary, and a more fusiform body. Several distinctive adult characters also can be recognized in larger larvae of the two species, i.e., differences in meristic characters and depth of caudal peduncle. The most striking differences between larvae of the two species are found in the head pigment which is restricted to an eye-bar in *S. tristis,* as compared with the scattered pigment on the operculum, lower jaw, etc. of *S. clarkei.*

The two species are similar in general body shape, head size, eye size, length of snout, and position of fins on the body. *Scopelengys clarkei* has its greatest body depth at the dorsal origin, whereas *S. tristis* has its greatest body depth at the nape.

When an analysis of covariance was performed on the morphometric characters of 7 *S. clarkei* and 32 *S. tristis* from the eastern North Pacific, eastern tropical Pacific, Indian, and Atlantic oceans, only the least depth of caudal peduncle

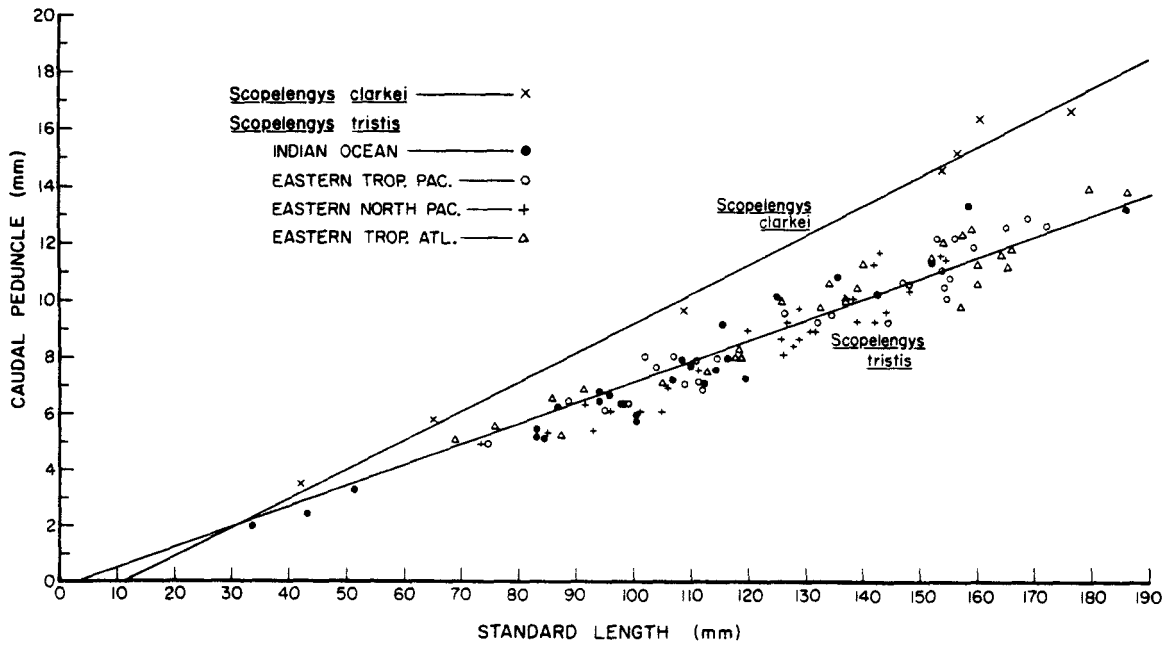

FIGURE 5.—Regression of least depth of caudal peduncle on standard length of *Scopelengys tristis* and *S. clarkei.*

showed a significant difference at the 1% level, $F = 3.72$, between the two species.

The Atlantic specimens of *S. tristis* had counts for four characters that were closer to those of *S. clarkei* than were counts of these characters from other geographic areas. These differences in counts between Atlantic *S. tristis* and *S. clarkei* were as follows: dorsal fin rays 1.0 (12.0 vs. 13.0), anal fin rays 0.6 (13.4 vs. 14.0), pectoral fin rays 2.1 (15.0 vs. 12.9), and vertebrae 3.1 (31.1 vs. 34.2). Differences of two in pectoral-fin ray counts and three for vertebrae are much greater than the regional variability found among specimens of *S. tristis*.

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