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FILEFISHES (MONACANTHIDAE) OF THE WESTERN NORTH ATLANTIC

BY FREDERICK H. BERRY AND LOUIS E. VOGELE

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ABSTRACT

Filefishes of the western North Atlantic, important forage fish because of their abundance, have been inadequately described and are difficult to identify to species. In determining the species that occur in the western North Atlantic, several thousands of young and adult specimens were examined, and four genera and nine species were found to be valid and separable by external characters: *Alutera monoceros, A. scripta, A. schoepfii, A. heudelotii, Monacanthus ciliatus, M. tuckeri, Stephanolepis hispidus, S. setifer,* and *Amanses pullus.*

Considerable intraspecific variation in profile was found, resulting in the synonymizing of several species, among them *Alutera punctata* and *Stephanolepis spilonotus.*

Evidence is presented for the use of Monacanthidae as the family name, rather than Aluteridae.

Keys to juvenile and adult specimens are presented, and proportional measurements and fin-ray counts are given in tabular form. Graphs, charts, photographs, and drawings supplement the data to facilitate identification.

Information on ranges and behavior is also presented.

FILEFISHES (MONACANTHIDAE) OF THE WESTERN NORTH ATLANTIC

By FREDERICK H. BERRY and LOUIS E. VOEGLE, *Fishery Research Biologists*

BUREAU OF COMMERCIAL FISHERIES

Filefishes of the family Monacanthidae that occur in the western North Atlantic Ocean have been studied as a part of the biological research program of the United States Bureau of Commercial Fisheries Biological Laboratory at Brunswick, Georgia. This program is concerned with an evaluation of the fauna off the southeastern Atlantic coast of the United States. However, the study of the filefishes, because of their wide distribution, was not limited to this area. Several of the species concerned may occur north to Newfoundland and south to Brazil, and two of them probably have a worldwide distribution.

Examination of collections made in recent years —during cruises of the M/V *Theodore N. Gill*, *Oregon*, *Combat*, and *Silver Bay* off the south Atlantic coast of the United States—by dip net, plankton tows, meter larvae net, and from stomach contents of larger fish taken by trolling, has indicated that the filefishes are a numerically abundant group and comprise an important part of the planktonic and forage-fish fauna. Recent catches at trawling stations in this area have furnished additional specimens for taxonomic, morphological, and environmental evaluation. Many of these specimens are in the collection of the Brunswick Biological Laboratory, but several museum and university collections of filefishes were examined to augment this material.

Nine species of filefishes from the western North Atlantic were identified—primarily from specimens taken off the United States. These species are *Alutera monoceros* (Linnaeus), *Alutera scripta* (Osbeck), *Alutera schoepfii* (Walbaum), *Alutera heudelotii* Hollard, *Monacanthus tuckeri* Bean, *Monacanthus ciliatus* (Mitchill), *Stephanolepis hispidus* (Linnaeus), *Stephanolepis setifer* (Bennett), and *Amanses pullus* (Ranzani).

It is our purpose to give reasons for use of these names, to briefly diagnose and distinguish the genera and species, to furnish illustrations of the species, and to list the specimens examined that they shall be readily available for more detailed future studies.

In accomplishing these objectives we have determined several aspects of the life histories of these fishes, added to the knowledge of their distribution, discovered and confirmed certain anatomical features, described morphological and meristic variation, and through our own studies and from published accounts we have summarized their taxonomic relationships. We have been dogmatic in our taxonomic pronouncements concerning the several taxonomic problems that remain in order to stabilize the nomenclature until adequate numbers of specimens from the entire geographical ranges of these groups can be studied. We have explained the problems involved.

Previously, the two most useful references for identifying specimens of Monacanthidae from the western North Atlantic were publications by Fraser-Brunner (1940, 1941).

We have found that the early life-history stages of the Atlantic coast species occur pelagically in offshore waters, and believe these waters probably are the principal habitat for those stages. The late juvenile and adult stages tend to adopt inshore or benthic–offshore habitats. Preliminary inspection of the extensive plankton collections made off the coasts of North and South Carolina, Georgia, and east Florida by the *Gill* in 1953–54 (see Anderson, Gehringer, and Cohen, 1956) has indicated that larval filefish are relatively abundant in waters of the Gulf Stream in this area. Samples taken by dip net on the *Gill* and other vessels have indicated the abundance of juvenile specimens in offshore waters, particularly in association with floating seaweed. Although juveniles are taken in inshore waters and are seined on the beaches, the specimens from offshore waters appear to be more abundant and of a smaller average size. Available data

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on larger juveniles and adults show that they were usually taken from or near the bottom in shallow waters out to depths of about 25 fathoms. We have heard reports of large specimens of *Alutera* floating at the surface far out at sea, and we have also been told that these and large specimens of other filefish genera have been seen by skin divers on or near the bottom. All of the large specimens on which we have adequate collection data were taken by bottom-collection methods.

We are indebted to the following persons for making specimens available that were instrumental in this study: James E. Böhlke, Academy of Natural Sciences of Philadelphia; Eugenie Clark, Cape Haze Marine Laboratory; Earl E. Deubler, Jr., University of North Carolina; W. I. Follett, California Academy of Sciences; John D. Kilby, University of Florida; George S. Myers, Stanford University; Leonard P. Schultz, U.S. National Museum; Victor G. Springer, Florida State Board of Conservation; and Royal D. Suttkus, Tulane University. We are grateful for the assistance of the entire staff of the U.S. Bureau of Commercial Fisheries Biological Laboratory at Brunswick.

METHODS

Body measurements greater than about 6 millimeters were taken with dial calipers or with dividers and a metric scale; smaller measurements were taken with a microscope and calibrated micrometer eyepiece. Measurements of less than 100 mm. were generally recorded to the nearest 0.1 mm.; larger measurements, to the nearest millimeter.

Counts of rays of the soft dorsal, anal, and pectoral fins were made with a microscope and transmitted light on all specimens of less than about 250 mm. standard length. Each discernible ray was counted, including the small or rudimentary ray that occasionally is present at the posterior end of the fins. Only the pectoral and caudal fins have branched rays. All species examined have two dorsal spines and one pectoral spine; the second dorsal spine and the pectoral spine become minute or vestigial with growth of the fish. The pectoral spine was not included in the count of that fin. By definition, a ray in a fin may be of two types: a spine (which usually has a pointed tip, is never segmented, and is never branched) and a soft ray (which usually has a blunt or fimbriated tip, is segmented, and may or may not be branched).

Obvious deformities were neither counted nor measured.

The following measurements are illustrated in figures 1 and 2.

Standard length (*S.L.*).—Distance from tip of snout (upper lip) to middle of caudal-fin base. The caudal-fin base is distinguished externally as the curved ridge formed by the proximal ends of the caudal-fin rays. This ridge is not to be confused with the line formed by the extension of body skin and scales onto the bases of the caudal rays. Percent of standard length is recorded as "% S.L."

Body depth.—Distance between origins of second dorsal fin and anal fin.

Head length.—Distance from tip of snout (upper lip) to upper end of gill slit.

Snout length.—Distance from tip of snout (upper lip) to anterior margin of orbit.

Eye diameter (*orbit diameter*).—Horizontal diameter of orbit.

Eye to dorsal spine.—Straight-line distance from top of orbit to front center of base of first dorsal spine.

Dorsal-spine length.—Distance from front center of base of dorsal spine to its tip.

Caudal-fin length.—Distance from middle of caudal base to tip of longest caudal ray.

Peduncle depth.—Least depth of caudal peduncle, a vertical measurement from posterior end of anal-fin base.

Peduncle length.—Shortest distance, from posterior end of anal-fin base to caudal-fin base along ventral surface of peduncle.

IDENTIFICATION

Our dichotomous keys to filefishes of the western North Atlantic have been constructed to allow for intraspecific and interspecific variation, and for ontogenetic changes in form and morphometrics. When our series of specimens was small or incomplete in size range, we attempted to anticipate variation and ontogenetic changes, particularly by not using or qualifying the use of characters that we suspect might not be valid at specimen sizes we did not have.

KEY TO GENERA OF MONACANTHIDAE FROM THE WESTERN NORTH ATLANTIC

A. Pelvic bone without an external spine or with only a very small rudimentary barbed spine present in three species (fig. 5). Gill slit usually very oblique (at an angle of about 45° from longitudinal body axis on specimens larger than 40 mm. S.L.) (fig. 4). First dorsal spine located over middle or back of eye (fig. 4). Anal-fin rays, 35 to 52 (fig. 3) ---------- *Alutera.*

AA. Pelvic bone with a prominent external spine (fig. 5). Gill slit nearly vertical or only slightly oblique (fig. 4) ---- B.

B. A deep groove behind the dorsal spines (fig. 27B). Pelvic spine not movable (fusion may be broken on damaged specimens) (fig. 5). First dorsal spine inserted over anterior part of eye (on specimens 30 mm. S.L. and larger) (fig. 4). Anal-fin rays, 29 to 32 (fig. 3) ---------- *Amanses.*

BB. No deep groove behind the dorsal spines. Pelvic spine movable in anterioposterior direction (fig. 5). First dorsal spine inserted over posterior part of eye (fig. 4). Anal-fin rays, 26 to 36 (fig. 3) ---------- C.

C. Scales with 1 to 8 or more spines, each spine arising individually from the scale base, and none of the spines branched; the spines usually separate but joined basally by a thin bony connection on larger specimens (95 mm. S.L. and larger; fig. 8). Body relatively shallower (table 12). Caudal peduncle of specimens 20 mm. S.L. and larger with 2 to 4 pairs of enlarged spines on each side (spines recurved in males). No elongated dorsal rays. Ventral flap relatively large (fig. 30) ---------- *Monacanthus.*

CC. Scales usually with 1 spine, but with about 3 to 8 closely joined spines in larger specimens (100 mm. S.L. and larger). On specimens larger than about 40 mm. S.L. the spines branched one to many times above their bases; on specimens between about 19 and 40 mm. S.L. the spines of only a part of the scales are branched; and on specimens smaller than about 19 mm. S.L. spines are not branched (fig. 8). Body relatively deeper (table 12). No enlarged paired and recurved spines on caudal peduncle. Second dorsal ray elongated in mature males. Ventral flap relatively small (fig. 31) ---------- *Stephanolepis.*

KEYS TO SPECIES OF MONACANTHIDAE FROM THE WESTERN NORTH ATLANTIC

Genus *Alutera* Cloquet

A. Dorsal rays 43 to 50. Anal rays 46 to 52 (fig. 3). Pectoral rays modally 14 ---------- B.

B. Caudal peduncle longer than deep; peduncle length into peduncle depth 0.65 to 0.95 times. Caudal fin relatively short, about 18 to 26% S.L. Eye to dorsal spine distance relatively large, 7.0 to 8.6% S.L. Depth relatively great on specimens smaller than 175 mm. S.L., 36.8 to 43.8% S.L. (fig. 35) ---------- *Alutera monoceros.*

BB. Caudal peduncle deeper than long on specimens larger than 30 mm. S.L.; peduncle length into peduncle depth 1.24 to 1.60 times on specimens larger than 50 mm. S.L., 1.03 to 1.05 times on specimens of 31 to 46 mm. S.L., 0.86 on a 27-mm. specimen. Caudal fin relatively long, about 33 to 61% S.L. Eye to dorsal spine distance relatively small, 5.0 to 6.7% S.L. Depth relatively shallow on specimens smaller than 175 mm. S.L., 21.5 to 33.1% S.L. (fig. 35) ---------- *Alutera scripta.*

AA. Dorsal rays 32 to 41. Anal rays 35 to 44 (fig. 3). Pectoral rays modally 12 and 13 ---------- C.

C. No pelvic spine. Eye to dorsal spine distance variable and relatively large on specimens larger than 100 mm. S.L. (fig. 34), 7.3 to 13.5% S.L. Eye relatively small on specimens larger than 175 mm. S.L., 4.8 to 6.8% S.L. Body depth relatively small in specimens smaller than 35 mm. S.L., 17.3 to 23.2% S.L. Snout relatively short on specimens smaller than 45 mm. S.L., 12.0 to 23.9% S.L. Body scales relatively large and sparse; spines on scales relatively long and not close set (fig. 6), producing a comparatively rough feeling to the touch. Dorsal spine relatively long, thin, and with small barbs (fig. 7). Ventral profile of specimens smaller than about 45 mm. S.L. flatly curved, not produced into an angle (fig. 11). Pigment pattern of preserved specimens of about 70 to 200 mm. S.L., usually consisting of relatively fewer rounded spots or stripes mainly present on the ventral portion of the body; however, this pigmentation may be entirely absent (fig. 23). Coloration of live specimens with few to many orange spots ---------- *Alutera schoepfii.*

CC. Rudimentary pelvic spine present (on specimens 30 to 135 mm. S.L.) (figs. 4 and 5). Eye to dorsal spine distance relatively small on specimens larger than 100 mm. S.L. (fig. 34), 4.6 to 6.6% S.L. Eye relatively large on specimens larger than 175 mm. S.L., 6.2 to 7.7% S.L. Body depth relatively great in specimens smaller than 35 mm. S.L., 27.6 to 30.6% S.L. Snout relatively long on specimens smaller than 45 mm. S.L., 23.8 to 26.7% S.L. Body scales relatively small and numerous; spines on scales relatively short and close set (fig. 6), producing a "velvety" feeling to the touch, especially on specimens larger than 70 mm. S.L. Dorsal spine relatively short with large barbs (fig. 7); this condition pronounced on specimens between 40 and 140 mm. S.L. Ventral profile on specimens smaller than about 45 mm. S.L. produced in a convex angle by the extended pelvic bone (fig. 12). Pigment pattern of preserved specimens larger than about 70 mm. S.L. consisting of rounded or elongated and rounded spots, these more numerous on the dorsal half of the body (fig. 25). Color markings on live specimens bluish purple ---------- *Alutera heudelotii.*

Genus *Monacanthus* Oken

A. Body depth relatively shallow, 31.3 to 38.6% S.L. (fig. 36). Head relatively long on specimens larger than 40 mm. S.L., 33.1 to 36.1% S.L. Snout relatively long on specimens larger than 30 mm. S.L., 25.4 to 28.1% S.L. ---------- *Monacanthus tuckeri.*

AA. Body depth relatively great, 39.1 to 54.5% S.L. (fig. 36). Head relatively short on specimens larger than 40 mm. S.L., 29.0 to 33.3% S.L. Snout relatively short on specimens larger than 30 mm. S.L., 21.9 to 25.7% S.L. ---------- *Monacanthus ciliatus.*

Genus *Stephanolepis* Gill

A. Dorsal rays usually 31 to 34, rarely 29, 30, or 35. Anal rays usually 31 to 34, rarely 30 or 35 (table 10). Pigment pattern of preserved specimens between about 27 and 65 mm. S.L. consisting of a longitudinal arrangement of relatively few, small, dark dashes in several rows and several relatively large, dark, oblique or vertical blotches on the sides; the breast and snout without small flecks of pigment; and two moderately distinct dusky bars of about equal intensity on the caudal fin (fig. 31). On larger specimens the body dashes and caudal bars tend to become indistinct, the blotches on the sides become larger and more irregular, and the breast and snout become generally darker, but still lack a spotted effect [1] ---------- *Stephanolepis hispidus.*

AA. Dorsal rays usually 27 to 29, rarely 30. Anal rays usually 27 to 29, rarely 26 or 30 (table 10). Pigment pattern of preserved specimens between about 27 and 65 mm. S.L. consisting of a relatively greater number of rows of dark dashes (which are more sharply defined and which give a broken-lines effect to the sides) and relatively small vertical or oblique blotches present on the sides; the breast and snout with few to many small flecks or spots of pigment; and two very distinct bars on the caudal fin, the anterior bar the darker (fig. 31). On larger specimens the body dashes and blotches and the caudal bars are less distinct, but the broken-lines effect on the sides and the spots on the breast and snout remain apparent [1] ---------- *Stephanolepis setifer.*

Genus *Amanses* Gray

A. A single species ---------- *Amanses pullus.*

DESCRIPTION OF GENERA AND SPECIES

Monacanthidae is the correct name for this group of fishes, although the name Aluteridae was used by Fraser-Brunner (1941: p. 176) and others. Whitley (1929: p. 138) stated that "*Aluterus* Cloquet is an earlier name than *Monacanthus* Shinz, the first Latinization of 'Les Monacanthes' Cuvier, so the family hitherto known as Monacanthidae should be named Aluteridae." Two factors govern the propriety of family names—priority of the generic names as they have been used as family names, and, especially in the case of well-known groups, the generally used and accepted name that has become attached to a family (International Trust for Zoological Nomenclature, 1953: p. 33, art. 45(1)). Both of these factors apply to the acceptability of the name Monacanthidae. A review of the literature and abstracting journals clearly supports the more common acceptance of this name. In addition, Gill (1884: p. 417) gives "Monacanthini, Nardo . . . 1844" as the name used earliest and also gives five other uses of *Monacanthus* as a family group name that predate the first use of *Alutera* (in 1873) as a family group name (p. 416).

The separation of Monacanthidae (under the name of Aluteridae) as a family distinct from Balistidae by Fraser-Brunner (1941) provides adequate justification for this subjective distinction, although some recent authors have not acknowledged the separation and have treated Monacanthidae as a subfamily of Balistidae. In addition to the trenchant characters given by Fraser-Brunner, comparison of larval forms—larval Monacanthidae are very laterally compressed, contrasted with the laterally expanded and rotund larval Balistidae—provides additional reason for the familial separation. Fraser-Brunner's (1941: p. 176) separation follows:

The division Balistiformes of the suborder Balistoidea consists of two families, which are separable as follows:

I. Palatine T-shaped, the foot of the T movably articulated with the ectopterygoid. 8 outer teeth in each jaw; 6 inner ones in upper jaw. 2 or no caudal vertebrae with epipleurals. 5 precaudal interneurals; [2] 4 forming trough for spinous dorsal fin, the first movably articulated between exoccipitals, the others free from skull; the fifth forming a prop between trough and vertebral column. Distal ends of caudal interneurals and interhaemals not expanded. 3 dorsal spines. Scales moderate or small, in regular series, imbricate. All soft fins with branched rays ---------- Balistidae.

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[1] The described pigmentations develop between 22 and 27 mm. S.L. We record specimens that have 30 soft rays in the dorsal or anal fins and lack the definitive pigment pattern as specifically unidentifiable.

[2] "Excepting one, which may be thickened, in series with the caudal interneurals, in front of soft dorsal fin" (Fraser-Brunner, 1941: p. 176).

II. Palatine a simple bar, not directly connected with ectopterygoid. 6 outer teeth in each jaw; 4 inner ones in upper jaw. 4 or 5 caudal vertebrae with epipleurals. 3 precaudal interneurals [2] fused to form trough for spinous dorsal fin, immovably attached to exoccipitals, unconnected with vertebral column. Distal ends of caudal interneurals with prominent lateral expansions. Normally 2 dorsal spines, the second very small and sometimes absent. Scales small or minute, not in regular series, rarely in contact. Soft dorsal, anal and pectoral rays simple---Aluteridae [Monacanthidae].

Alutera CLOQUET 1816

Aluterus as first proposed by Cloquet (1816: p. 135) is correctly emended to *Alutera* because the stem, *aluta*, is a feminine noun (Andrews, 1851: p. 89) and thus is in accord with the Copenhagen decisions on zoological nomenclature (International Trust for Zoological Nomenclature 1953: p. 49, art. 84(1)). Cloquet's proposal of the name appeared in a French dictionary and was based on a manuscript of Cuvier. Cuvier's (1817: p. 153) first application of the name, however, was in the vernacular, "Les Aluteres." Oken (1817: p. 1173) furnished *Alutera* in its nomenclatorially acceptable form. This genus includes the following nominal genera as synonyms: *Ceratacanthus* Gill 1861, *Osbeckia* Jordan and Evermann 1898, and *Davidia* Miranda Ribeiro 1915. Fraser-Brunner (1941: p. 187) separated the first two of these names as subgenera of *Alutera* on the basis of fin-ray counts and shape of the snout and caudal peduncle.

We recognize four species of *Alutera* from the western North Atlantic: *Alutera monoceros* (Linnaeus) 1758, *Alutera scripta* (Osbeck) 1765, *Alutera schoepfii* (Walbaum) 1792, and *Alutera heudelotii* Hollard 1855. A fifth species, *Alutera punctata* (Cuvier) *in* Spix 1831, has been reported from this area, but we regard it as a synonym of *Alutera schoepfii*, and it is discussed under the account of that species.

Alutera heudelotii, *A. scripta*, and *A. monoceros* possess an external, rudimentary pelvic spine near the distal end of the pelvic bone. This spine usually has several short, thick, and irregular barbs, that appear to wear off in large specimens. On some of the largest specimens the pelvic spine could not be located, presumably because of its degeneration and the corresponding increase in number and thickness of the spines on the body scales in this area. At its maximum development on smaller fish, the barbs of this rudimentary spine are much thicker and extend farther from the body surface than the spines of the associated body scales (fig. 5). This type of spine does not occur in *Alutera schoepfii*, and therefore its presence or absence is useful in distinguishing this species from *A. heudelotii*, particularly so in specimens 50 to 90 mm. S.L. where other characters used to separate these two species are relative or overlapping. This spine was found in all specimens of *Alutera heudelotii* from 30.5 to 135 mm. S.L., but could not be located in specimens of 136 mm. S.L. and larger. It was noted in specimens of *A. monoceros* from 53 to 137 mm. S.L. In *A. scripta*, it was noted in specimens from 27 to 200 mm. S.L. Smith (1935: p. 359, pl. XLII D) recorded pelvic spines in *A. monoceros* and *A. scripta* from South Africa.

Longley (1935: p. 86) noted the pelvic spine in *Alutera ventralis* and referred to it as "a microscopic vestige of the reduced ventral girdle of *Monacanthus*." Hildebrand (*in* Longley and Hildebrand, 1940: p. 279) corroborated its presence in this species, but described it as freely movable in the skin. The skin surrounding the spine can readily be lifted away from the bone, and we have found the spine to be directly fused to the pelvic bone. However, the spine can be broken away from the bone, and if retained in position in the surrounding skin it is then movable. We have not determined a homologous relationship between this rudimentary spine and the pelvic spine of *Monacanthus*, *Stephanolepis*, or *Amanses*, and accept Longley's interpretation only on circumstantial evidence.

Alutera monoceros (Linnaeus) 1758

(Figures 19, 20, and 21)

This species was described in a pre-Linnaean publication by Osbeck (1757) from a specimen taken off the coast of China. The name was documented nomenclatorially by Linnaeus in 1758. Some authors have regarded *Alutera monoceros* as a Pacific species and have distinguished the Atlantic form under the name of *Alutera guntheriana* Poey 1863; but comparisons of our Atlantic material with specimens from the China Sea and the Philippines show them to be identical in all respects, and we regard *Alutera monoceros* as a species of worldwide occurrence. Comparisons of specimens from the western North Atlantic with specimens from Brazil, South Africa, and the Pacific coast of Panama show slight differences in contour and depth, but we attribute this to individual variation and perhaps varying rates of ontogeny in different geographical areas.

Diagnostic characters.—Dorsal spines, 2. Dorsal soft rays, 46 to 50; anal soft rays, 47 to 52 (table 1). Pectoral spine, 1 rudimentary. Pectoral soft rays, 14 (table 11). Pelvic spine, rudimentary and not movable (as *Alutera heudelotii* in fig. 5), absent in large specimens. Gill slit, oblique at an angle of about 45° to horizontal to body axis (as in fig. 4). First dorsal spine, inserted over middle or posterior part of eye (as in fig. 4). No deep groove behind dorsal spines. Body depth, 34.4 to 43.8% S.L. (table 12; fig. 35). Head length, 26.6 to 34.7% S.L. (table 13). Snout length, 23.4 to 27.5% S.L. (table 14). Eye diameter, 4.2 to 8.3% S.L. (table 15). Eye to dorsal spine distance, 7.0 to 8.6% S.L. (table 16). Caudal peduncle longer than deep; peduncle length into peduncle depth 0.65 to 0.95 times. Caudal fin relatively short, about 18 to 26% S.L.

Specimens examined.—From the western North Atlantic: 10 of 53 to 545 mm. S.L., from southern Massachusetts, the Carolinas, eastern Florida, and the Florida Keys (fig. 38).

Alutera scripta (Osbeck) 1765

(Figures 9, 19, 20, and 22)

This species has usually been regarded as of worldwide distribution. We have examined specimens from Hawaii, Okinawa, and the Pacific coast of Panama that appear to be identical with our western Atlantic material. Whitley (1952: p. 30) attempted to limit the Atlantic population under the name of *Osbeckia picturata* (Poey) 1863.

The brief description of *Balistes scriptus* that has been assigned to this species was in a publication by Osbeck (1757: p. 111) that predates nomenclatorial acceptability. Linnaeus did not record this name in the tenth edition of his Systema Naturae, although he did include (1758: p. 327) the listing of Osbeck's *Balistes monoceros* from the preceding page of Osbeck's book (1757: p. 110). The first nomenclatorially acceptable publication of the name *scripta* is in a translation of Osbeck's 1757 book from Swedish to German by J. G. Georgi in 1765 (p. 145). Since Georgi apparently made a direct translation without any emendations, we do not consider him as the author of Osbeck's names and descriptions.

Diagnostic characters.—Dorsal spines, 2. Dorsal soft rays, 43 to 49; anal soft rays, 46 to 52 (table 2). Pectoral spine, 1 rudimentary. Pectoral soft rays, 13–15 (table 11). Pelvic spine, rudimentary and not movable (as *Alutera heudelotii* in fig. 5), absent in large specimens. Gill slit, oblique at an angle of about 45° to horizontal body axis on specimens larger than 40 mm. S. L. (as in fig. 4). First dorsal spine, inserted over middle or posterior part of eye (as in fig. 4). No deep groove behind dorsal spines. Body depth, 21.5 to 35.0% S. L. (table 12; fig. 35). Head length, 29.3 to 33.9% S. L. (table 13). Snout length, 21.9 to 28.8% S. L. (table 14). Eye diameter, 5.3 to 9.1% S. L. (table 15). Eye to dorsal spine distance, 5.0 to 6.7% S. L. (table 16). Caudal peduncle deeper than long on specimens larger than 30 mm. S. L.; peduncle length into peduncle depth 1.24 to 1.60 times on specimens larger than 50 mm. S. L., 1.03 to 1.05 times on specimens of 31 to 46 mm. S. L., 0.86 on a 27-mm. S. L. specimen. Caudal fin relatively long, about 33 to 61% S. L.

Specimens examined.—From the western North Atlantic: 48 of 27 to 377 mm. S. L. (skin and skull examined of a specimen about 410 mm. S. L.) from Bermuda, off the North Carolina coast, southward around Florida, in the Gulf of Mexico, and the Caribbean (fig. 38).

Color.—In live specimens taken off North Carolina in September 1959, the scrawled markings and spots were dark green and the background color was mottled olive-brown. This color fades and may disappear upon preservation, but the pigmentation in the markings and spots remains dark on most specimens even after prolonged preservation.

Alutera schoepfii (Walbaum) 1792

(Figures 10, 11, 23, and 24)

This species is extremely variable in certain morphological characters. Early in the study when we had only a few specimens, it appeared that two forms existed, one of which we would have called *Alutera punctata* (Cuvier) *in* Spix,

1831. Specimens were examined that were extremely diverse in eye diameter, distance from eye to dorsal spine, shape of the snout to dorsal spine profile, body depth, and pigmentation. However, when our complete size series of specimens had been acquired and examined, we found that the specimens intermediate in these morphological characters were more abundant than the extremely diverse specimens. We were convinced that these specimens represented a single highly variable species. If *A. punctata* exists, we have no specimens of it, and there is no available publication to differentiate it from *A. schoepfii*. The inadequacy of the original description of *A. punctata* was pointed out by Longley (*in* Longley and Hildebrand, 1941: p. 292). Longley also examined the specimen Jordan and Rutter (1897: p. 127) used for the first redescription of *A. punctata*, and considered it to be *A. schoepfii*. We assume artist's license in the excessively low numbers of dorsal fin rays and high numbers of body spots on the drawing of the type specimen of *A. punctata* (*in* Spix, 1831, pl. LXXVI). "Cuv. in litt." is given by Agassiz as the author of this species (*in* Spix, 1831: p. 137), inferring that Cuvier should be recorded as the author of this name.

Diagnostic characters.—Dorsal spines, 2. Dorsal soft rays, 32 to 39; anal soft rays, 35 to 41 (table 3). Pectoral spine, 1 rudimentary. Pectoral soft rays, 11 to 14 (table 11). Pelvic spine, absent at all sizes. Gill slit, oblique at an angle of about 45° to horizontal body axis on specimens larger than 40 mm. S.L. (as in fig. 4). First dorsal spine, inserted over mid or posterior part of eye (as in fig. 4). No deep groove behind the dorsal spines. Body depth, 17.3 to 47.4% S.L. (table 12; fig. 35). Head length, 23.3 to 34.2% S.L. (table 13). Snout length, 12.0 to 28.6% S.L. (table 14). Eye diameter, 4.8 to 8.8% S.L. (table 15). Eye to dorsal spine distance, 3.9 to 13.5% S.L. (table 16; fig. 34).

Specimens examined.—258 of 15.0 to 410 mm. S.L., from Bermuda, from Nova Scotia southward along the eastern and Gulf coasts of the United States, and from along the coasts of Cuba, Jamaica, Haiti, Atlantic Panama, and Brazil (fig. 38).

Color.—In live specimens taken off North Carolina in September 1959, the coloration was variable with background shades of white, orange, or metallic gray. When white was present, it was usually most prevalent over the anterior regions of the fish. Orange was nearly always present, at least in the form of spots along the midventral region of the body. The dark metallic gray color was often present on the dorsal half of the body as well as on the peduncle. In a few specimens the body was entirely dark, but even in these orange spots were present, and in several specimens the orange spots were extremely numerous. Usually when the anterior regions of the fish were white, some orange blotches extended onto the white background. Often the dark gray occurred as large blotches over the orange. The entire coloration fades rapidly when specimens are placed in a preservative—the orange spots are extremely ephemeral.

Alutera heudelotii Hollard 1855

(Figures 12 and 25)

Alutera heudelotii Hollard (1855: p. 13, described from Senegal, West Africa) occurs in both the eastern and western Atlantic, and its synonymy has only recently been determined.[3] It includes the following nominal species: *Alutera fuscus* (Fischer, 1885: p. 75, pl. II, fig. 6, from Cameroon, West Africa); *Alutera blankerti* (Metzelaar, 1919: p. 295, fig. 64, from Cape Blanco, West Africa); and *Alutera ventralis* (Longley, 1935: p. 68, from Tortugas, Florida; redescribed by Hildebrand in Longley and Hildebrand, 1940: p. 278).

This species has largely been overlooked or confused, and we have re-identified specimens in several museums that were incorrectly identified as *A. scripta*, which species it superficially resembles, and as *A. schoepfii* and its synonym *A. punctata*. A number of early and recent references to *A. punctata* were undoubtedly based on specimens of *A. heudelotii*. The 44-mm. specimen from off West Africa described and illustrated as *A. blankerti* by Poll (1959: p. 247, fig. 83) represents this species, as does the 291-mm. West African specimen Poll illustrated as *A. punctatus* (1959: fig. 82).

Diagnostic characters.—Dorsal spines, 2. Dorsal soft rays, 36 to 41; anal soft rays, 39 to 44 (table 4). Pectoral spine, 1 rudimentary. Pectoral soft rays, 12 to 14 (table 11). Pelvic spine,

[3] Berry, Frederick H., and Max Poll. Manuscript, Synonymy of the Atlantic Ocean filefish *Alutera heudelotii* Hollard.

rudimentary and not movable (fig. 5), absent in specimens larger than 135 mm. S.L. Gill slit, oblique at an angle of about 45° to horizontal body axis in specimens larger than 40 mm. S.L. (fig. 4). First dorsal spine, inserted over mid or posterior part of eye (fig. 4). No deep groove behind dorsal spines. Body depth, 27.6 to 46.5% S.L. (table 12; fig. 35). Head length, 29.1 to 35.2% S.L. (table 13). Snout length, 23.8 to 28.7% S.L. (table 14). Eye diameter, 6.2 to 10.0% S.L. (table 15). Eye to dorsal spine distance, 4.0 to 7.3% S.L. (table 16; fig. 34).

Specimens examined.—68 of 30.5 to 240 mm. S.L., from Bermuda, from southern Massachusetts, off the coast of the Carolinas, around the Florida coast, in the Gulf of Mexico, and off Brazil (fig. 38).

Color.—In live specimens taken off North Carolina in September 1959, the scrawled markings and spots were bluish purple; the background color was a mottled olive brown that faded upon preservation. The pigmentation of the markings and spots remains dark on most specimens even after prolonged preservation.

Monacanthus OKEN 1817

We have examined two valid species of this genus from the western North Atlantic, *M. tuckeri* Bean 1906 and *M. ciliatus* (Mitchill) 1818.

The two species of *Monacanthus* in the western North Atlantic were recorded in a new subgenus, *Leprogaster*, by Fraser-Brunner (1941: p. 184). He distinguished it as an Atlantic subgenus characterized by a shorter pelvic spine and a smaller ventral flap than are present in the Pacific subgenus *Monacanthus*. We found no elongation of the upper caudal ray in the Atlantic species as was depicted by Fraser-Brunner for his new Pacific species, *Monacanthus macrolepis* (1941: p. 190, fig. 4).

Monacanthus tuckeri apparently is a smaller species than *M. ciliatus*, both in not growing to so large a size and in maturing at a smaller size. Based on the specimens we examined it appears to be the less abundant of the two along the United States coast, but more equally common with *M. ciliatus* in the Bahamas and Bermuda.

In his revision of the Aluteridae Fraser-Brunner (1941) recorded both *Monacanthus* and *Stephanolepis* as valid and distinct genera. Since then several workers have disagreed with this pronouncement and have regarded *Stephanolepis* as a synonym of *Monacanthus*. The probable reason for this disagreement is the interpretation of scale structure of the two nominal genera. We have found the scale structure is subject to ontogenetic change—not adequately accounted for by Fraser-Brunner. Scales of various sizes of specimens of *Stephanolepis hispidus* and *Monacanthus ciliatus* are diagrammatically illustrated in figure 8. In the structure and ontogeny of its scales, *Stephanolepis setifer* is essentially similar to *S. hispidus*, as is *Monacanthus tuckeri* to *M. ciliatus*, except that *M. tuckeri* is smaller at maturity than is *M. ciliatus* and exhibits changes in its scale structure at smaller sizes.

The scales of all four genera of filefish examined during this study have one or more spines arising perpendicularly from the scale base, the number of spines increasing with growth or size of the fish. Above the scale base the spines are usually curved posteriad, and they may undergo certain modifications as secondary sexual characteristics, particularly in the region of the caudal peduncle. The scales of *Alutera* and *Amanses* are similar to those of *Monacanthus*. The scales of *Monacanthus* and *Stephanolepis* are similar up to a size of about 20 mm. S.L., the scales of each having a single spine (fig. 8). At sizes larger than 20 mm. S.L., the spines of some of the scales of *Stephanolepis* have become branched—this branching occurs well above the scale base usually on the distal one-fourth of the spine. Between 30 and 40 mm. S.L. the spines of essentially all of the scales of *Stephanolepis* have become branched. Two or more closely joined spines are present on scales of *Stephanolepis* of more than 100 mm. S.L., and eight were present on the scales of a 150-mm. S.L. specimen—all of these spines are branched. Conversely, the scale spines of *Monacanthus* never branch—each spine arises individually from the scale base. Two spines were found on a few scales of a 41-mm. S.L. specimen of *Monacanthus ciliatus*, three at 46.5 mm. S.L., and seven at 95 mm. S.L. (fig. 8). Some of the spines on larger specimens of *Monacanthus* are joined basally by a thin bony partition.

After analyzing these concrete differences in scale structure in the two groups, as well as distinct differences in secondary sexual characters, we recognize the value of Fraser-Brunner's generic distinction of *Stephanolepis* from *Monacanthus*.

The pelvic spine in *Monacanthus* is very similar to that in *Stephanolepis* (fig. 5).

Monacanthus tuckeri Bean 1906

(Figures 13 and 29)

Although this species was described more than 50 years ago, it has never been adequately distinguished from *Monacanthus ciliatus*, and many museum collections we have examined contained both species, usually cataloged as *M. ciliatus*.

Diagnostic characters.—Dorsal spines, 2. Dorsal soft rays, 32 to 37; anal soft rays, 31 to 36 (table 5). Pectoral spine, 1 rudimentary. Pectoral soft rays, 10 to 12 (table 11). Pelvic spine, large and movable (as in *Stephanolepis;* fig. 5). Gill slit, nearly vertical with respect to horizontal body axis (as in *Stephanolepis;* fig. 4). First dorsal spine, inserted over posterior part of eye (as in *Stephanolepis;* fig. 4). No deep groove behind dorsal spines. Body depth, 31.3 to 38.6 % S.L. (table 12; fig. 36). Head length, 33.1 to 41.5 % S.L. (table 13). Snout length, 20.7 to 28.2 % S.L. (table 14). Eye diameter, 8.7 to 14.4 % S.L. (table 15). Eye to dorsal spine distance, 6.3 to 10.6 mm. S.L. (table 16).

Specimens examined.—60 of 15.3 to 56.5 mm. S.L., from Bermuda, off the Carolinas, off eastern Florida, in the Bahamas and the Lesser Antilles (fig. 39).

Sexual characters.—The seven largest specimens available had gonads large enough to permit determination of sex (2 males, 56.5 and 50.5 mm. S.L.; 5 females, 53, 51.5, 50.5, 49, and 48 mm. S.L.). The next largest specimens, 44 and 36 mm. S.L., had visible gonads, but they were too small for the sex to be interpreted. The males have a dorsal and a ventral pair of enlarged recurved spines on each side of the caudal peduncle, and the spines on other scales on the sides of the peduncle are elongated, forming a bristlelike patch. The females have similar pairs of spines on the peduncle but they are smaller and are directed posteriorly, and the spines of scales on the peduncle are not much, if any, larger than other body scale spines. These dorsal and ventral pairs of spines are discernible on specimens as small as 19 mm. S.L., since at this size and larger the scale bases from which they arise are larger (of greater diameter) than the bases of the other peduncle scales. The larger or more expandible ventral flap of the male with the dark stripe near its margin was described and illustrated by Clark (1950: p. 162). Clark listed males of 39, 59, and 60 mm. S.L., a female of 45 mm. S.L., and immature specimens of 17 to 30 mm. S.L.

Monacanthus ciliatus (Mitchill) 1818

(Figures 14, 15, 29, and 30)

As noted before, this species has frequently been confused with *Monacanthus tuckeri*.

Diagnostic characters.—Dorsal spines, 2. Dorsal soft rays, 29 to 37; anal soft rays, 28 to 36 (table 6). Pectoral spine, 1 rudimentary. Pectoral soft rays, 9 to 13 (table 11). Pelvic spine, large and movable (as in *Stephanolepis;* fig. 5). Gill slit, nearly vertical with respect to horizontal body axis (as *Stephanolepis;* fig. 4). First dorsal spine, inserted over posterior part of eye (as in *Stephanolepis;* fig. 4). No deep groove behind dorsal spines. Body depth, 39.1 to 54.5 % S.L. (table 12; fig. 36). Head length, 29.0 to 38.7 % S.L. (table 13). Snout length, 16.4 to 25.7 % S.L. (table 14). Eye diameter, 7.4 to 14.5 % S.L. (table 15). Eye to dorsal spine distance, 6.7 to 10.1 % S.L. (table 16).

Specimens examined.—347 of 11.0 to 111 mm. S.L., from Bermuda, Massachusetts, the coast of the Carolinas, around Florida, in the Gulf of Mexico, the Bahamas, and throughout the Caribbean (fig. 39).

Sexual characters.—Clark (1950: p. 159) described the sexual characters of this species. Immature specimens have a dorsal and a ventral pair of posteriorly directed spines on each side of the caudal peduncle—discernible on specimens as small as 20 mm. S.L. In the three largest females we examined (92.5, 101, and 109 mm. S.L.) the anterior spine of each pair was slightly recurved. In male fish larger than about 60 mm. S.L., these spines enlarge and become strongly recurved. Although the original pairs of spines remain distinct, additional and similar spines form with growth—the largest male examined (107 mm. S.L.) had 5 dorsal and 4 ventral spines on each side. On males 90 mm. S.L. and larger, the spines on the other scales on the sides of the peduncle are elongated, forming a bristlelike patch.

Stephanolepis Gill 1861

After examination of thousands of specimens of this genus from the western North Atlantic, we were able to distinguish only two species—*S. hispidus* (Linnaeus) and *S. setifer* (Bennett). The name *setifer* was applied to specimens from Cuba and Atlantic Colombia with a relatively low number of fin rays (D. 27–28, A. 26–27) by Fraser-Brunner (1940: p. 519). His reasons for applying and restricting this name certainly appear to be justified. *Stephanolepis setifer* is identical with *Monacanthus oppositus* Poey described by Meek and Hildebrand (1928: p. 798) from Panama, but we can not confirm their species range of from Massachusetts to Brazil.

Five species of *Stephanolepis* were identified from the western Atlantic by Fraser-Brunner (1940). *S. setifer* has low numbers of fin rays, whereas the other four species were reported to have 30 or more dorsal and anal rays. *S. insignis* Fraser-Brunner 1940 and *S. varius* (Ranzani) 1842 were recorded from Brazil. Our specimens of *Stephanolepis* do not represent either of these forms; their distinguishing characteristics are not too convincing; none has been recorded from the western Atlantic with the exception of the type material. The remaining two species reported by Fraser-Brunner were *S. hispidus* (Linnaeus) 1758 and *S. spilonotus* (Cope) 1871. We record *S. spilonotus* as a synonym of *S. hispidus*, because we judge our specimens to represent a single species with moderate variation in morphological characters, and because we found a complete overlap in every character that Fraser-Brunner (1940: p. 523, 535) used to separate the two nominal species. Certainly there is no difference between populations of *S. hispidus* from the Atlantic and from the Gulf of Mexico, as his observations suggest. The five specimens Fraser-Brunner designated as *S. spilonotus* from Florida, Mississippi, and Cuba in the Museum of Comparative Zoology cannot be located.

In *Stephanolepis* the first dorsal spine has two rows of large, ventrally directed barbs on its posterior margin. The number of barbs present is difficult to count, because those near the base of the spine abruptly decrease in size, particularly in larger specimens; but the number of these barbs has been used previously as a taxonomic character (Fraser-Brunner, 1940: p. 523) to separate *S. hispidus* with 6 or 7 strong barbs from *S. spilonotus* with 12 or more small barbs. We have determined two features that invalidate this character: (1) the barbs become relatively smaller as the fish increases in size, and (2) the number of barbs increases with growth of the fish. The following counts of barbs from one side of the spine of *S. hispidus* illustrate this second invalidating feature (standard length in millimeters and number of barbs in parentheses): 8.4 (3), 8.9 (2), 9.5 (3), 16 (3), 16.5 (3), 16.5 (2), 17 (3), 17.5 (2), 18 (2), 20 (3), 24.5 (4), 26.5 (4), 29.5 (2), 42.5 (5), 44 (5), 48 (5), 52.5 (6), 59 (6), 62 (5), 66 (5), 67 (6), 70 (6), 72 (6), 72 (7), 73 (8), 81 (10), 83 (8), 97 (8), 114 (8), 122 (10), 136 (8), 139 (11), 142 (10), 143 (12), 145 (9), 151 (11), 158 (13), 167 (11). Frequently the number of barbs on each side of the back of the spines varies by 1 or 2, and in these cases the count from the side having the greater number of barbs was recorded.

It is characteristic that a small percentage of specimens of most of the species of Monacanthidae examined had a background pigmentation much darker than average. This was observed in specimens preserved in both alcohol and formalin. Conversely, some few of the preserved specimens were almost unpigmented. This caused some difficulty in confirming pigmentation characteristics for *S. hispidus* and *S. setifer*, but usually when moist specimens were examined the correct determination could be made (drying or partly drying of specimens makes the pigmentation more difficult to see). This feature produces excessive difficulties in utilizing the key to the species of *Stephanolepis* by Fraser-Brunner (1940: p. 521), in which the primary couplet concerns pigment (longitudinal pattern of bars, patches, or bands *vs.* transverse and mottled pattern).

The profile from snout to dorsal spine of *S. hispidus* is concave in most specimens, but in some it is nearly straight, and in others slightly convex.

The distance from the upper edge of the orbit to the base of the first dorsal spine in *S. hispidus* is also variable and may be either greater or less than the diameter of the eye.

We have found no specimens of *Stephanolepis setifer* from the coast of the United States, where *S. hispidus* is relatively common. Analysis of the specimens examined indicates that *S. setifer* is more common around Cuba, Jamaica, other islands of the West Indies, and in open waters of the Gulf Stream or Florida Current. Apparently it is a smaller species than *S. hispidus*, maturing at a smaller body size.

The relationship of this genus to *Monacanthus* is discussed under the generic account of *Monacanthus*. Photomicrographs of the scale structures of *Stephanolepis* (under the name of *Stefanolepis hispidus*) were published by Sanzo (1930, pl. III, figs. 32–35).

The pelvic spine of *Stephanolepis hispidus* and of *S. setifer* possesses barbs and is articulated with the end of the barbed portion of the pelvic bone that protrudes through the skin (fig. 5). It is freely movable for a short distance (about 45°) in an anteroposterior direction.

The color patterns on sides, breast, and caudal fin are of about equal value in separating the two species; that is, the prominence of one of the characters is usually accompanied by an equal prominence of the other two. At sizes less than about 22 mm. S.L. the species cannot be separated on this basis as the patterns described below are nearly always absent. From about 22 mm. to about 27 mm. these patterns are often present. Specimens between about 27 to 65 mm. normally have good and distinguishable color patterns; the pattern tends to become less distinguishing at the larger sizes. **Sides:** *S. setifer* normally has more rows of dashes arranged longitudinally, giving a broken-lines effect, the dashes being narrower and more sharply defined than the corresponding small bars and spots of *S. hispidus;* and both species have similar broad, dusky bands of varying intensity, that may be vertical or oblique. **Breast:** Both species have the broad dusky bands continuing onto the breasts, but in addition, *S. setifer* has few to many small flecks or spots, especially in the region ventral to and anterior to the bases of the pectoral fins; these flecks are entirely absent in *S. hispidus*. **Caudal fin:** Both species have two dark vertical bands on the caudal fin, however, these bands are narrower and usually much darker in *S. setifer;* the first band in *S. setifer* is usually much darker than the second, while in *S. hispidus* both bands are of about equal intensity and not very prominent.

Stephanolepis hispidus (Linnaeus) 1758

(Figures 16, 17, 31, 32, and 33)

The close relationship of this species to *Stephanolepis setifer* has been discussed under the account of the genus.

Diagnostic characters.—Dorsal spines, 2. Dorsal soft rays, 29 to 35; anal soft rays, 30 to 35 (tables 7 and 10). Pectoral spine, 1; rudimentary at larger sizes, pronounced in larvae (see fig. 16). Pectoral soft rays, 12 to 14 (table 11). Pelvic spine, large and movable (fig. 5). Gill slit, nearly vertical with respect to horizontal body axis (fig. 4). First dorsal spine, inserted over posterior part of eye (fig. 4). No deep groove behind dorsal spines. Body depth, 43.3 to 65.8% S.L. (table 12; fig. 37). Head length, 29.5 to 41.4% S.L. (table 13). Snout length, 14.4 to 27.5% S.L. (table 14). Eye diameter, 6.9 to 17.1% S.L. (table 15). Eye to dorsal spine distance, 7.3 to 17.1% S.L. (table 16).

Specimens examined.—3,539 of 5.6 to 211 mm. S.L., from Georges Bank southward all along the Atlantic and Gulf coasts of the United States, off Mexico and Brazil (fig. 40).

It has been suggested (Fraser-Brunner, 1940: p. 535) that the number of dorsal and anal fin rays is greater in specimens from more northern localities than from more southern localities. The following values tend to indicate such a trend:

Eighty-seven specimens from the Gulf of Mexico ranged from D 29–A 30 to D 34–A 34 with a 26.2-percent mode at D 32–A 32; 267 specimens from Georgia ranged from D 30–A 31 to D 34–A 33 with a 27.3-percent mode at D 32–A 32; 199 specimens from North Carolina ranged from D 31–A 31 to D 35–A 35 with a 29.6-percent mode at D 33–A 33: but a smaller sample of 20 specimens from Massachusetts ranged from D 32–A 32 to D 34–A 34 with a 40-percent mode of D 33–A 32, intermediate between that of Georgia and North Carolina.

Sexual characters.—Two secondary sexual characters develop on maturing males: the second soft ray of the dorsal fin becomes very elongated, and the spines of the scales on the sides of the caudal peduncle become prolonged and form a patch of bristles. The elongation of the second dorsal soft ray begins between about 104 and 128 mm. S.L. The patch of bristles on the peduncle forms between about 104 and 134 mm. On specimens larger than 140 mm. the elongated second soft ray of the dorsal fin was 21 to 95 mm. longer than the third soft ray. No secondary sexual characters were found in females. Although females average a slightly greater body depth than males, appreciable variation occurs in this character and the values for the sexes overlap.

The following observations were made on a sample of 140 specimens of 73.5 to 211 mm. S.L. taken by bottom trawling on the M/V *Silver Bay* off the coast of North Carolina during September 1959:

Seven immature specimens or specimens with gonads too small to be evaluated, 73.5 to 95 mm. (mean, 85.3 mm.); 62 males, 78 to 211 mm. (mean, 131.8 mm.); 71 females, 77 to 180 mm. (mean, 120.1 mm.) of which five (146 to 180 mm.) had large macroscopic eggs in the ovaries. Such large eggs were found in other specimens ranging from 81 to 139 mm. S.L., taken at other times and areas.

Occurrence.—The locations of specimens of *Stephanolepis hispidus* and *S. setifer* taken at the surface off the southeastern Atlantic coast of the United States on cruises of the *Gill*, *Combat*, and *Silver Bay* are shown in figure 41. These specimens were less than 70 mm. S.L., and represent developing young, the majority of which were being carried northward by the Gulf Stream. The total number of records and of specimens of *S. hispidus* was much greater than for *S. setifer*. The records of *S. hispidus* are distributed from inshore out to beyond the axis of the Gulf Stream, whereas the records of *S. setifer* are generally confined to the boundaries of the Stream.

On cruise 18 of the M/V *Silver Bay* off the North Carolina coast in September 1959, records were made of all of the bottom-trawling stations at which *Stephanolepis hispidus* was taken. Figure 42 shows that the species was broadly distributed over the area at that time. Most of these specimens were mature, and some of the females had macroscopic eggs and apparently were near spawning condition.

Stephanolepis setifer (Bennett) 1830

(Figures 31 and 32)

The resemblance of this species to *Stephanolepis hispidus* has been discussed under the account of the genus.

Diagnostic characters.—Dorsal spines, 2. Dorsal soft rays, 27 to 30; anal soft rays, 26 to 30 (tables 8 and 10). Pectoral spine, 1 rudimentary. Pectoral soft rays, 11 to 13 (table 11). Pelvic spine, large and movable (fig. 5). Gill slit, nearly vertical with respect to horizontal body axis (fig. 4). First dorsal spine, inserted over posterior part of eye (fig. 4). No deep groove behind dorsal spines. Body depth, 46.8 to 59.6 % S.L. (table 12; fig. 37). Head length, 31.3 to 40.2 % S.L. (table 13). Snout length, 18.4 to 26.8 % S.L. (table 14). Eye diameter, 7.6 to 15.9 % S.L. (table 15). Eye to dorsal spine distance, 7.7 to 13.3 % S.L. (table 16).

Specimens examined.—139 of 11.0 to 136 mm. S.L., from Bermuda, the Carolinas, southward around Florida, into the Gulf of Mexico, and throughout the Caribbean (fig. 40).

Sexual characters.—Sex was determined on 37 specimens, 15 males of 56.5 to 136 mm. S.L., and 22 females of 46.5 to 98 mm. S.L.; 18 other specimens of 36 to 53.5 mm. S.L. were either immature or had gonads too small to be interpreted. Secondary sexual characters apparently are similar to those of *Stephanolepis hispidus*, except that *S. setifer* matures and secondary sexual characters develop at smaller sizes. The females showed no secondary sexual development. Females 62.5 to 98 mm. S.L. had large macroscopic ovarian eggs, but females of 76.5 mm. and of 61.5 mm. S.L. and smaller had microscopic eggs. Males 82.5 mm. S.L. and larger had a patch of bristles on each side of the caudal peduncle; smaller specimens lacked this bristle patch. All males examined had the second soft ray of the dorsal fin elongated: 5.5 mm. longer than the other rays in the 56.5-mm. S.L. male and more than 33 mm. longer in the 136-mm. S.L. male. A 98.5-mm male had the third ray elongated also, about one-half the extent of elongation of the second ray.

Amanses Gray 1833

Fraser-Brunner (1941) reduced *Cantherines* Swainson 1839 to subgeneric rank within the genus *Amanses* Gray 1833. The subgenus *Amanses* reportedly possesses "A patch of long spines on side between soft dorsal and anal fin, at least in male." Since this feature has never been reported for western North Atlantic monacanthids, *A. pullus* should be of the subgenus *Cantherines*.

The pelvic spine of *Amanses pullus* is fused to the end of the barbed portion of the pelvic bone that protrudes through the skin (fig. 5). It is similar to the pelvic spine of *Monacanthus* and *Stephanolepis*, but unlike the spine in those genera, it is not movable, unless damaged. (With excessive pressure the plane of fusion may part, and the spine may be abnormally movable.)

Amanses pullus (Ranzani) 1842

(Figures 18, 26, 27, and 28)

Ranzani (1842) described *Monacanthus pullus* from a large, blackish specimen without spines on the caudal peduncle, from the coast of Brazil. Cope (1871) described *Monacanthus amphioxys* from a smaller, lightly colored specimen, also without caudal spines, from St. Martins Island in the West Indies. The relationship of these two nominal forms is still uncertain, but we believe the forms are identical. The variation in color pattern of specimens 38 to 148 mm. S.L. was described by Clark (1950: p. 163) under the name of *Cantherines pullus*. In addition to her observations, we have examined a large freshly preserved female (158 mm. S.L., University of Florida 7266) that has a black body and caudal fin and the other fins pale or colorless. Larger specimens preserved for a long time have brownish bodies and clear fins.

Diagnostic characters.—Dorsal spines, 2. Dorsal soft rays, 33 to 37; anal soft rays 29 to 32 (table 9). Pectoral spine, 1 rudimentary. Pectoral soft rays, 12 to 14 (table 11). Pelvic spine, large and not movable, fused to pelvic bone (fig. 5). Gill slit, nearly vertical with respect to horizontal body axis (fig. 4). First dorsal spine, inserted over anterior part of eye on specimens 30 mm. S.L. and larger (fig. 4). A deep groove present behind the dorsal spines into which they can be depressed (fig. 27, B). Body depth, 38.6 to 49.3 % S.L. (table 12; fig. 37). Head length, 29.0 to 42.9 % S.L. (table 13). Snout length, 25.6 to 33.3 % S.L. (table 14). Eye diameter, 5.2 to 14.9 % S.L. (table 15). Eye to dorsal spine distance, 5.9 to 9.0 % S.L. (table 16).

Specimens examined.—99 of 17.5 to 325 mm. S.L., from Massachusetts, southward along the Atlantic coast, around the coast of Florida into the Gulf of Mexico, the Bahamas, and throughout the West Indies (fig. 39).

The specialized scalation and spination on the caudal peduncle (usually a sex-associated character) is not clearly understood. Two large fresh specimens with orange-colored curved spines on the peduncle have been reported to us (personal communications, Eugenie Clark, Cape Haze Marine Laboratory, and Craig Phillips, U.S. Fish and Wildlife Service). The three largest specimens examined have recurved spines on the peduncle—a 325-mm. S.L. male has 3 dorsal and 2 ventral strongly recurved spines on each side of the peduncle; a 322-mm. male has 2 dorsal and 2 ventral spines similarly located (both of these specimens have a patch of bristles extending from the recurved spines onto the body); a 288-mm. female has 2 dorsal and 2 anal spines on each side of the peduncle, that are smaller and only slightly recurved in comparison to the spines of the males, and the patch of bristles on the peduncle of this female is relatively smaller. A 182-mm. specimen (sex unknown) has 2 pairs of large recurved spines and sparse patches of bristles on each side of the peduncle. A 115-mm. specimen (sex unknown) has 2 pairs of small and only slightly recurved spines on each side of the peduncle. No other specimens of this species examined had paired peduncle spines. Specimens with patches of bristles on each side of the peduncle included females 136 and 158 mm. S.L., males 124 and 136 mm. S.L., and sex unknown 105, 123, 127, 131, and 138 mm. S.L. Several specimens between 100 and 142 mm. lacked these bristle patches, and no specimens less than 100 mm. had them. A 288-mm. female had large ovaries but no macroscopic eggs, although females of 158, 142, 136, and 136 mm. had large macroscopic eggs.

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APPENDIX

FIGURES

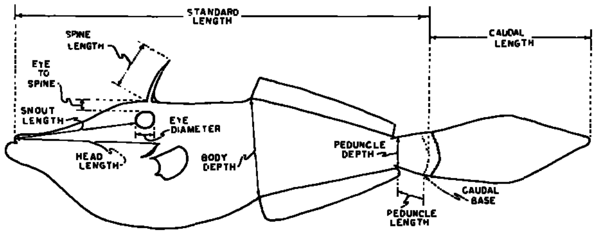

FIGURE 1.—Diagram of a filefish showing measurements used in this study.

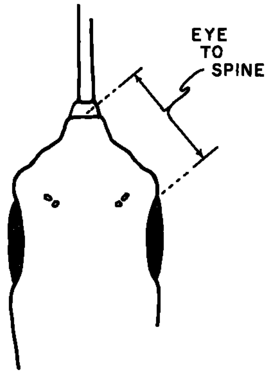

FIGURE 2.—Enlarged front view of upper part of head showing measurement from eye to insertion of dorsal spine.

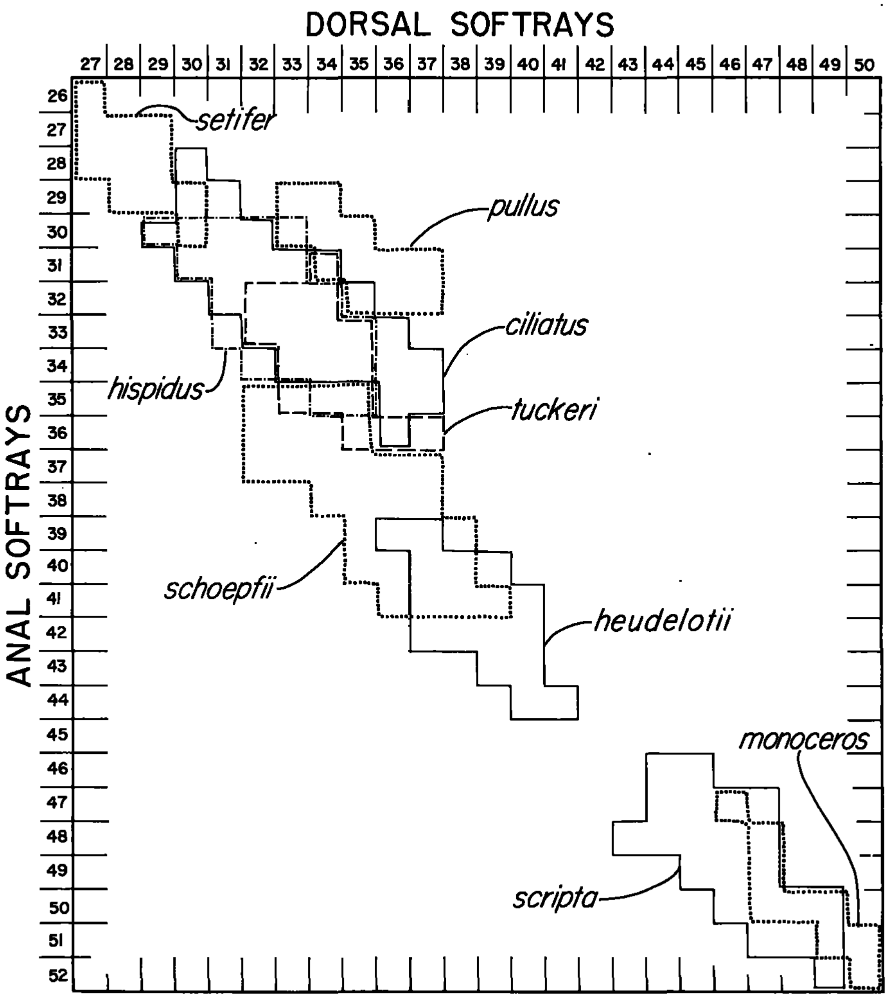

FIGURE 3.—Dorsal and anal soft ray correlation in western North Atlantic Monacanthidae. The various outlines (dots, dashes, solid lines, and dots and dashes) encompass the dorsal and anal ray combinations found in the nine species.

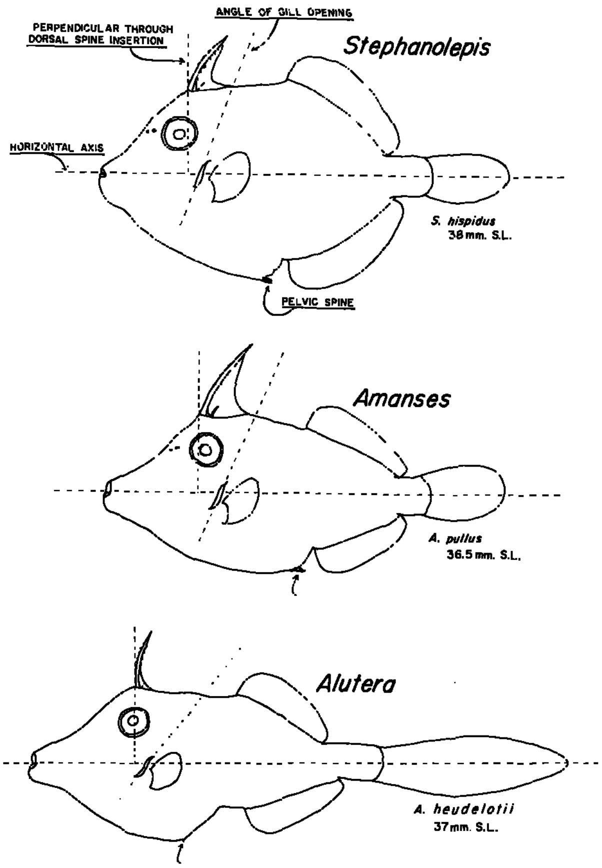

FIGURE 4.—Outlines of *Stephanolepis*, *Amanses*, and *Alutera*, illustrating location of the pelvic spine, positional relation of the first dorsal spine to the eye, and angle of the gill opening to the horizontal body axis.

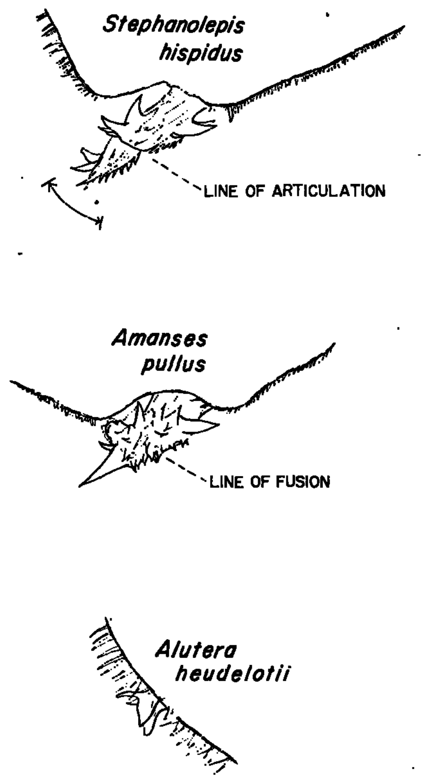

FIGURE 5.—Pelvic spines: *Stephanolepis hispidus*, 38 mm. S.L.; *Amanses pullus*, 36.5 mm. S.L.; and *Alutera heudelotii*, 37 mm. S.L. The ratio of magnification of the drawings is 1.0, 1.33, and 4.0.

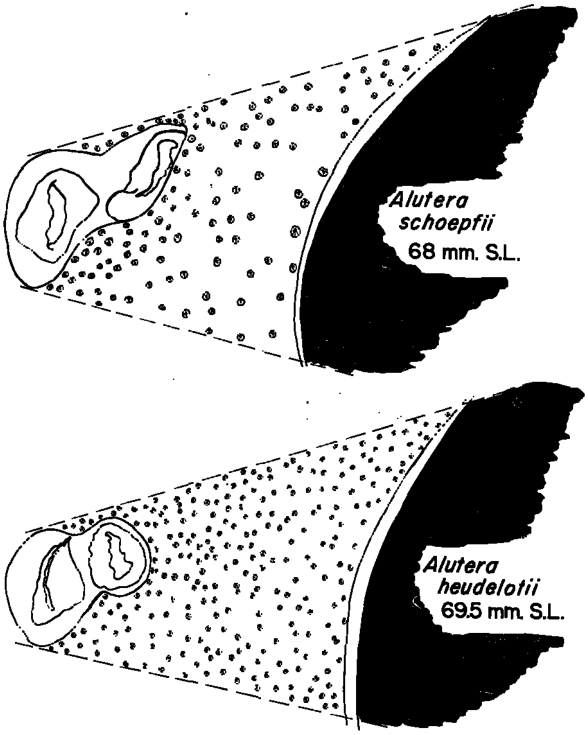

FIGURE 6.—Diagrammatic section of head region between eye and nostrils, illustrating the relative number and position of scale spines in this area: *Alutera schoepfii*, 68 mm. S.L.; *Alutera heudelotii*, 69.5 mm. S.L.

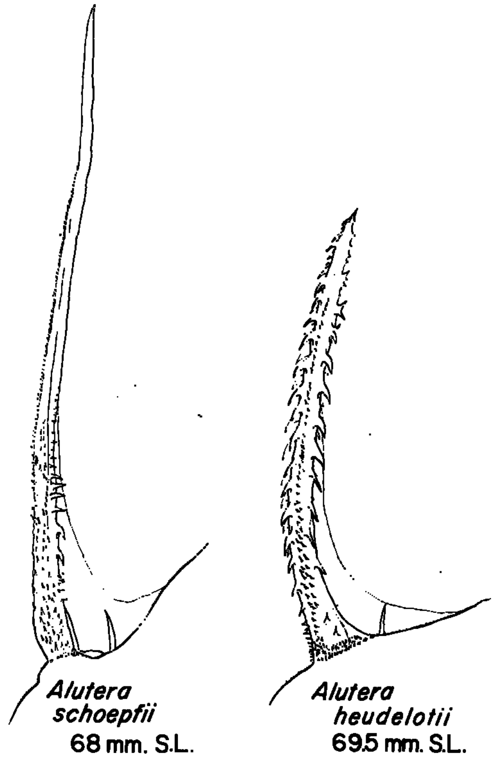

FIGURE 7.—Dorsal spines: *Alutera schoepfii*, 68 mm. S.L.; *Alutera heudelotii*, 69.5 mm. S.L.

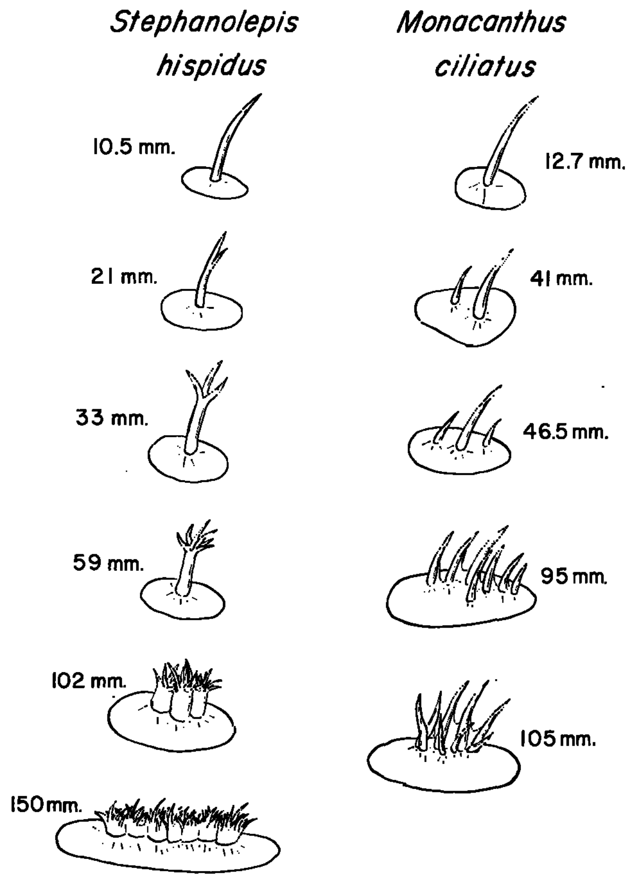

Figure 8.—Scales of *Stephanolepis hispidus* and *Monacanthus ciliatus,* illustrating development of the scale spines with increase in body size. The drawings are semidiagrammatic and are not drawn to the same relative proportion.

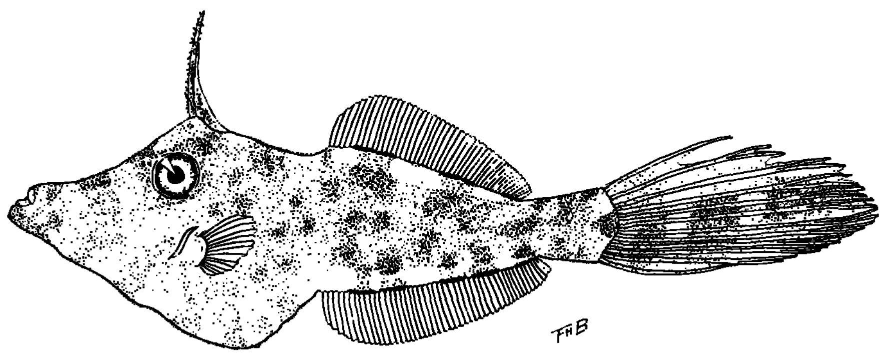

Figure 9.—*Alutera scripta,* 31.0 mm. S.L. (*Combat* station 438).

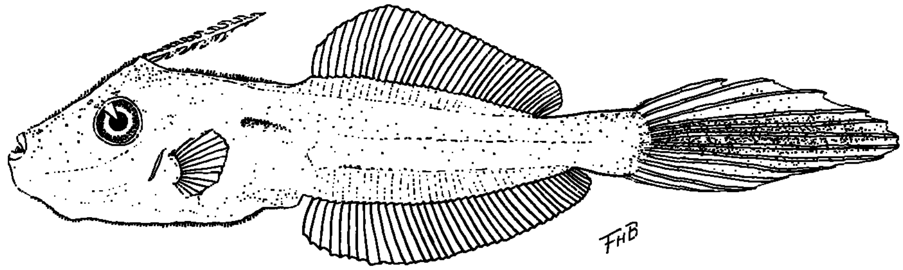

FIGURE 10.—*Alutera schoepfii,* 15.0 mm. S.L. (*Gill* cruise 2, regular station 5).

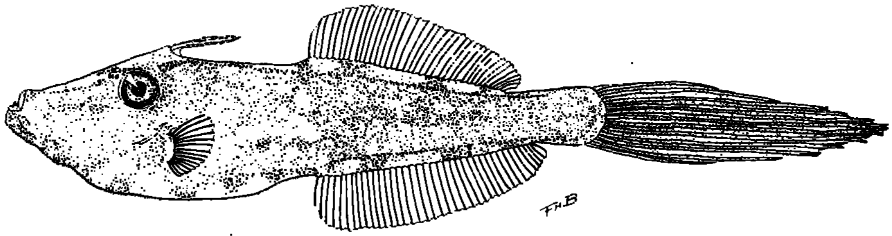

FIGURE 11.—*Alutera schoepfii,* 32.5 mm. S.L. (*Combat,* Port Canaveral, Fla.).

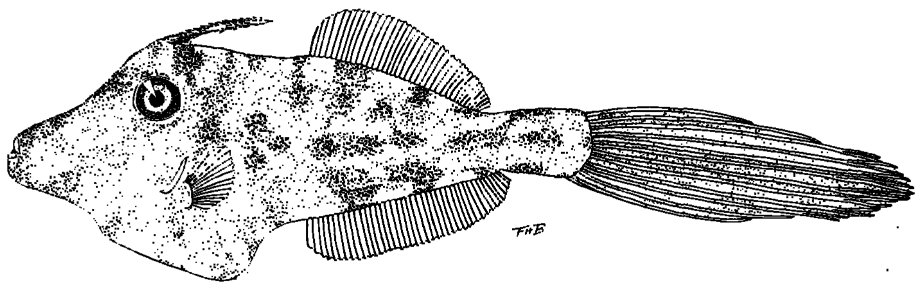

FIGURE 12.—*Alutera heudelotii,* 30.5 mm. S.L. (*Oregon* station 1074, University of Florida 3829).

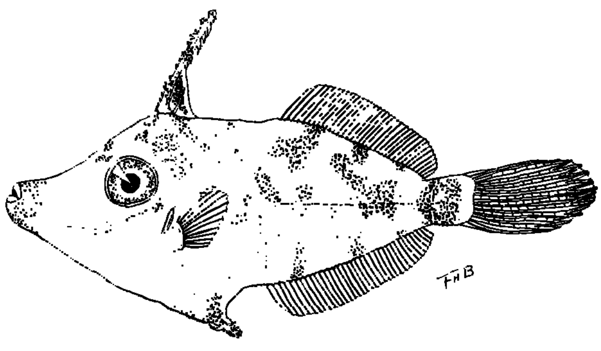

FIGURE 13.—*Monacanthus tuckeri,* 15.3 mm. S.L. (Academy of Natural Sciences of Philadelphia 84471).

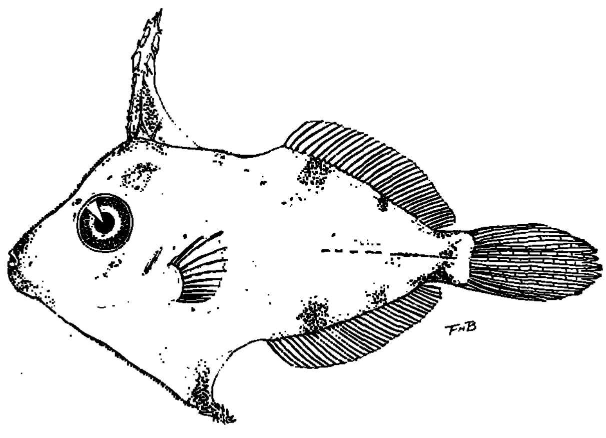

FIGURE 14.—*Monacanthus ciliatus,* 11.0 mm. S.L. (*Silver Bay* station 476).

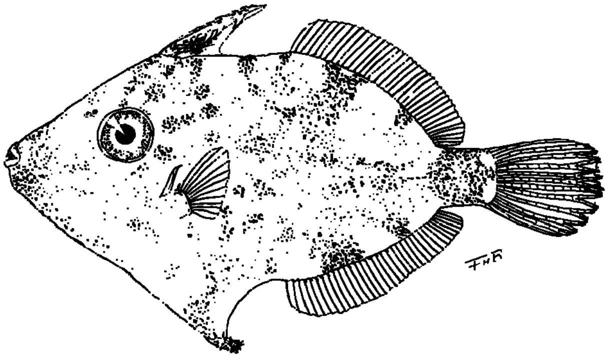

FIGURE 15.—*Monacanthus ciliatus*, 15.3 mm. S.L. (*Gill* cruise 7, regular station 54).

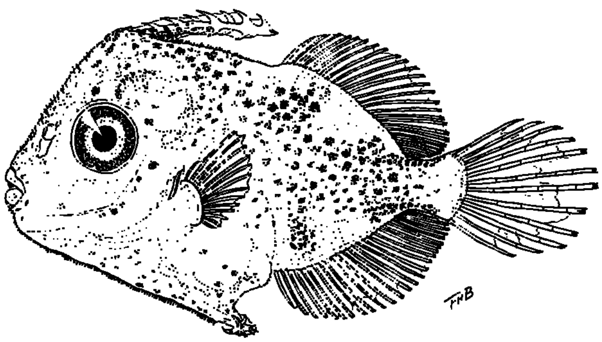

FIGURE 16.—*Stephanolepis hispidus*, 6.5 mm. S.L. (*Gill* cruise 7, regular station 38).

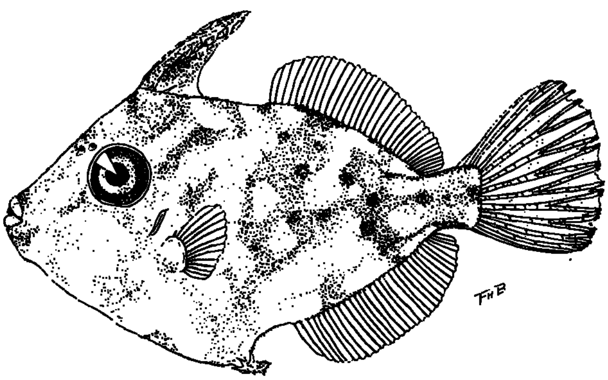

FIGURE 17.—*Stephanolepis hispidus*, 15.2 mm. S.L. (*Gill* cruise 8, regular station 48).

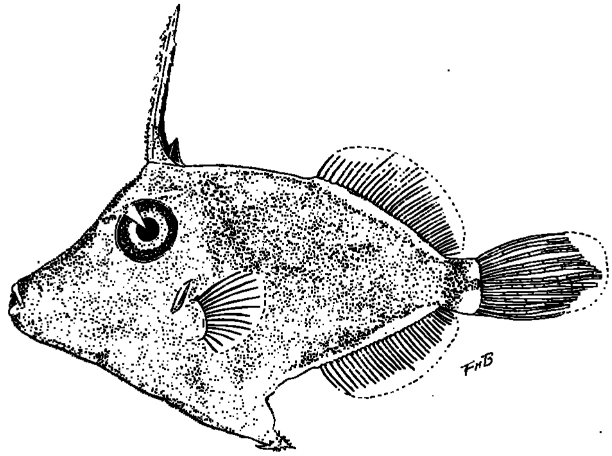

FIGURE 18.—*Amanses pullus*, 17.5 mm. S.L. (*Gill* cruise 9, from stomach contents of *Katsuwonus pelamis*, Nov. 15, 1954; 1600).

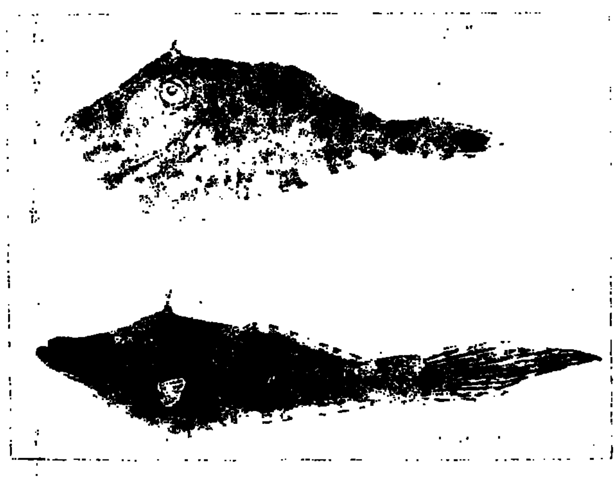

FIGURE 19.—Top: *Alutera monoceros*, 53 mm. S.L. (U.S. National Museum 117022). Bottom: *Alutera scripta*, 53 mm. S.L. (*Gill* cruise 8, regular station 52).

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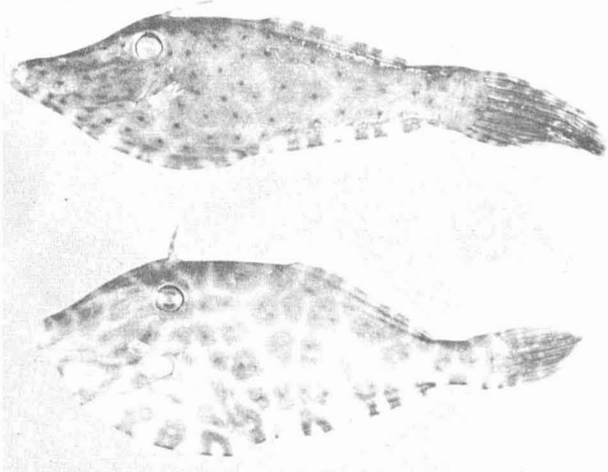

FIGURE 20.—Top: *Alutera scripta*, 119 mm. S.L. Bottom: *Alutera monoceros*, 122 mm. S.L. (Both from *Combat* station 459.) Note differences in body depth, caudal peduncle, and caudal-fin length.

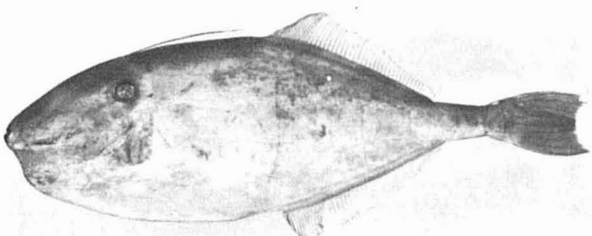

FIGURE 21.—*Alutera monoceros*, 545 mm. S.L. (*Silver Bay* station 1550).

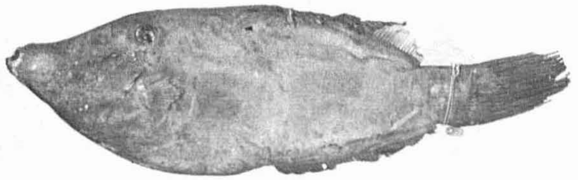

FIGURE 22.—*Alutera scripta*, 377 mm. S.L. (U.S. National Museum 170118).

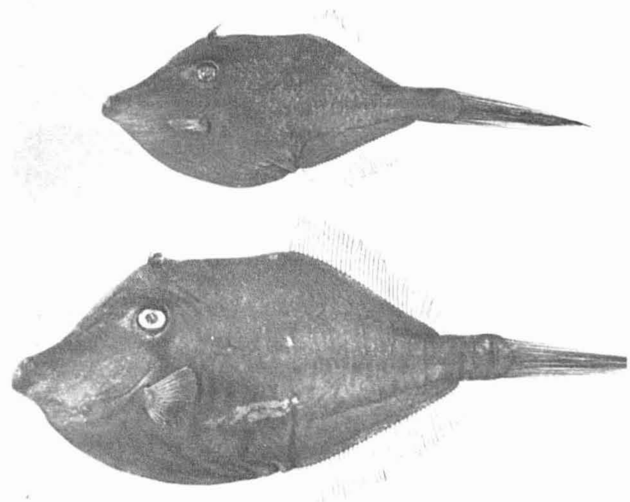

FIGURE 23.—*Alutera schoepfii*. Top: 126 mm. S.L. (University of Florida 2542). Bottom: 176 mm. S.L. (University of Florida C-9-2053-3). Body pigment spots that are frequently present on *A. schoepfii* of this size are not present on these two specimens.

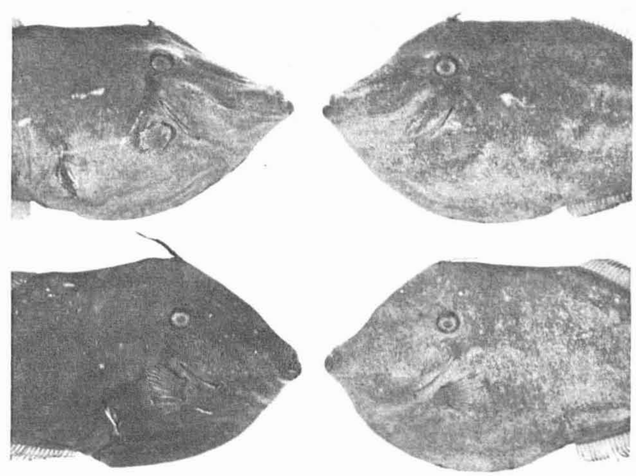

FIGURE 24.—*Alutera schoepfii*, 317 to 343 mm. S.L. (Tulane University 17106). Note variations in head profile and in size and position of the eye in this species.

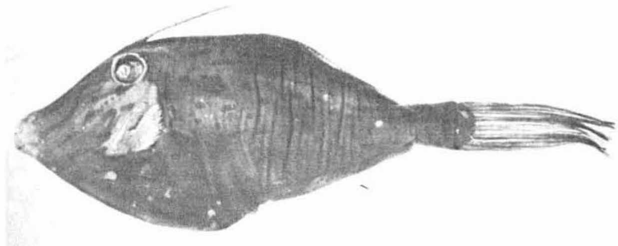

FIGURE 25.—*Alutera heudelotii*, 230 mm. S.L. (Tulane University 16316). Note the small distance from eye to dorsal spine.

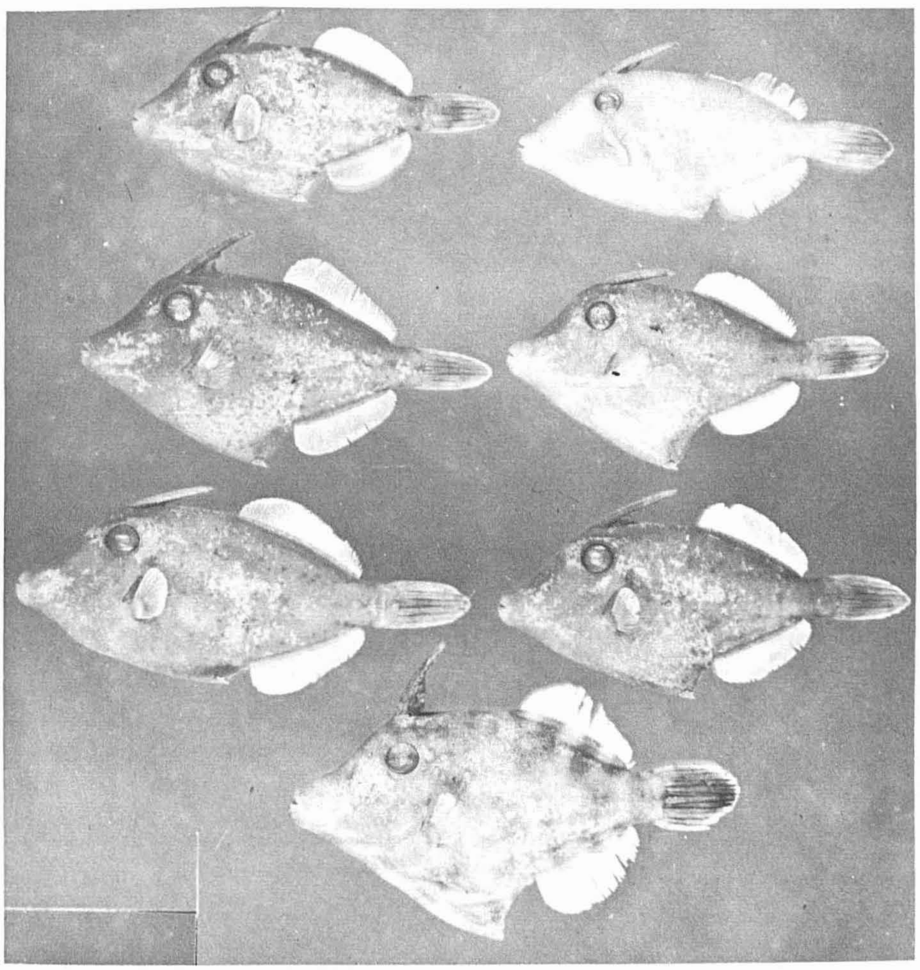

FIGURE 26.—*Amanses pullus*, 45.5 to 58 mm. S.L. (*Combat* station 474). Note variation in pigmentation.

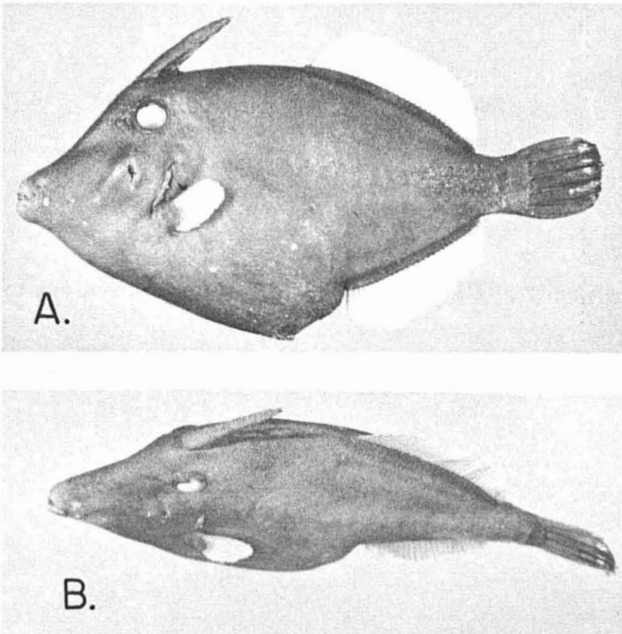

FIGURE 27.—*Amanses pullus,* 158 mm. S.L. female (University of Florida 7266). A. Lateral view. B. Oblique view showing deep groove behind dorsal spines.

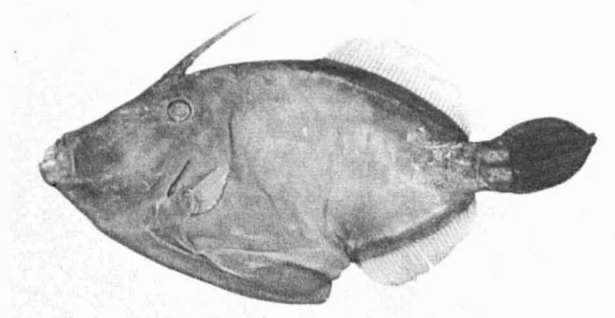

FIGURE 28.—*Amanses pullus,* 322 mm. S.L. male (U.S. National Museum 32096). Note prominent patch of bristles and pairs of large recurved spines on peduncle.

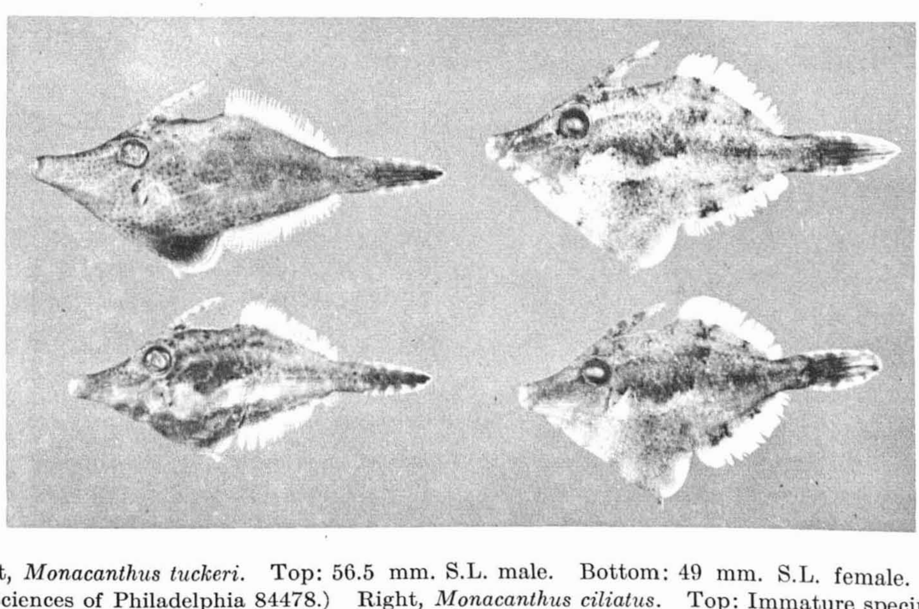

FIGURE 29.—Left, *Monacanthus tuckeri.* Top: 56.5 mm. S.L. male. Bottom: 49 mm. S.L. female. (Both Academy of Natural Sciences of Philadelphia 84478.) Right, *Monacanthus ciliatus.* Top: Immature specimen, 54 mm. S.L. Bottom: Immature specimen, 47.5 mm. S.L. (Both from Sanibel Island, Fla., August 19, 1959.) Note black line on ventral flap of the male *M. tuckeri* and compare body profiles of the two species at similar sizes.

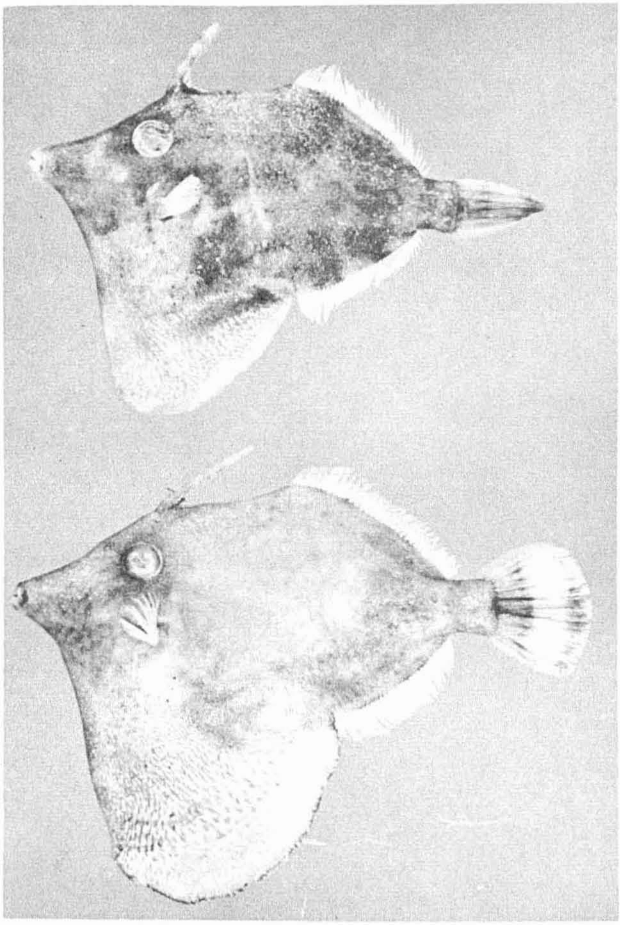

FIGURE 30.—*Monacanthus ciliatus*. Top: 92.5 mm. S.L. female. Bottom: 103 mm. S.L. male. (Both University of Florida 3611.) Note larger, recurved spines on caudal peduncle and black line on margin of ventral flap of male.

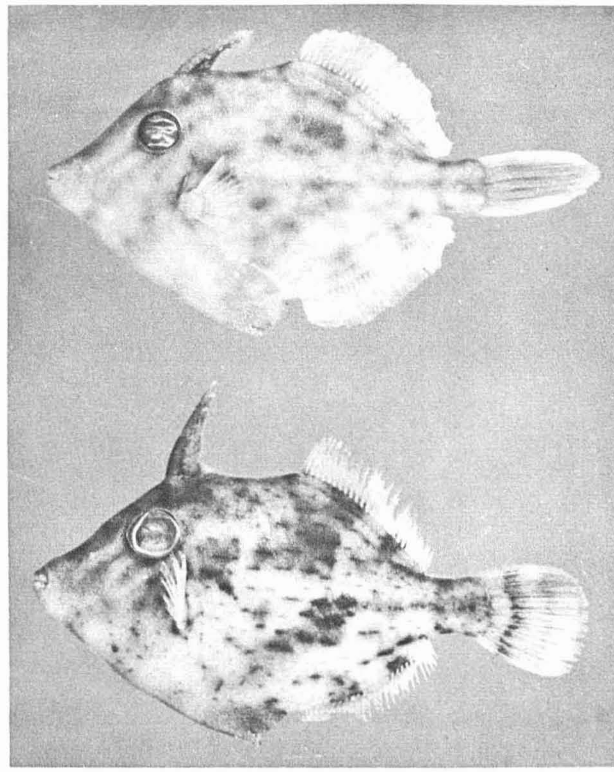

FIGURE 31.—Top: *Stephanolepis hispidus*, 52.5 mm. S.L. (*Gill* cruise 4, regular station 46). Bottom: *Stephanolepis setifer*, 55 mm. S.L. (*Combat* station 459). Note small spots and dashes of pigment and bars on caudal fin of *S. setifer*.

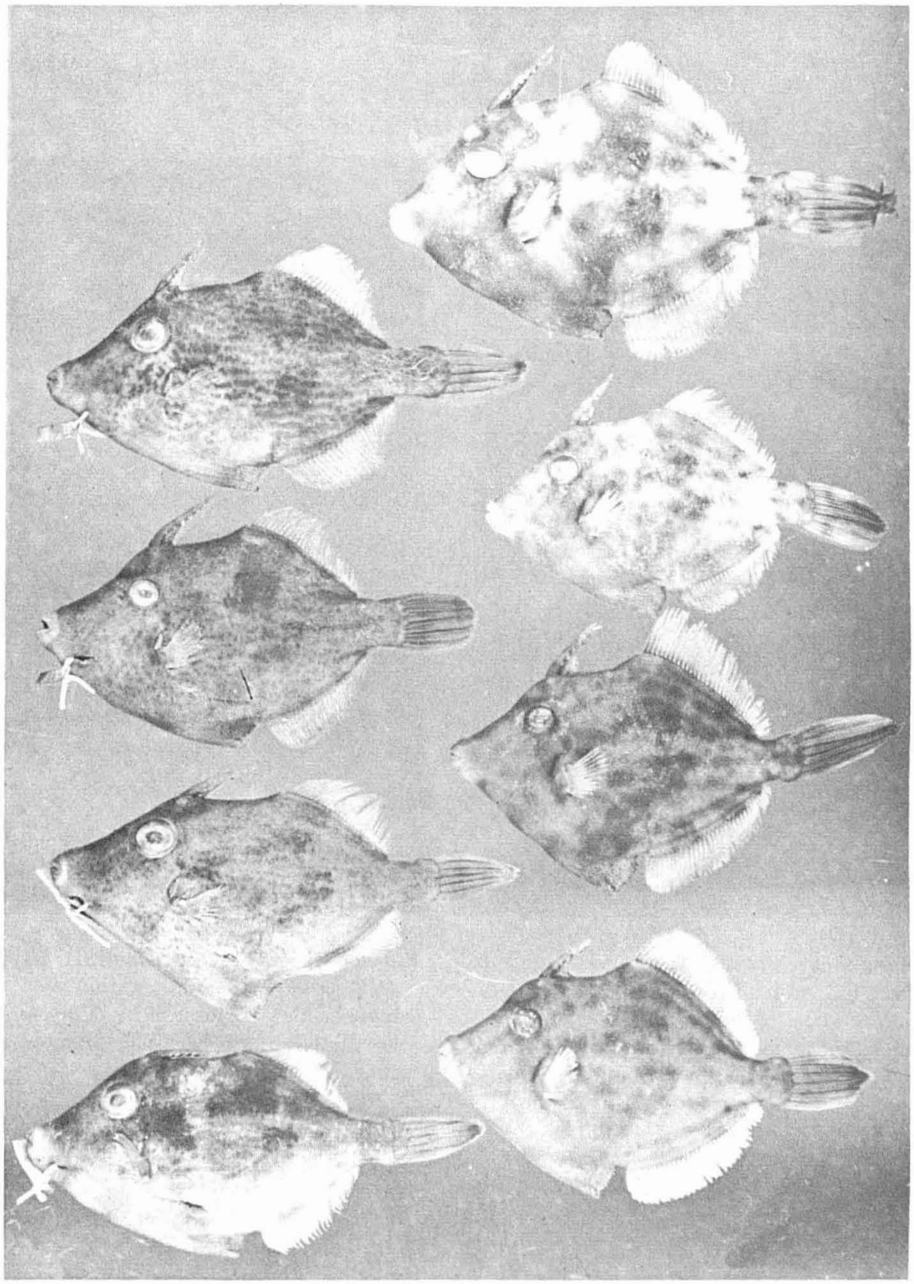

FIGURE 32.—Left: *Stephanolepis setifer* (Stanford University Natural History Museum 4772). Standard length and sex from top to bottom, 101-mm. male, 95-mm. male, 98-mm. female, 96-mm. female. Right: *Stephanolepis hispidus*, immature specimens (top two, *Silver Bay* station 1315, bottom two, University of Florida No. C–7–1253–4). Standard lengths from top to bottom, 103, 83.5, 88.5, and 88 mm. Note intraspecific and interspecific variation in size of eye. The elongated second ray of the two males of *S. setifer* is not clearly shown.

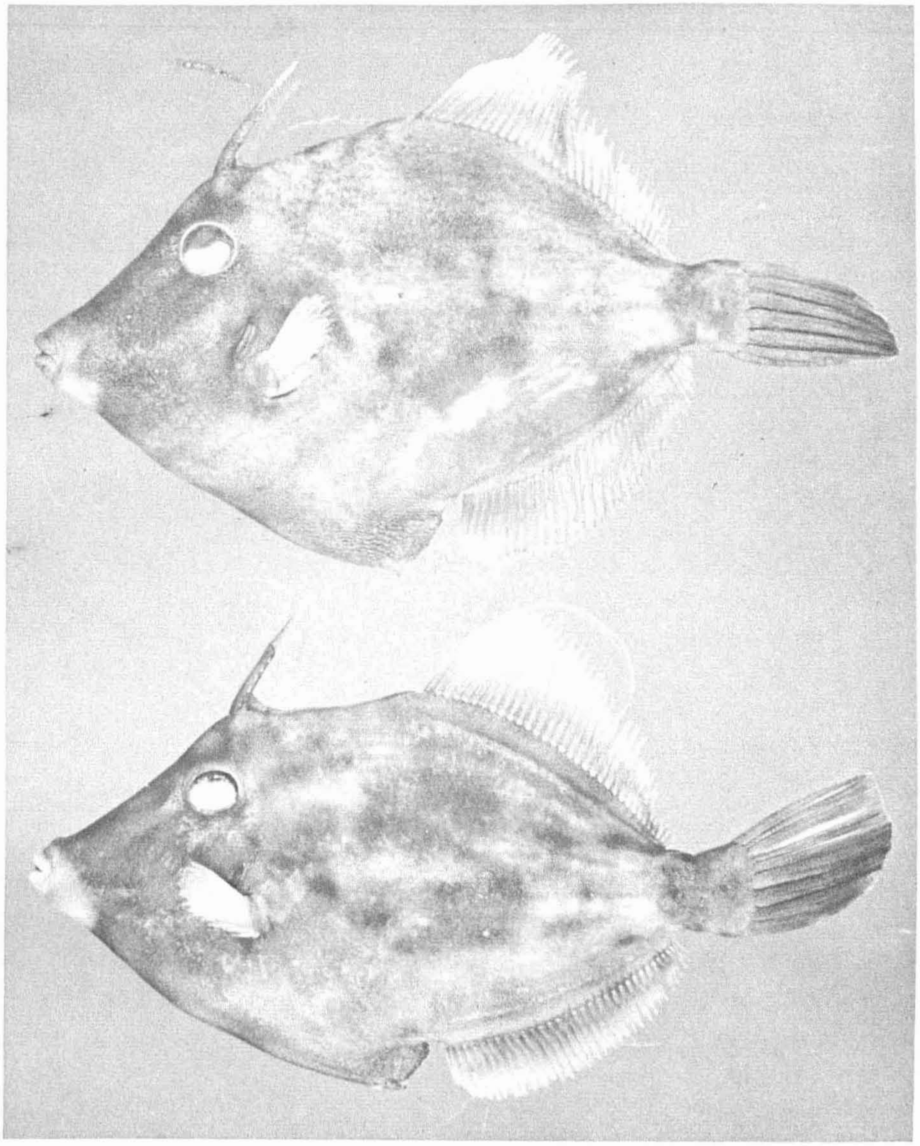

FIGURE 33.—*Stephanolepis hispidus.* Top: 167 mm. S.L. female (*Silver Bay* station 1297). Bottom: 169 mm. S.L. male (*Silver Bay* station 1210). Note the elongated second dorsal ray and patch of caudal peduncle bristles on the male, absent on the female.

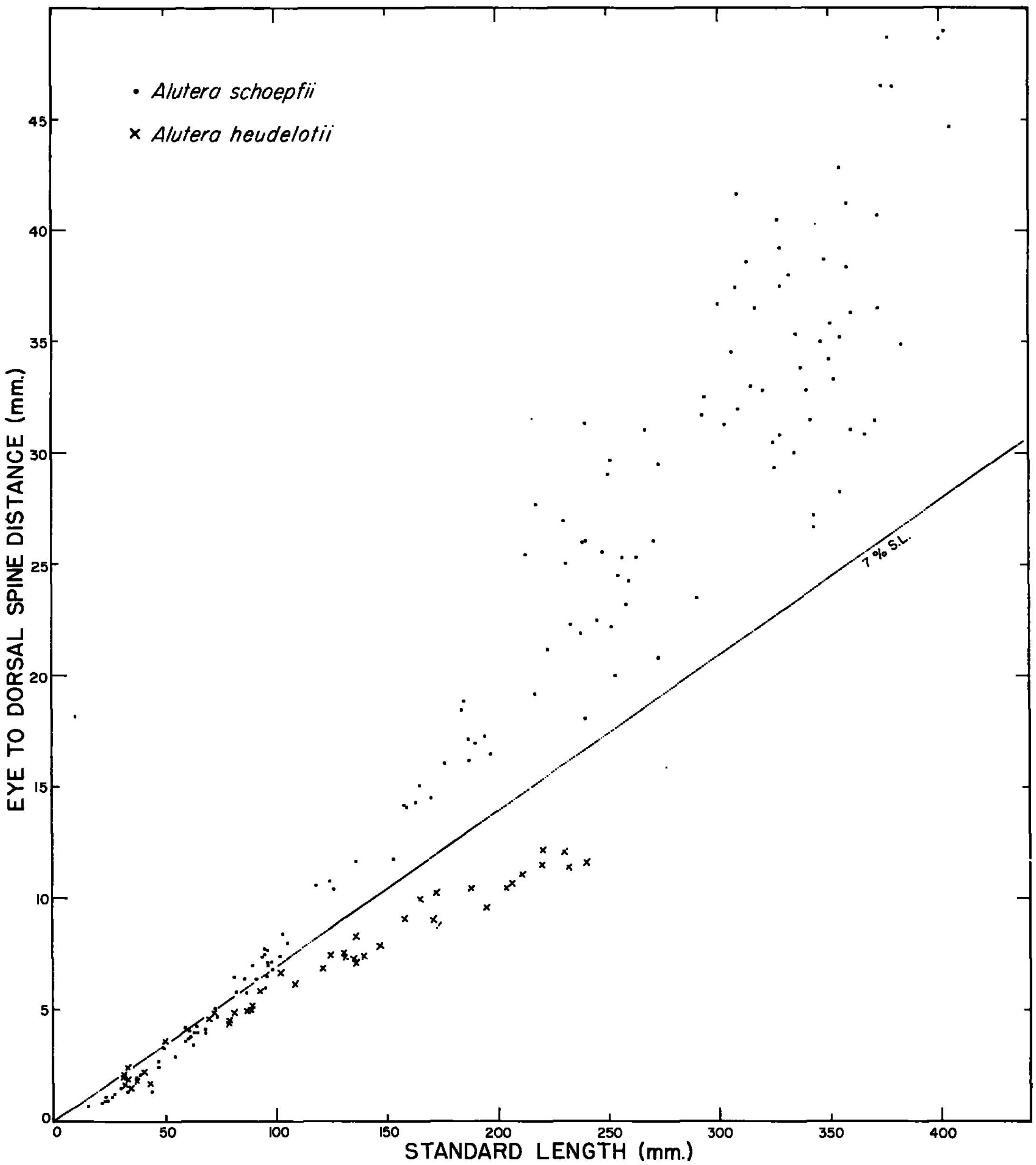

FIGURE 34.—Relation of eye to dorsal-spine distance and standard length for *Alutera schoepfii* and *Alutera heudelotii*. Specimens larger than 100 mm. can be distinguished by this character.

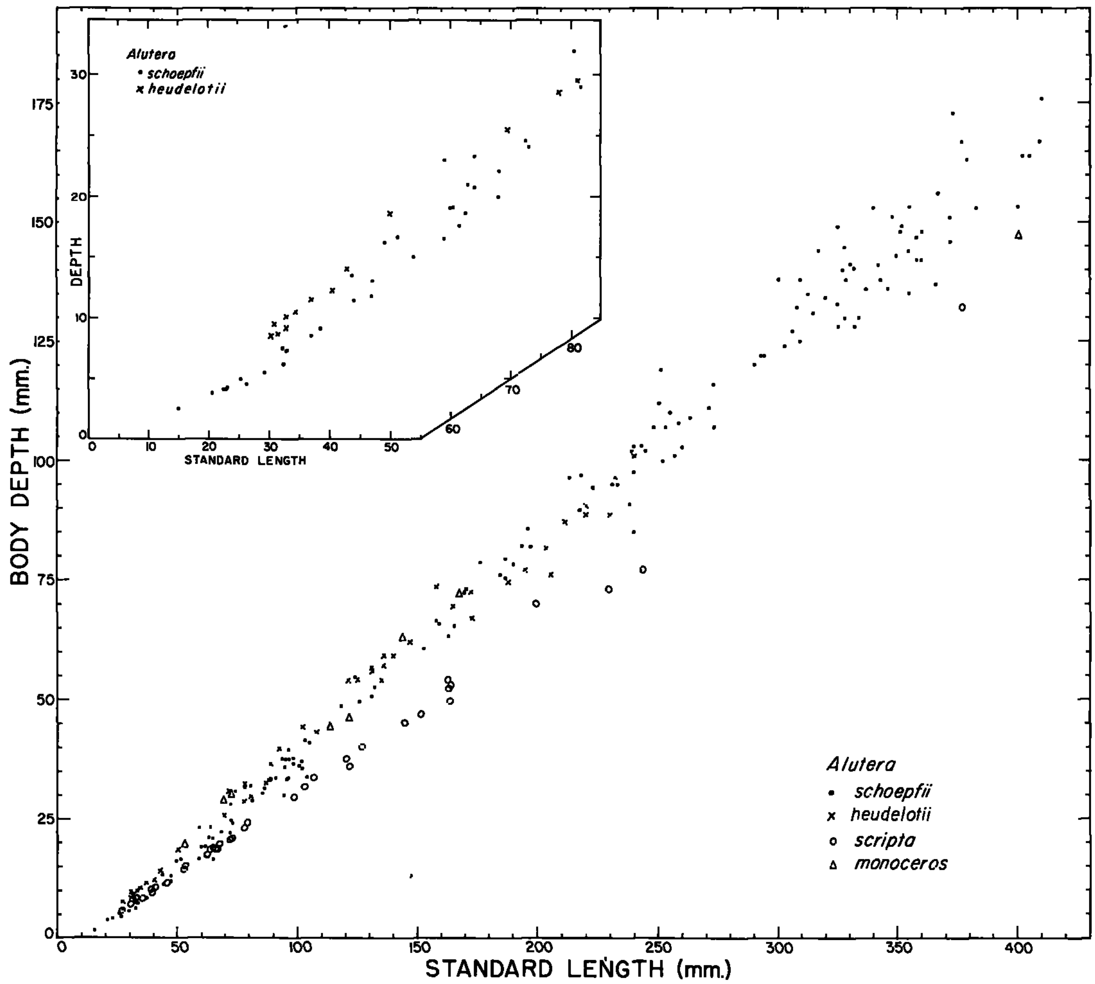

FIGURE 35.—Relation of body depth to standard length for *Alutera schoepfii*, *Alutera heudelotii*, *Alutera scripta*, and *Alutera monoceros*. Insert graph illustrates difference in depth between *Alutera schoepfii* and *Alutera heudelotii* at sizes less than about 35 mm.

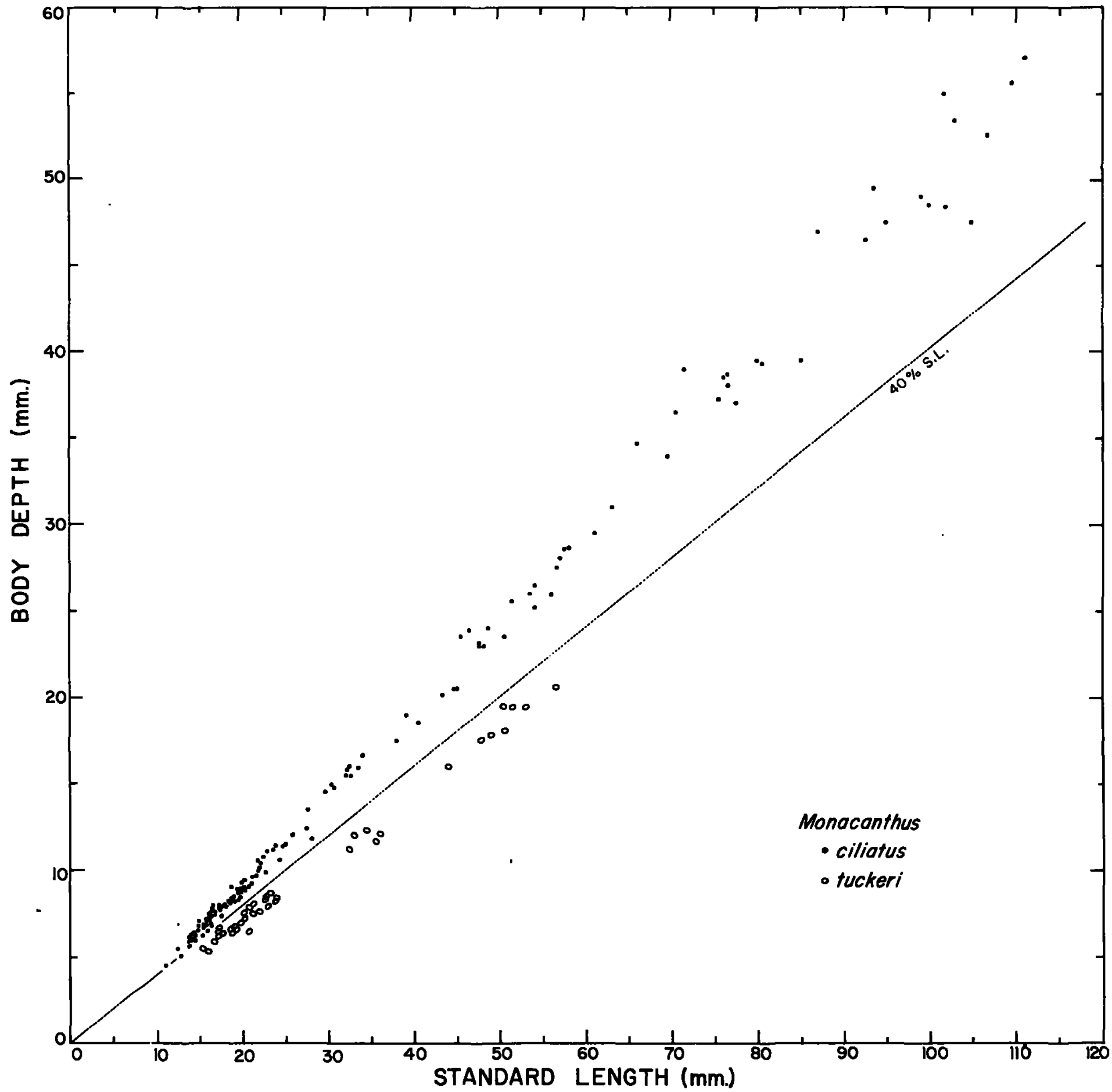

FIGURE 36.—Relation of body depth to standard length for *Monacanthus ciliatus* and *Monacanthus tuckeri*.

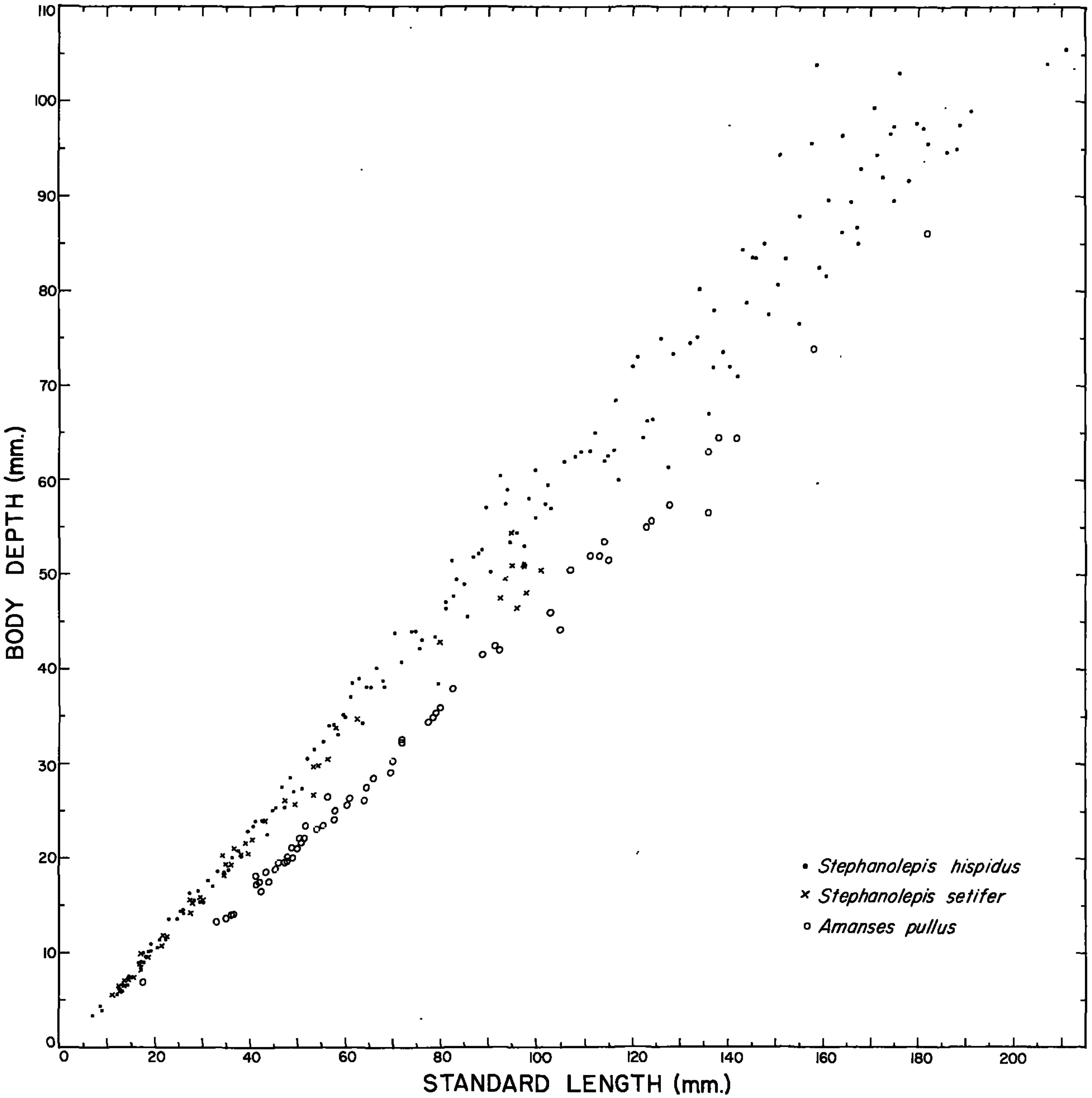

FIGURE 37.—Relation of body depth to standard length for *Stephanolepis hispidus*, *Stephanolepis setifer*, and *Amanses pullus*.

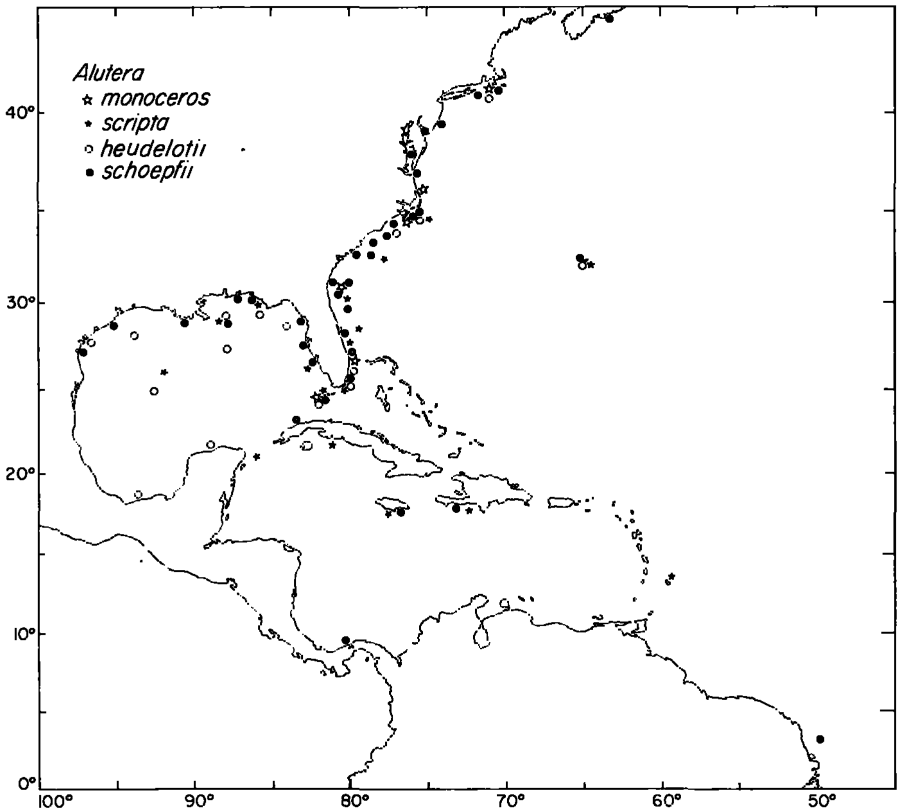

FIGURE 38.—General distribution of specimens examined of *Alutera monoceros*, *Alutera scripta*, *Alutera heudelotii*, and *Alutera schoepfii*.

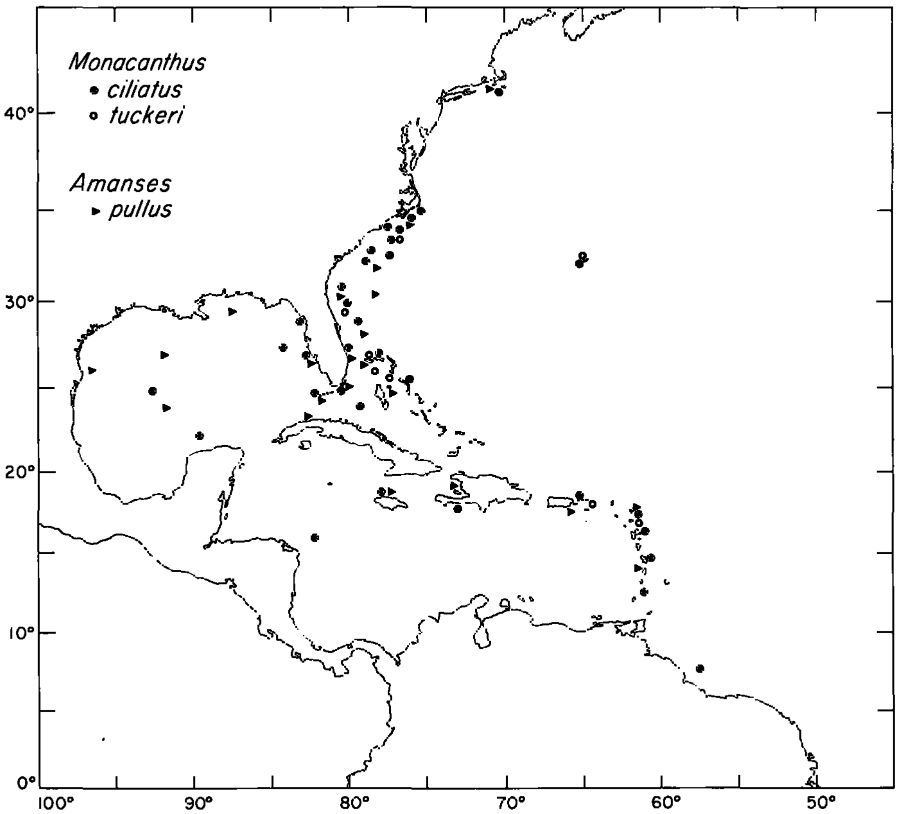

FIGURE 39.—General distribution of specimens examined of *Monacanthus ciliatus*, *Monacanthus tuckeri*, and *Amanses pullus*.

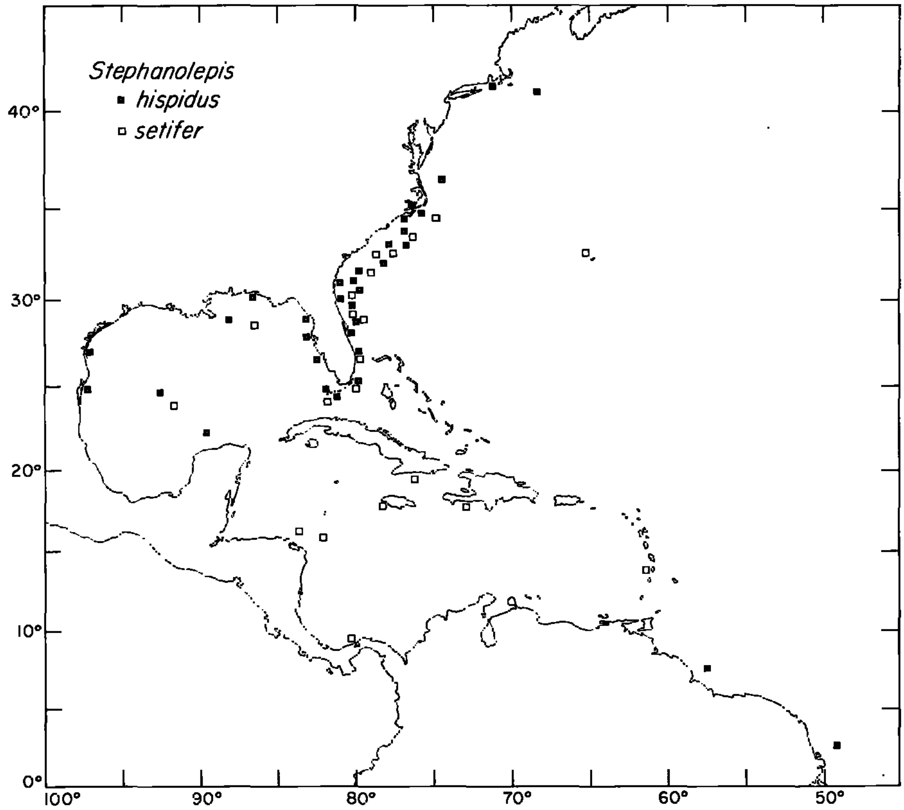

FIGURE 40.—General distribution of specimens examined of *Stephanolepis hispidus* and *Stephanolepis setifer*. (No attempt has been made to indicate all records where collecting stations were closely spaced.)

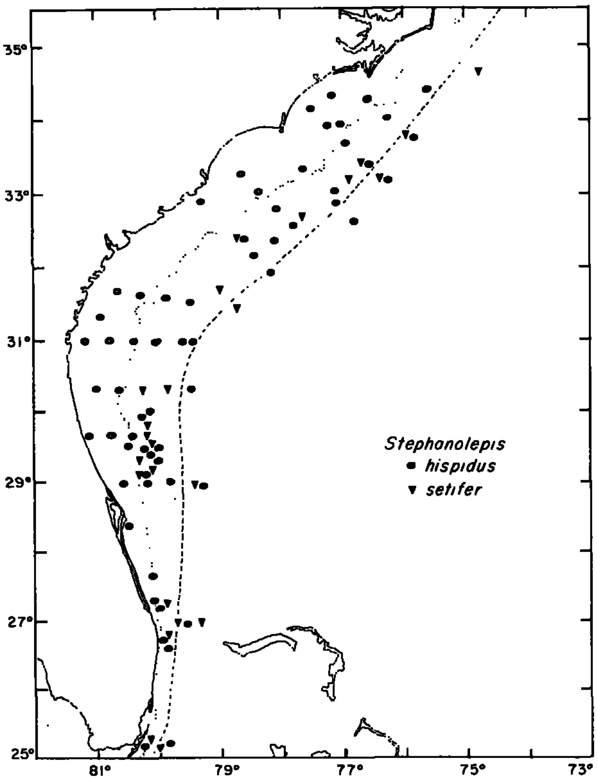

FIGURE 41.—Locations of specimens of *Stephanolepis hispidus* and *Stephanolepis setifer* taken at the surface off the southeastern Atlantic coast of the United States by dip net and meter larvae net on cruises of the *Gill*, *Combat*, and *Silver Bay*. The 20-fathom contour line is represented by the line of dots. The approximate axis of the Gulf Stream is represented by the line of dashes.

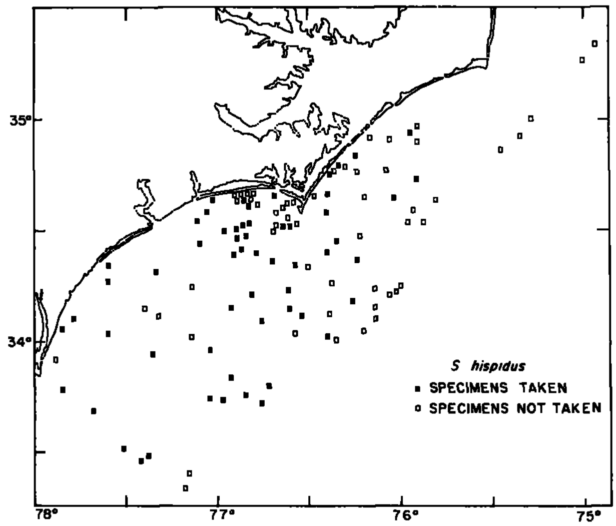

FIGURE 42.—Chart of the waters off North Carolina showing the concentrated bottom-trawling stations made by the *Silver Bay* in September 1959 and indicating the stations at which *Stephanolepis hispidus* was taken (black squares) and was not taken (open squares).

B. TABLES

Table 1.—*Dorsal ray–anal ray relation for 10 specimens of* Alutera monoceros

Anal soft rays \ Dorsal soft rays	46	47	48	49	50
47	1				
48		2			
49					
50		1	2	1	
51				1	1
52					1

Table 2.—*Dorsal ray–anal ray relation for 47 specimens of* Alutera scripta

Anal soft rays \ Dorsal soft rays	43	44	45	46	47	48	49
46		1	2				
47		1	1		1		
48	1			5	3		
49			2	7	8		
50				3	2	4	2
51					1	2	
52							1

Table 3.—*Dorsal ray–anal ray relation for 125 specimens of* Alutera schoepfii

Anal soft rays \ Dorsal soft rays	32	33	34	35	36	37	38	39
35	1		2	1				
36		1	2	1				
37	1	2	2	3	6	1		
38			3	9	15	2		
39				7	17	11	1	
40				2	9	9	5	
41					1	2	7	2

Table 4.—*Dorsal ray–anal ray relation for 58 specimens of* Alutera heudelotii

Anal soft rays \ Dorsal soft rays	36	37	38	39	40	41
39	1	2				
40		3	8	4		
41		3	10	7	1	
42		2	3	10	1	
43				1		
44					1	1

Table 5.—*Dorsal ray–anal ray relation for 52 specimens of* Monacanthus tuckeri

Anal soft rays \ Dorsal soft rays	32	33	34	35	36	37
31			1			
32	1		1			
33	2	3	2	1		
34		1	11			
35		1	9	9	2	
36			1	1	4	2

Table 6.—*Dorsal ray–anal ray relation for 239 specimens of* Monacanthus ciliatus

Anal soft rays \ Dorsal soft rays	29	30	31	32	33	34	35	36	37
28		6							
29		23	10						
30	2	14	30	12					
31		2	13	22	5	2			
32			1	10	8	17	5		
33				2	4	16	9	3	
34					1	3	5	6	1
35								4	1
36								2	

Table 7.—*Dorsal ray–anal ray relation for 975 specimens of* Stephanolepis hispidus

Anal soft rays \ Dorsal soft rays	29	30	31	32	33	34	35
30	1	3	18	3	1		
31		4	67	97	3		
32			21	216	154	6	
33			1	37	209	17	2
34				1	13	38	5
35						3	5

Table 8.—*Dorsal ray–anal ray relation for 133 specimens of* Stephanolepis setifer

Anal soft rays \ Dorsal soft rays	27	28	29	30
26	2			
27	18	16	1	
28	6	50	8	
29		6	20	2
30				4

FIGURE 9.—*Dorsal ray–anal ray relation for 81 specimens of* Amanses pullus

Anal soft rays \ Dorsal soft rays	33	34	35	36	37
29	2	1			
30	2	13	4		
31		12	32	4	1
32			5	4	1

TABLE 10.—*Dorsal ray–anal ray relation for 133 specimens of* Stephanolepis setifer *and 975 specimens of* Stephanolepis hispidus

[s=*S. setifer;* h=*S. hispidus;* figures are the percentages of the total for each ray combination]

Anal soft rays \ Dorsal soft rays	27	28	29	30	31	32	33	34	35
26	s 1.5								
27	s 13.5	s 12.0	s 0.8						
28	s 4.5	s 37.7	s 6.0						
29		s 4.5	s 15.0	s 1.5					
30			h 0.1	s 3.0 h 0.3	h 1.8	h 0.3	h 0.1		
31				h 0.4	h 6.9	h 9.9	h 0.3		
32					h 2.2	h 22.3	h 15.8	h 0.6	
33					h 0.1	h 3.8	h 21.4	h 6.9	h 0.2
34						h 0.1	h 1.3	h 3.9	h 0.5
35								h 0.3	h 0.5

TABLE 11.—*Numbers of pectoral soft rays in western North Atlantic Monacanthidae*

[Counts of rays from both sides; not recorded with respect to right and left sides; rudimentary pectoral spine not included in counts]

Species	9–10	10–10	10–11	11–11	11–12	12–12	12–13	13–13	13–14	14–14	14–15	15–15
Alutera monoceros										10		
Alutera scripta								2	2	41	2	2
Alutera schoepfii					6	63	23	61	3	2		
Alutera heudelotii							3	40	9	8		
Monacanthus tuckeri			3	34		2						
Monacanthus ciliatus	1	4	18	148	10	11	1					
Stephanolepis hispidus						5	10	236	42	63		
Stephanolepis setifer				19	16	88	4					
Amanses pullus							3	54	8	13		

TABLE 12.—*Relation of body depth to standard length in Monacanthidae of the western north Atlantic, by species and millimeter intervals*

[In percent of standard length for grouped millimeter intervals of standard length]

Standard length (mm.)	Body depth in percent of standard length								
	Alutera				*Monacanthus*		*Stephanolepis*		*Amanses pullus*
	monoceros	*scripta*	*schoepfii*	*heudelotii*	*tuckeri*	*ciliatus*	*hispidus*	*setifer*	
0–4.9									
5–9.9							43.3–48.6		
10–14.9						39.1–48.6	46.2–51.7	47.2–52.2	
15–19.9			17.3		33.1–38.5	39.9–48.5	48.7–57.9	48.4–57.8	38.9
20–24.9			18.2–18.5		31.3–37.9	43.2–48.8	51.2–58.7	50.2–54.6	
25–29.9		21.5	17.4–22.2	27.8		42.1–49.5	51.2–59.6	51.8–56.6	
30–34.9		22.6–24.5	19.1–23.2	27.6–30.6	34.5–36.4	47.7–49.5	52.8–55.7	51.7–59.6	40.3
35–39.9		23.1–25.9	22.7–23.9	31.1	33.0–33.9	46.1–48.7	52.9–58.0	52.0–57.3	38.6–39.1
40–44.9		25.9	25.9–30.9	30.1–32.6	36.4	45.7–46.8	51.3–58.0	54.3–56.3	38.8–44.2
45–49.9		25.2	25.1–33.1		36.3–36.5	45.6–51.9	53.9–59.0	51.9–54.9	40.8–43.3
50–59.9	36.8	27.4–28.0	27.8–39.0	37.0	35.8–38.6	46.4–49.9	53.4–60.0	50.4–58.6	41.8–46.9
60–69.9	42.0	27.7–29.2	25.2–36.4	36.7		48.4–52.6	53.9–62.6	52.7–55.7	40.8–43.2
70–79.9	41.4	28.8–30.2	30.0–40.4	36.2–42.9		47.7–54.5	48.3–62.2	55.5–58.4	43.3–45.1
80–89.9			35.6–39.8	36.4–41.0		46.5–54.0	54.8–63.6	49.1–55.9	45.1–46.6
90–99.9		30.0	29.6–41.1	43.0		49.5–52.9	54.4–65.2	48.4–56.8	45.4–46.2
100–124.9	37.7–38.6	29.5–31.4	32.4–44.0	39.8–44.5		45.2–54.5	51.3–61.0	46.8–50.9	42.1–47.2
125–149.9	43.8	31.0–31.5	38.5–40.1	40.0–43.4			49.3–60.1		41.5–46.7
150–174.9	43.1	30.2–33.1	38.8–42.6	38.7–46.5			49.4–65.8		46.8
175–199.9			40.4–44.7	39.5–39.6			50.4–58.2		47.3
200–224.9		35.0	41.2–45.3	36.8–41.2			50.0–50.2		
225–249.9		31.6–31.7	35.4–43.1	38.5–42.1					
250–274.9			38.2–47.4						
275–299.9			41.4						49.3
300–349.9			38.6–46.0						46.9–48.3
350–399.9		35.0	37.4–46.3						
400+	34.4–36.7		38.3–42.9						

TABLE 13.—*Relation of head length to standard length in Monacanthidae of the western North Atlantic, by species and millimeter intervals*

[In percent of standard length for grouped millimeter intervals of standard length]

Standard length (mm.)	Head length in percent of standard length								
	Alutera				*Monacanthus*		*Stephanolepis*		*Amanses pullus*
	monoceros	*scripta*	*schoepfii*	*heudelotii*	*tuckeri*	*ciliatus*	*hispidus*	*setifer*	
5-9.9							34.4-41.4		
10-14.9						34.5-38.2	34.3-38.3	37.5-40.2	
15-19.9			23.3		37.8-41.5	32.7-38.7	34.0-38.2	35.8-37.7	42.9
20-24.9			25.2-26.9		35.6-39.1	32.5-38.5	33.3-37.1	35.7-37.0	
25-29.9		31.5	25.3-25.5			34.4	34.4-37.3	35.7-36.3	
30-34.9		31.9-32.5	27.4-27.9	31.8-35.2	36.3-37.0	33.5-35.0	34.8-35.7	35.0-37.8	38.8
35-39.9		31.0-32.7	29.6-29.7	32.4	35.2-35.8		33.5-36.5	34.5-36.7	38.6-40.1
40-44.9		29.3	31.6-31.8	33.7-34.1	34.8	32.4-33.3	33.0-36.1	34.1-36.3	36.6-39.3
45-49.9		32.6	28.5-32.2		34.8-34.9	32.8-33.3	33.6-34.9	35.4	35.4-35.9
50-59.9	34.7	32.6-32.9	29.4-32.2	32.2	33.1-36.1	31.0-33.3	32.5-34.8	33.6-35.3	34.4-39.0
60-69.9	31.7	32.0-33.1	30.3-32.7	33.4			32.6-36.9	35.7	33.3-35.0
70-79.9	33.7	31.4-33.9	30.8-32.3	32.9-34.6		31.0-31.8	33.0-34.7	37.9	32.9-37.8
80-89.9			30.1-32.4	30.1-33.7		29.4-31.7	31.9-35.1	31.3	32.9-33.8
90-99.9		32.2	29.3-34.2			29.8-32.5	31.5-34.4	33.5-37.1	29.0-32.9
100-124.9	31.4-31.6	30.9-32.8	28.0-31.8	31.3-31.8		29.0-30.1	31.7-34.5	31.6-34.2	32.0-35.4
125-149.9	31.6	31.4-33.0	29.8-31.7	30.2-32.7			31.1-34.2		31.9-32.4
150-174.9	30.5	31.7-32.0	27.4-30.8	30.1-31.6			29.5-35.4		32.0
175-199.9			28.8-31.1	30.8-31.4			30.4-33.0		
200-224.9		32.3	27.8-29.7	29.1-30.9			29.8-31.6		
225-249.9		32.2-32.4	27.9-30.3	29.8-31.3					
250-274.9			27.8-32.2						
275-299.9			29.8						33.9
300-349.9			27.4-31.1						31.4-33.8
350-399.9		31.3	27.0-31.0						
400+	26.6-26.9		27.9-29.6						

TABLE 14.—*Relation of snout length to standard length in Monacanthidae of the western North Atlantic, by species and millimeter intervals*

[In percent of standard length for grouped millimeter intervals of standard length]

Standard length (mm.)	Snout length in percent of standard length								
	Alutera				*Monacanthus*		*Stephanolepis*		*Amanses pullus*
	monoceros	*scripta*	*schoepfii*	*heudelotii*	*tuckeri*	*ciliatus*	*hispidus*	*setifer*	
5-9.9							14.4-20.0		
10-14.9						16.4-21.0	17.5-19.3	18.4-21.0	
15-19.9			12.0		21.8-28.2	16.6-21.9	18.2-20.5	19.0-21.6	25.7
20-24.9			14.1-16.7		20.7-25.5	19.3-25.2	19.4-20.4	20.4-21.3	
25-29.9		21.9	15.8-16.6			21.4-25.1	19.6-22.3	21.2-23.2	
30-34.9		22.6-23.8	18.8-18.9	23.8-25.2	26.1-27.0	22.2-23.9	22.0-24.3	21.7-25.7	27.3
35-39.9		23.7-25.1	20.8-21.8	25.4	25.4-25.9	23.7-25.1	21.5-24.8	23.6-25.1	27.8-28.8
40-44.9		22.4	23.8-23.9	25.9-26.7	26.4	22.2-23.0	21.4-24.2	23.5-24.3	27.4-28.6
45-49.9		25.0	23.0-24.7		26.7	23.3-24.9	22.5-24.9	25.1	27.1-28.0
50-59.9	27.2	25.7-26.9	23.1-25.5	26.0	26.1-28.1	22.8-24.9	22.7-25.0	23.4-24.7	26.6-28.4
60-69.9	26.5	25.8-26.7	23.5-27.0	28.1		23.8-24.6	23.2-26.0	24.3	25.9-27.4
70-79.9	27.0	26.0-28.0	25.5-27.3	27.7-27.8		23.3-25.2	22.6-25.1	26.8	26.9-33.3
80-89.9			24.7-27.6	26.0-28.7		21.9-24.5	22.8-25.2	20.6-24.9	26.9-27.8
90-99.9		27.2	24.2-28.6			23.4-25.7	21.2-24.4	24.2-25.6	26.5-28.9
100-124.9	26.2-27.5	26.3-28.8	22.5-27.5	27.2-27.9		22.4-24.3	22.5-25.1	22.1-23.9	26.0-27.8
125-149.9	26.7	26.8-28.0	24.8-26.7	26.2-28.7			23.3-26.0		25.9-27.2
150-174.9	26.5	27.4-28.3	25.1-27.1	26.7-27.9			21.3-27.5		26.9
175-199.9			24.8-27.8	27.1-27.7			23.3-25.9		
200-224.9		28.3	23.6-27.0	26.6-28.0			22.4-24.4		
225-249.9		28.0-28.1	24.2-26.5	26.9-28.2					
250-274.9			24.2-26.9						
275-299.9			27.1						27.4
300-349.9			23.6-27.6						25.6-28.8
350-399.9		26.8	23.9-26.7						
400+	23.4-24.2		23.3-26.1						

TABLE 15.—*Relation of eye diameter to standard length in Monacanthidae of the western North Atlantic, by species and millimeter intervals*

[In percent of standard length for grouped millimeter intervals of standard length]

Standard length (mm.)	Eye diameter in percent of standard length								
	Alutera				*Monacanthus*		*Stephanolepis*		*Amanses pullus*
	monoceros	*scripta*	*schoepfii*	*heudelotii*	*tuckeri*	*ciliatus*	*hispidus*	*setifer*	
5–9.9							13.3–17.1		
10–14.9						11.8–14.5	13.3–15.7	14.0–15.9	
15–19.9			8.0		11.4–14.4	10.8–13.1	13.2–15.6	13.8–15.0	14.9
20–24.9			7.8–8.4		11.0–12.7	11.0–12.6	11.8–14.0	13.1–14.4	
25–29.9		8.5	7.2–7.8			10.9–12.8	11.3–15.8	12–4–13.9	
30–34.9		8.4–9.1	7.1–8.4	8.5–9.7	11.0–11.2	11.2–12.1	13.3–14.8	12.9–13.3	10.6
35–39.9		7.8–9.0	7.0–7.6	10.0	10.0–10.1	12.6	12.0–13.9	11.7–12.6	9.7–11.0
40–44.9		7.3	8.0–8.4	8.8–9.1	9.8	10.2–11.1	11.3–13.5	11.1–11.6	10.3–11.3
45–49.9		7.4	7.4–8.7		9.4	9.9–10.3	10.3–12.4	10.9–11.4	9.5–10.0
50–59.9	8.3	7.4–7.9	7.8–8.3	8.0	8.7–10.1	8.6–9.8	10.4–11.5	11.0–11.8	9.0–10.4
60–69.9	7.8	6.6–7.2	7.0–8.6	8.3		9.2	9.5–11.7	9.9–10.1	8.5–9.4
70–79.9	7.4	6.6–8.0	5.8–8.8	8.2–9.6		9.1–10.2	9.7–10.5	9.9–12.0	8.0–9.0
80–89.9			6.7–7.9	7.3–8.4		7.4–9.1	9.1–11.5	9.4–11.3	8.0–8.2
90–99.9		6.7	4.8–8.1			7.7–8.9	8.7–9.6	8.7–11.6	7.9–8.1
100–124.9	6.4	5.9–6.8	6.0–7.3	6.4–8.1		7.4–8.3	7.4–9.9	7.6–9.9	7.5–8.8
125–149.9	6.7	5.7–6.5	6.4–7.1	6.3–7.7			7.5–8.9		7.0–7.6
150–174.9	5.4	5.6–6.4	5.1–7.2	6.4–8.5			7.0–9.1		7.0
175–199.9			5.1–6.8	7.0–7.6			7.1–7.8		6.6
200–224.9		5.4	5.7–6.1	6.2–7.7			6.9–7.1		
225–249.9		5.5	5.3–6.1	6.6–7.5					
250–274.9			5.1–6.7						
275–299.9			5.9						5.6
300–349.9			5.0–6.4						5.2–5.3
350–399.9		5.3	4.8–6.0						
400+	4.2–4.4		4.9–5.1						

TABLE 16.—*Relation of eye to dorsal-spine distance to standard length in Monacanthidae of the western North Atlantic, by species and millimeter intervals*

[In percent of standard length for grouped millimeter intervals of standard length]

Standard length (mm.)	Eye to dorsal spine distance in percent of standard length								
	Alutera				*Monacanthus*		*Stephanolepis*		*Amanses pullus*
	monoceros	*scripta*	*schoefii*	*heudelotii*	*tuckeri*	*ciliatus*	*hispidus*	*setifer*	
5–9.9							11.7–17.1		
10–14.9						8.6–9.5	11.5–13.9	11.8–12.8	
15–19.9			4.7		9.5–10.6		11.6–12.7	12.7	7.4
20–24.9			3.9–4.8		7.7–8.8	8.8–9.8	10.8–11.4	11.1	
25–29.9		6.7	4.3–5.1			10.1	10.4–11.9	10.6–11.2	
30–34.9		5.8–6.5	4.0	4.3–7.3	7.5–7.7		9.6–11.1	9.9–13.3	7.6
35–39.9		5.1–6.4	5.1–5.5	4.9	7.0–7.2		9.7–11.0	10.3–11.5	7.5–7.9
40–44.9		6.1	4.0	4.0–5.4	7.3	9.6	8.7–11.0	9.1	7.8–9.0
45–49.9		5.7	5.1–6.7		6.5–6.7	8.0–8.4	9.5–10.5	9.3–9.9	6.9–7.9
50–59.9	8.1	6.0–6.4	5.4–7.1	7.2	6.3–7.4	8.0–9.6	8.8–10.1	8.7–10.9	6.6–8.5
60–69.9	7.8	5.4–6.1	5.4–6.8	6.6			8.9–10.5	10.9	7.1–7.7
70–79.9	7.3	5.7–6.4	6.4–6.9	5.7–6.7		8.0–9.1	8.7–10.7	9.8	7.3–8.5
80–89.9			6.7–8.1	5.7–6.7		6.7–7.9	8.8–10.7	9.4	7.2–7.9
90–99.9		6.1	6.3–8.3	6.4		7.8–8.5	8.3–10.2	8.4–10.4	8.2–8.3
100–124.9	7.8	5.8–6.0	7.3–8.9	4.6–6.6		7.0–7.9	8.4–10.6	7.7–8.6	6.6–8.3
125–149.9	8.3	5.9	7.8–8.6	5.2–6.1			7.4–10.0		5.9–6.5
150–174.9	8.6	5.1–6.0	7.7–9.2	5.1–6.1			7.4–9.8		6.6
175–199.9			8.4–11.2	4.9–5.6			8.0–8.6		
200–224.9		6.1	8.8–12.7	5.1–5.5			7.3–8.5		
225–249.9		5.0–5.5	7.5–11.0	4.8–5.3					
250–274.9			7.6–11.8						
275–299.9			8.1						8.9
300–349.9			7.9–13.5						7.4–8.3
350–399.9		5.3	7.9–12.9						
400+	7.0–7.2		12.0–13.0						

C. SPECIMENS EXAMINED

The specimens examined are listed by species and arranged generally from north to south along the Atlantic coast of the United States, including Bermuda and the Bahamas; then north, west, and south around the Gulf of Mexico; next throughout Cuba and the rest of the West Indies; and finally southward through the Caribbean and to Brazil. The few records from outside the western North Atlantic are listed terminally on the individual species lists.

The following abbreviations are used for collections:

ANSP, Academy of Natural Sciences of Philadelphia; BLBG, U.S. Fish and Wildlife Service Biological Laboratory, Brunswick, Ga.; CAS, California Academy of Sciences; CHML, Cape Haze Marine Laboratory; FSBC, Florida State Board of Conservation Marine Laboratory, St. Petersburg, Fla.; SU, Stanford University Natural History Museum; TU, Tulane University; UF, University of Florida; UNC, University of North Carolina Institute of Fisheries Research; USNM, U.S. National Museum.

The following abbreviations are used for collecting methods, in those instances in which the methods are definitely known:

D.N., dip net; M.L.N., meter larval net; P.T., plankton tow; S.C., stomach contents of a larger fish; Sn., seine; Tr., bottom trawl.

The following additional abbreviations are used: Cr., cruise; Reg., regular station; Spc., special station; Std., standard station; Sta., station; S.L., standard length.

Alutera monoceros

Woods Hole, Mass., 22 Aug. 1898, (1 specimen) 114 mm. S.L., USNM 85771.___25 miles southwest of Cuttyhunk Island, Mass., 17 Sept. 1935, (1) 144 mm. S.L., caught in lobster pot, USNM 107273.___34°05′ N., 76°21′ W., to 34°01′ N., 76°18′ W., *Albatross* Cr. 31–A, Sta. 2, tow 2, 19 Jan. 1950, (1) 520 mm. S.L., Tr. 25–75 fathoms, USNM 152089.___34°05′ N., 76°21′ W., to 34°01′ N., 76°18′ W., *Albatross* Cr. 31–A, Sta. 2, tow 2, 19 Jan. 1950, (1) 401 mm. S.L., Tr. 25–75 fathoms, USNM 152090.___Kitty Hawk, N.C., (1) 167 mm. S.L., USNM 163881.___30°34′ N., 80°17′ W., *Silver Bay* Sta. 1550, 17 Jan. 1960, (1) 545 mm. S.L., Tr. 22–21 fathoms, BLBG.___26°47′ N., 79°53′ W., *Combat* Sta. 459, 28 July 1957, (1) 122 mm. S.L., D.N., BLBG.___Tortugas, Fla., (3) 53.0–73.0 mm. S.L., collected by W. H. Longley, USNM 117022.___Port of Fortaleza, Mucuripe, Brazil, Mar. 1945, (1) 91.0 mm. S.L., SU 52309, No. 558.___Port of Fortaleza, Mucuripe, Brazil, June 1945, (1) 78.0 mm. S.L., SU 52309, No. 841.___Durban Harbor, Durban, Natal, South Africa, 8 Aug. 1933, (1) 96.5 mm. S.L., collected by H. W. B. Marley, Herre 1934 Exped., SU 31365.___China Sea, coast of Pahang, Malay Peninsula, Nov. 1926, (2) 115 and 137 mm. S.L., collection of Fisheries Dept. F. M. S., Herre 1934 Exped., SU 30786.___Manado, Indonesia, (1) 115 mm. S.L., USNM 126630.___Chame Point, Pacific Panama, (1) 49.5 mm. S.L., collected by Tweedlie, USNM 82059.

Alutera scripta

34°38′ N., 74°46′ W., *Gill* Cr. 2, Reg. 80, 12 May 1953, (1 specimen) 62.5 mm. S.L., D.N., BLBG.___34°14′ N., 76°03′ W., *Silver Bay*, 15 Sept. 1959, (3) 78.5–103 mm. S.L., D.N., BLBG.___32°34′ N., 77°48′ W., *Gill* Cr. 8, Reg. 52, 26 Sept. 1954, (1) 53.0 mm. S.L., D.N., BLBG.___Bermuda, (1) about 410 mm. S.L. (skin and skull only), collected by G. B. Goode, USNM 21889.___31°57′ N., 78°09′ W., *Gill* Cr. 3, Reg. 50, 6 Aug. 1953, (1) 39.5 mm. S.L., D.N., BLBG.___30°00′ N., 80°10′ W., *Silver Bay* Sta. 476, 18 June 1958, (1) 33.0 mm. S.L., M.L.N., BLBG.___29°40′ N., 80°00′ W., *Gill* Cr. 8, Reg. 18, 13 Sept. 1954, (1) 35.0 mm. S.L., D.N., BLBG.___29°38′ N., 80°12′ W., *Combat* Sta. 474, 14 Aug. 1957, (5) 64.0–73.0 mm. S.L., D.N., BLBG.___29°38′ N., 80°09′ W., *Silver Bay* Sta. 471, 17 June 1958, (1) 46.0 mm. S.L., M.L.N., BLBG.___29°29′ N., 80°09′ W., *Combat* Sta. 485, 18 Aug. 1957, (1) 66.0 mm. S.L., D.N., BLBG.___29°29′ N., 80°10′ W., *Combat* Sta. 490, 19 Aug. 1957, (1) 99.0 mm. S.L., D.N., BLBG.___29°10′ N., 80°19′ W., to 29°19′ N., 80°15′ W., *Combat* Sta. 336 to Sta. 337, 1 June 1957, (1) 41.0 mm. S.L., D.N., BLBG.___28°18′ N., 79°28′ W., *Gill* Cr. 8, Reg. 8, 12 Sept. 1954, (1) 39.0 mm. S.L., D.N., BLBG.___27°14′ N., 79°50′ W., *Combat* Sta. 462, 29 July 1957, (1) 53.5 mm. S.L., D.N., BLBG.___Jupiter Inlet, Fla., July 1958, (1) 27.0 mm. S.L., BLBG.___26°47′ N., 79°53′ W., *Combat* Sta. 459, 28 July 1957, (2) 119 and 128 mm. S.L., D.N., BLBG.___25°11′ N., 79°56′ W., *Combat* Sta. 443, 22 July 1957, (1) 127 mm. S.L., D.N., BLBG.___25°10′ N., 80°02′ W., *Combat* Sta. 438, 22 July 1957, (3) 31.0–121 mm. S.L., D.N., BLBG.___Tortugas, Fla., (1) 160 mm. S.L., collected by W. H. Longley, USNM 117024.___Tortugas, Fla., (2) 70.5 and 121 mm. S.L., collected by W. H. Longley, USNM 117023.___Gulf of Mexico, 30 miles southwest of Boca Grande, Fla., 21 Oct. 1956, (1) 200 mm. S.L., CHML.___Destin, Fla., about June 1958, (1) 163 mm. S.L., BLBG.___Choctawatchee Bay, Fla., June 1958, (1) 152 mm. S.L., BLBG.___28°47′ N., 87°56′ W., *Oregon* Sta. 1589, 23–24 July 1956, (2) 141 and 164 mm. S.L., USNM 158763.___29°10′ N., 88°08′ W., *Oregon* Sta. 1525, 17 May 1956, (1) 67.0 mm. S.L., TU 11639.___28°45′ N., 88°03′ W., *Oregon* Sta. 1590, 24 July 1956, (2) 164 mm. S.L., UF.___26°40′ N., 92°00′ W., *Oregon* Sta. 1035, 8 May 1954, (1) 145 mm. S.L., TU 10937.___24°50′ N., 92°35′ W., *Oregon* Sta. 2198, 23–24 June 1958, (1) 107 mm. S.L., D.N., BLBG.___20°50′ N., 86°10′ W., *Oregon* Sta. 1297, 28 Apr. 1955, (1) 35.0 mm. S.L., D.N., USNM 159168.___Cuba, 1914, (1) 244 mm. S.L., collected by Henderson and Bartsch, USNM 82569.___Cuba, (1) 57.5 mm. S.L., collected by Poey, USNM 37466.___Jamaica, (1) 230 mm. S.L., collection of Institute of Jamaica, USNM 32041.___Haiti, (1) 79.0 mm. S.L., collected by Beebe, USNM 178807.---Barbados, Antigua, (1) 377 mm. S.L., collection U. of Iowa Barbados-Antigua Exped. 1918, USNM 170118.---No data, presumably from western North Atlantic, (1) 35.5 mm. S.L., BLBG.---Chame Point, Pacific Panama, (2) 50.0–67.5 mm. S.L., USNM 82059.--- Ecuador, 16 Nov. 1919, (1) 52.0 mm. S.L., USNM 84042.---No data, (1) 98.0 mm. S.L., USNM 83814.

Alutera schoepfii

Halifax, Nova Scotia, (1) 95.5 mm. S.L., collected by Honeyman, USNM 22490.---Woods Hole, Mass., *Fish Hawk*, Aug. 1899, (1) 170 mm. S.L., USNM 120557.--- Woods Hole, Mass., (1) 142 mm. S.L., USNM 34397.--- Woods Hole, Mass., (2) 63.0 and 137 mm. S.L., USNM 119226.---Vineyard Sound, Mass., 4 Oct. 1927, (2) 118 and 132 mm. S.L., USNM 107272.---West Falmouth, Mass., 22 Aug. 1899, (1) 126 mm. S.L., USNM 120556.--- Buzzards Bay, Mass., (1) 117 mm. S.L., USNM 107263.--- New Bedford, Mass., (2) 96.0 and 102 mm. S.L., USFC 16542, TU 8911.---Katama Bay, Mass., 19 Aug. 1938, (1) 101 mm. S.L., USNM 107275.---Newport, R.I., (6) 131–160 mm. S.L., collected by S. Powell, USNM 20727.---Newport, R.I., (1) 143 mm. S.L., collected by S. Powell, USNM 20198.---Long Island, N.Y., (1) 163 mm. S.L., collected by Jordan, SU 1959.---Barnegat Bay, Seaside Park, N.J., July-Aug. 1926, (1) 355 mm. S.L., collected by B. A. Bean, USNM 120493.---Carson's Inlet, N.J., 9 Sept. 1916, (1) 196 mm. S.L., ANSP 46736. ---Bombay Hook, Del., 10 June 1884, (1) 407 mm. S.L., Sn., USNM 34977.---Mouth of Great Wicinoco River, Chesapeake Bay, *Albatross*, (1) 355 mm. S.L., USNM 33333.---Mouth of Great Wicinoco River, Chesapeake Bay, *Albatross*, (1) 390 mm. S.L., USNM 33332.---Ocean View, Norfolk, Va., 22 Oct. 1922, (2) 116 and 130 mm. S.L., Sn., USNM 91102.---Ocean View, Va., 1-5 Oct. 1922, (4) 101–131 mm. S.L., Sn., USNM 91103.---34°58′ N., 75°54′ W., *Silver Bay* Sta. 1258, 8 Sept. 1959, (1) 367 mm. S.L., Tr. 13–14 fathoms, BLBG.---34°53.5′ N., 75°32′ W., to 34°54′ N., 75°31′ W., *Albatross III*, Cr. 31–A, Sta. 17, 22 Jan. 1950, (1) 363 mm. S.L., 23 fathoms, USNM 152092.---34°50′ N., 76°14′ W., *Silver Bay* Sta. 1254, 8 Sept. 1959, (4) 194–355 mm. S.L., Tr. 12–11 fathoms, BLBG.---34°47′ N., 76°20′ W., *Silver Bay* Sta. 1252, 8 Sept. 1959, (2) 320 and 340 mm. S.L., Tr. 9–11 fathoms, BLBG.---34°44′ N., 75°53′ W., *Silver Bay* Sta. 1271, 12 Sept. 1959, (1) 402 mm. S.L., Tr. 17 fathoms, BLBG.--- 34°39′ N., 76°01′ W., *Silver Bay* Sta. 1270, 12 Sept. 1959, (1) 335 mm. S.L., Tr. 20 fathoms, BLBG.---34°38′ N., 76°49′ W., *Silver Bay* Sta. 1291, 22 Sept. 1959, (1) 263 mm. S.L., Tr. 8–10 fathoms, BLBG.---34°37′ N., 77°01′ W., *Silver Bay* Sta. 1311, 24 Sept. 1959, (1) 271 mm. S.L., Tr. 7 fathoms, BLBG.---34°35′ N., 76°23′ W., *Silver Bay* Sta. 1250, 7 Sept. 1959, (1) 328 mm. S.L., Tr. 11–10 fathoms, BLBG.---34°35′ N., 77°03′ W., *Silver Bay* Sta. 1310, 24 Sept. 1959, (4) 217–260 mm. S.L., Tr. 8 fathoms, BLBG.---34°32′ N., 76°33′ W., *Silver Bay* Sta. 1317, 27 Sept. 1959, (1) 303 mm. S.L., Tr. 8 fathoms, BLBG.---34°31′ N., 76°53′ W., *Silver Bay* Sta. 1239, 6 Sept. 1959, (1) 360 mm. S.L., Tr. 14–12 fathoms, BLBG.---34°31′ N., 76°35′ W., *Silver Bay* Sta. 1242, 6 Sept. 1959, (1) 223 mm. S.L., Tr. 9 fathoms, BLBG.--- Cape Lookout, N.C., July 1912, (1) 345 mm. S.L., collected by R. J. Coles, USNM 74300.---Cape Lookout, N.C., 22 Oct. 1927, (1) 72.0 mm. S.L., surface, USNM 111836.---34°29′ N., 76°57′ W., *Silver Bay* Sta. 1307, 24 Sept. 1959, (1) 360 mm. S.L., Tr. 12 fathoms, BLBG.--- 34°27′ N., 76°20′ W., *Silver Bay* Sta. 1249, 7 Sept. 1959, (1) 294 mm. S.L., Tr. 7 fathoms, BLBG.---34°26′ N., 77°05′ W., *Silver Bay* Sta. 1308, 24 Sept. 1959, (1) 348 mm. S.L., Tr. 9–10 fathoms, BLBG.---34°25′ N., 76°51′ W., *Silver Bay* Sta. 1294, 23 Sept. 1959, (2) 308 and 334 mm. S.L., Tr. 12–13 fathoms, BLBG.---34°23′ N., 76°54′ W., *Silver Bay* Sta. 1295, 23 Sept. 1959, (2) 309 and 352 mm. S.L., Tr. 13–15 fathoms, BLBG.---34°21′ N., 77°34′ W., *Silver Bay* Sta. 1227, 4 Sept. 1959, (2) 240 and 293 mm. S.L., Tr. 7–8 fathoms, BLBG.---34°16′ N., 77°34′ W., *Silver Bay* Sta. 1226, 4 Sept. 1959, (1) 350 mm. S.L., Tr. 8–7 fathoms, BLBG.---34°15′ N., 76°36′ W., *Silver Bay* Sta. 1236, 6 Sept. 1959, (1) 358 mm. S.L., Tr. 18 fathoms, BLBG.---34°13′ N., 76°48′ W., *Silver Bay* Sta. 1296, 23 Sept. 1959, (1) 366 mm. S.L., Tr. 17 fathoms, BLBG.---34°09′ N., 76°55′ W., *Silver Bay* Sta. 1230, 5 Sept. 1959, (2) 342 and 379 mm. S.L., Tr. 17 fathoms, BLBG.---34°09′ N., 76°35′ W., *Silver Bay* Sta. 1297, 23 Sept. 1959, (2) 243 and 251 mm. S.L., Tr. 20 fathoms, BLBG.---34°07′ N., 77°19′ W., *Silver Bay* Sta. 1224, 4 Sept. 1959, (1) 372 mm. S.L., Tr. 13 fathoms, BLBG.---33°56′ N., 77°20′ W., *Silver Bay* Sta. 1215, 3 Sept. 1959, (4) 330–372 mm. S.L., Tr. 15 fathoms, BLBG.---33°47′ N., 77°50′ W., *Silver Bay* Sta. 1210, 2 Sept. 1959, (2) 136 and 355 mm. S.L., Tr. 8 fathoms, BLBG.---33°45′ N., 76°50′ W., *Silver Bay* Sta. 1218, 3 Sept. 1959, (6) 374–410 mm. S.L., Tr. 23–24 fathoms, BLBG.---33°41′ N., 77°40′ W., *Silver Bay* Sta. 1209, 2 Sept. 1959, (2) 309–332 mm. S.L., Tr. 11–12 fathoms, BLBG.---33°32′ N., 77°30′ W., *Silver Bay* Sta. 1208, 2 Sept. 1959, (3) 300–358 mm. S.L., Tr. 14 fathoms, BLBG.---32°54′ N., 77°04′ W., *Gill* Cr. 3, Reg. 61, 10 Aug. 1953, (1) 20.5 mm. S.L., D.N., BLBG.---32°24′ N., 78°45′ W., *Gill* Cr. 8, Reg. 48, 25 Sept. 1954, (1) 23.0 mm. S.L., D.N., BLBG.---Charleston, S.C., (1) 124 mm. S.L., collected by J. C. Mitchell, USNM 30727.--- Bermuda, (1) 365 mm. S.L., USNM 23859.---31°00′ N., 80°23′ W., *Gill* Cr. 4, Reg. 32, 16 Oct. 1953, (1) 26.5 mm. S.L., D.N., BLBG.---Commercial Trawling Area, Brunswick, Ga., 9–13 Apr. 1956, (1) 187 mm. S.L., Tr., BLBG.--- Commercial Trawling Area, Brunswick, Ga., 23 Sept. 1956, (1) 96.0 mm. S.L., Tr., BLBG.---30°20′ N., 80°36′ W., *Gill* Cr. 7, Reg. 25, 26 June 1959, (1) 22.5 mm. S.L., D.N., BLBG.---29°32′ N., 80°25′ W., *Combat* Sta. 348, 2 June 1957, (1) 355 mm. S.L., Tr. 22 fathoms, BLBG.--- Port Canaveral Anchorage, Fla., *Combat*, 28–29 Apr. 1957, (1) 32.5 mm. S.L., D.N., BLBG.---Jupiter Inlet, Fla., Sept.-Nov. 1958, (3) 22.7-33.0 mm. S.L., UF.---Jupiter Inlet, Fla., Aug. 1958, (1) 68.0 mm. S.L., UF.---Jupiter Inlet, Fla., June 1958, (1) 377 mm. S.L., UF.---27°04′ N., 80°04′ W., *Gill* Cr. 2, Reg. 5, 23 Apr. 1953, (1) 15.0 mm. S.L., D.N., BLBG.---Biscayne Bay, Fla., *Launch 58*, 5 Sept. 1938, (1) 126 mm. S.L., Tr., USNM 155986.--- Tortugas, Fla., (5) 27.5–62.5 mm. S.L., collected by W. H. Longley, USNM 117026.---Cape Haze, Fla., 2 July 1958, (1) 49.0 mm. S.L., CHML.---Gasparilla Bay, Fla., (1) 337 mm. S.L., CHML.---Gasparilla Bay, Fla., (1) 233 mm. S.L., CHML.---Gasparilla Sound, Placida, Fla., 10 May 1955, (1) 197 mm. S.L., CHML.---Gasparilla Sound, Placida, Fla., 9 Apr. 1956, (1) 187 mm. S.L., CHML.---Gasparilla Sound, Placida, Fla., 26 May 1958, (1) 250 mm. S.L., TU 18493.---Lemon Bay, Fla., 28 Sept. 1955, (1) 98.0 mm. S.L., CHML.---Lemon Bay, Fla., summer 1956, (1) 95.0 mm. S.L., CHML.---Lemon Bay, Fla., May 1957, (1) 41.0 mm. S.L., CHML.---Englewood Beach, Fla., 26 Aug. 1956, (1) 30.0 mm. S.L., CHML.---Pass-a-Grille to Venice, Fla., 10–11 Feb. 1958, (1) 306 mm. S.L., FSBC VGS 58–41.---Egmont Key, Fla., 23 Mar. 1958, (12) 218–257 mm. S.L., TU 17941.---Mullet Key, Boca Ciega Bay, Fla., 4 June 1958, (1) 64.0 mm. S.L., FSBC VGS 58–152.---Bird Key, Boca Ciega Bay, Fla., 7 July 1958, (2) 89.0 and 95.0 mm. S.L., FSBC VGS 58–181.---Bird Key, Boca Ciega Bay, Fla., 7 July 1958, (1) 273 mm. S.L., FSBC VGS 58–276.---City dock, Clearwater, Fla., 5 Aug. 1948, (1) 96.0 mm. S.L., pole-and-line, USNM.---Cedar Keys, Fla., 18–20 Aug. 1949, (2) 62.5 and 93.5 mm. S.L., UF.---Cedar Keys, Fla., 7 Nov. 1950, (1) 73.0 mm. S.L., UF.---Piney Point, Cedar Keys, Fla., 7 June 1950, (2) 37.0–38.5 mm. S.L. UF.---Cedar Keys, Fla., 3 Oct. 1953, (1) 190 mm. S.L., UF C–10–353–4.---Cedar Keys, Fla., 20 Sept. 1953, (2) 158 and 176 mm. S.L., UF C–9–2053–3.---Cedar Keys, Fla., 20 Sept. 1953, (1) 159 mm. S.L., UF.---Cedar Keys, Fla., 6 Sept. 1953, (1) 126 mm. S.L., UF 2542.---Cedar Keys, Fla., 16 Aug. 1953, (1) 103 mm. S.L., UF C–8–1653–5.---Cedar Keys, Fla., 25 July 1953, (3) 60.0–96.0 mm. S.L., UF C–7–2553–4.---Cedar Keys, Fla., 12 July 1953, (1) 98.0 mm. S.L., UF C–7–1253–5.---Cedar Keys, Fla., 12 July 1953, (1) 80.5 mm. S.L., UF C–7–1253–1.---Cedar Keys, Fla., 12 July 1953, (1) 118 mm. S.L., UF C–7–1253–4.---Cedar Keys, Fla., 12 July 1953, (2) 91.0 and 165 mm. S.L., UF C–7–1253–7.---Cedar Keys, Fla., 12 July 1953, (1) 68.0 mm. S.L., UF 2475.---Cedar Keys, Fla., 1 July 1953, (1) 64.0 mm. S.L., UF 2457.---Cedar Keys, Fla., 28 June 1953, (4) 47.0–81.5 mm. S.L., UF C–6–2853–3.---Cedar Keys, Fla., 28 June 1953, (1) 59.0 mm. S.L., UF C–6–2853–1.---Cedar Keys, Fla., 30 June 1954, (1) 85.5 mm. S.L., UF C–6–3054–6.---Cedar Keys, Fla., 15–16 Aug. 1955, (3) 47.0–72.5 mm. S.L., TU 11953.---Cedar Keys, Fla., 11–13 June 1957, (39) 46.5–73.0 mm. S.L., USNM 176239.---Cedar Keys, Fla., 23 Nov. 1957, (1) 86.5 mm. S.L., UF.---Destin, Fla., Nov. 1956, (1) 213 mm. S.L., UF.---Fort Walton Beach, Fla., Nov. 1956, (1) 325 mm. S.L., UF.---Pensacola, Fla., (1) 185 mm. S.L., CAS C87 3519.---Florida, *Orian*, (1) 126 mm. S.L., collected by B. A. Bean and J. A. Pine, USNM 62555.---28°47′ N., 87°56′ W., *Oregon* Sta. 1589, 23–24 July 1956, (1) 68.5 mm. S.L., D.N., USNM 158763.---28°44′ N., 88°08′ W., *Oregon* Sta. 1583, 20–21 July 1956, (1) 59.0 mm. S.L., D.N., UF.---29°22′ N., 88°48′ W., *Oregon* Sta. 1109, 15 June 1954, (5) 317–343 mm. S.L., TU 17106.---Mississippi coast, (1) 124 mm. S.L., USNM 147796.---Grand Isle, La., (1) 119 mm. S.L., USNM 125803.---Oyster Bayou, Terrebonne County, La., June–July 1954, (1) 60.5 mm. S.L., TU 9039.---Freeport, Tex., Jan.–May 1947, (1) 309 mm. S.L., USNM 147808.---Aransas Pass, Tex., 11 Oct. 1926, (1) 35.8 mm. S.L., USNM 156000.---Aransas Pass, Tex., 5–7 June 1954, (4) 32.3–51.3 mm. S.L., TU 11781.---Harbor Island, Corpus Christi, Tex., 5 Oct. 1926, (2) 74.5 and 78.0 mm. S.L., USNM 156002.---Corpus Christi, Tex., (1) 72.0 mm. S.L., USNM 94553.---Corpus Christi, Tex., (1) 140 mm. S.L., USNM 94554.---Hahia Honda, Cuba, 5 June 1914, (1) 272 mm. S.L., collected by Henderson and Bartsch, USNM 82568.---Hahia Honda, Cuba, 5 June 1914, (1) 283 mm. S.L., collected by Henderson and Bartsch, USNM 82567.---Kingston, Jamaica, (1) 290 mm. S.L., SU 11808.---Jamaica, B.W.I., (3) 105–170 mm. S.L., collected by J. S. Roberts, SU 4880.---Jamaica, (1) 134 mm. S.L., collected by Adams, USNM 4910.---Bizoton Wharf, Haiti, (1) 65.0 mm. S.L., collected by Beebe, USNM 178063.---Bizoton, Haiti, (10) 25.0–53.5 mm. S.L., collected by Beebe, USNM 178917.--- Haiti, (1) 92.5 mm. S.L., collected by Beebe, USNM 178055.---Off Nicaragua, *Oregon*, (1) 237 mm. S.L., USNM 159204.---Chiriqui Lagoon, Atlantic Panama, 12 July 1933, (1) 37.5 mm. S.L., USNM 178916.---Fox Bay, Colon, Atlantic Panama, 5 Jan. 1911, (2) 91.5 and 115 mm. S.L., USNM 81516.---Colon, Panama, summer 1916, (1) 132 mm. S.L., ANSP 49071.---Brazil, *Albatross*, (1) 67.5 mm. S.L., USNM 43291.---No data, presumably from western North Atlantic, (1) 328 mm. S.L., BLBG.---No data, presumably from western North Atlantic, (1) 44.0 mm. S.L., BLBG.---No data, (1) 184 mm. S.L., USNM 91471.---No data, (2) 120 and 121 mm. S.L., USNM 91472.---No data, (1) 130 mm. S.L., USNM 91469.---No data, (1) 151 mm. S.L., USNM 91470.

Alutera heudelotii

Off southern Massachusetts, Nov. 1949, (1) 158 mm. S.L., USNM 148340.—North Carolina coast, *Albatross III* Cr. 31–B, Jan.–Feb. 1950, (1) 240 mm. S.L., USNM 152043.---84°45′20″ N., 75°38′10″ W., *Albatross* Sta. 2599, 18 Oct. 1885, (1) 29.2 mm. S.L., USNM 131492.---34°45′ N., 75°38′ W., *Combat* Sta. 386, 17 June 1957, (1) 125 mm. S.L., Tr. 45 fathoms, BLBG.---34°39′ N., 76°01′ W., *Silver Bay* Sta. 1270, 12 Sept. 1959, (3) 140–172 mm. S.L., Tr. 20 fathoms, BLBG.---34°38′30″ N., 75°33′30″ W., *Albatross* Sta. 2603, 18 Oct. 1885, (1) 27.0 mm. S.L., USNM 131596.---34°05′ N., 76°21′ W., to 34°01′ N., 76°18′ W., *Albatross III* Cr. 31–A, tow 2, (1) 220 mm. S.L., Tr. 25–75 fathoms, USNM 152091.---33°29′ N., 77°22′ W., *Silver Bay* Sta. 1205, 1 Sept. 1959, (1) 232 mm. S.L., Tr. 16–20 fathoms, BLBG.---33°21′ N., 77°24′ W., *Silver Bay* Sta. 1204, 1 Sept. 1959, (1) 171 mm. S.L., Tr. 15–16 fathoms, BLBG.---Bermuda, (1) 69.5 mm. S.L., collected by Beebe, USNM.---Miami, Fla., 24 Oct. 1953, (1) 78.0 mm. S.L., CHML.---25°10′ N., 80°02′ W., *Combat* Sta. 438, 22 July 1957, (6) 31.0–108 mm. S.L., D.N., BLBG.---24°13′ N., 81°42′ W., *Combat* Sta. 436, 21 July 1957, (1) 69.5 mm. S.L., BLBG.---Tortugas, Fla., (2) 71.5 and 92.5 mm. S.L., collected by W. H. Longley, USNM 117025.---Tortugas, Fla., (4) 42.5–54.0 mm. S.L., collected by W. H. Longley, USNM 88106.---Channel west of White Shoal, Tortugas, Fla., 22 June 1932, (1) 78.5 mm. S.L., USNM 109177 (lectotype).---Channel west of White Shoal, Tortugas, Fla., 22 June 1932, (5) 48.5–63.5 mm. S.L., USNM 109178, (paratypes)....Tortugas, Fla., (7) 29.7–69.5 mm. S.L., collected by W. H. Longley, USNM 117027....Tortugas, Fla., mid-April 1956, (1) 165 mm. S.L., CHML.... Tortugas, Fla., June–Aug. 1926, (1) 60.0 mm. S.L., USNM 88105....26°11′ N., 82°48′ W., *Oregon* Sta. 987, 7 Apr. 1954, (1) 121 mm. S.L., Tr. 20 fathoms, UF 3880.... 28°23′ N., 84°49′ W., *Oregon* Sta. 916, 10 Mar. 1954, (1) 131 mm. S.L., Tr. 37 fathoms, UF 3603....28°22′ N., 84°53′ W., *Oregon* Sta. 917, 10 Mar. 1954, (3) 131–136 mm. S.L., Tr. 48 fathoms, TU 13180....29°07′ N., 84°54′ W., *Oregon* Sta. 890, 7 Mar. 1954, (1) 206 mm. S.L., Tr. 19 fathoms, UF 3588....29°00′ N., 85°02′ W., *Oregon* Sta. 891, 7 Mar. 1954, (1) 173 mm. S.L., Tr. 21 fathoms, UF 3648....29°36′ N., 86°01′ W., *Silver Bay* Sta. 159, 23 Aug. 1957, (2) 136 and 198 mm. S.L., Tr., USNM.... 28°47′ N., 87°56′ W., *Oregon* Sta. 1589, 23–24 July 1956, (1) 40.0 mm. S.L., USNM 158763....27°55′ N., 88°05′ W., *Oregon* Sta. 1139, 24 July 1954, (1) 50.0 mm. S.L., TU 13164....29°20′ N., 88°20′ W., *Silver Bay* Sta. 14, 1 July 1957, (1) 230 mm. S.L., TU 16316....27°35′ N., 89°35′ W., *Oregon* Sta. 1133, 22 July 1954, (1) 33.0 mm. S.L., TU 13032....28°10′ N., 94°05′ W., *Silver Bay* Sta. 9, 29 June 1957, (1) 211 mm. S.L., TU 16270....28°12′ N., 94°10′ W., *Silver Bay* Sta. 8, 29 June 1957, (1) 220 mm. S.L., TU 16256....28°28′ N., 94°20′ W., *Silver Bay* Sta. 6, 25 June 1957, (1) 204 mm. S.L., TU 16230....28°02′ N., 94°39′ W., *Oregon* Sta. 143, 21 Nov. 1950, (1) 102 mm. S.L., TU 2021....24°00′ N., 96°50′ W., *Oregon* Sta. 1074, 25 May 1954, (1) 30.5 mm. S.L., D.N., UF 3829....18°43′ N., 93°30′ W., *Oregon* Sta. 1060, 16 May 1954, (1) 81.0 mm. S.L., UF....24°50′ N., 92°35′ W., *Oregon* Sta. 2198, 23–24 June 1958, (5) 31.5–43.0 mm. S.L., D.N., BLBG.... Ambergris Cay, Yucatan, (1) 136 mm. S.L., USNM 79247....Recife, Brazil, (2) 188 and 195 mm. S.L., SU 52306.

Monacanthus ciliatus

Off Georges Bank, Mass., *Caryn*, (1 specimen) 30.3 mm. S.L., BLBG....35°08′ N., 75°22′ W., *Gill* Cr. 8, Reg. 78, 29 Sept. 1954, (1) 18.0 mm. S.L., D.N., BLBG....34°32′ N., 75°53′ W., *Silver Bay* Sta. 1268, 11 Sept. 1959, (1) 77.5 mm. S.L., Tr. 31–30 fathoms, BLBG....34°10′ N., 77°30′ W., *Gill* Cr. 8, Reg. 67, 28 Sept. 1954, (1) 16.2 mm. S.L., D.N., BLBG....34°04′ N., 76°14′ W., *Gill* Cr. 7, Reg. 71, 10 July 1954, (1) 23.8 mm. S.L., D.N., BLBG.... 33°45′ N., 76°50′ W., *Silver Bay* Sta. 1218, 3 Sept. 1959, (7) 43.0–85.5 mm. S.L., Tr. 23–24 fathoms, BLBG.... 33°32′ N., 77°30′ W., *Silver Bay* Sta. 1208, 2 Sept. 1959, (4) 41.6–51.1 mm. S.L., Tr. 14 fathoms, BLBG....33°29′ N., 77°22′ W., *Silver Bay* Sta. 1205, 1 Sept. 1959, (2) 72.5 and 77.0 mm. S.L., Tr. 16–20 fathoms, BLBG....33°29′ N., 76°40′ W., *Gill* Cr. 3, Reg. 64, 11 Aug. 1953, (3) 21.0–21.5 mm. S.L., D.N., BLBG....33°17′ N., 78°38′ W., *Gill* Cr. 8, Reg. 55, 26 Sept. 1954, (15) 15.5–21.5 mm. S.L., D.N., BLBG....33°03′ N., 78°21′ W., *Gill* Cr. 7, Reg. 54, 4 July 1954, (1) 15.3 mm. S.L., D.N., BLBG.... 33°03′ N., 78°21′ W., *Gill* Cr. 8, Reg. 54, 26 Sept. 1954, (1) 24.6 mm. S.L., D.N., BLBG....32°56′ N., 78°06′ W., *Combat* Sta. 283, 19 Apr. 1957, (1) 101 mm. S.L., Tr. 50 fathoms, BLBG....32°54′ N., 77°04′ W., *Gill* Cr. 3, Reg. 61, 10 Aug. 1953, (2) 21.7 and 21.8 mm. S.L., D.N., BLBG....32°50′ N., 77°27′ W., *Combat* Sta. 295, 21 Apr. 1957, (2) 23.9 and 25.8 mm. S.L., D.N., BLBG....32°24′ N., 78°45′ W., *Gill* Cr. 8, Reg. 48, 25 Sept. 1954, (1) 18.5 mm. S.L., D.N., BLBG....Bermuda, (1) 51.0 mm. S.L., collected by J. M. Jones, USNM 21249....Bermuda, (1) 51.0 mm. S.L., collected by Beebe, USNM 178766.... Castle Roads, Bermuda, 11–12 Sept. 1931, (6) 23.7–43.0 mm. S.L., dredge 12–20 ft., USNM 178785....Nonsuch, Bermuda, (6) 39.5–52.0 mm. S.L., collected by Beebe, USNM 178862....Nonsuch, Bermuda, 18 Oct. 1930, (4) 35.5–43.5 mm. S.L., USNM 178859....31°00′ N., 80°23′ W., *Gill* Cr. 4, Reg. 32, 16 Oct. 1953, (2) 19.0–24.0 mm. S.L., D.N., BLBG....30°00′ N., 80°10′ W., *Silver Bay* Sta. 476, 18 June 1958, (26) 11.0–21.9 mm. S.L., M.L.N., BLBG....29°48′ N., 80°12′ W., *Silver Bay* Sta. 470, 17 June 1958, (14) 15.7–19.5 mm. S.L., D.N., BLBG.... 29°38′ N., 80°09′ W., *Silver Bay* Sta. 471, 17 June 1958, (25) 12.4–20.1 mm. S.L., M.L.N., BLBG....29°29′ N., 80°09′ W., *Combat* Sta. 485, 18 Aug. 1957, (4) 14.0–18.7 mm. S.L., D.N., BLBG....29°26′ N., 80°08′ W., *Combat* Sta. 315, 27 Apr. 1957, (2) 16.5–16.8 mm. S.L., D.N., BLBG....29°19′ N., 80°18′ W., *Combat* Sta. 339, 1 June 1957, (1) 109 mm. S.L., Tr. 25 fathoms, BLBG.... 29°10′ N., 80°19′ W., *Combat* Sta. 336, 1 June 1957, (1) 21.2 mm. S.L., D.N., BLBG....29°00′ N., 79°26′ W., *Gill* Cr. 4, Reg. 16, 14 Oct. 1953, (1) 24.3 mm. S.L., D.N., BLBG....28°58′ N., 80°13′ W., *Combat* Sta. 333, 1 June 1957, (1) 107 mm. S.L., Tr. 30 fathoms, BLBG....28°19′ N., 79°26′ W., *Gill* Cr. 3, Reg. 8, 26 July 1953, (2) 18.0 and 20.5 mm. S.L., D.N., BLBG....28°15′ N., 77°01′ W., *Gill* Cr. 9, Spc. 6–7, 5 Nov. 1954, (1) about 23 mm. S.L., S.C. of *Thunnus albacares* (Bonnaterre) BLBG.... 28°09′ N., 79°21′ W., *Gill* Cr. 7, Spc. 9 to Reg. 8, 24 June 1954, (1) S.C. of *Thunnus atlanticus* (Lesson), BLBG.... 27°36′ N., 83°40′ W., *Oregon* Sta. 935, 18 Mar. 1954, (1) 111 mm. S.L., Tr. 27 fathoms, UF 3665....27°34′ N., 80°04′ W., *Gill* Cr. 7, Reg. 4–5, 23 June 1954, (1) 15.5 mm. S.L., S.C. of *Euthynnus alletteratus* (Rafinesque) BLBG.... 27°14′ N., 79°50′ W., *Combat* Sta. 462, 29 July 1957, (1) 22.0 mm. S.L., D.N., BLBG....27°01′ N., 80°04′ W., *Gill* Cr. 2, Reg. 3, 23 Apr. 1953, (3) 15.3–19.9 mm. S.L., D.N., BLBG....Settlement Point, Grand Bahama Island, *Gill* Cr. 8, 29 Aug. 1954, (15) 13.6–21.5 mm. S.L., D.N., BLBG....26°47′ N., 79°53′ W., *Combat* Sta. 459, 28 July 1957, (3) 23.0–25.0 mm. S.L., D.N., BLBG....26°45′ N., 78°55′ W., *Gill* Cr. 4, 3 Oct 1955, 1600, (1) about 15 mm. S.L., S.C. of *Thunnus atlanticus*, BLBG....26°45′ N., 78°55′ W., *Gill* Cr. 4, 3 Oct. 1955, 1555, (2) about 17 mm. S.L., S.C. of *Thunnus atlanticus*, BLBG....Hawks Bill Creek, Grand Bahama Island, *Gill* Cr. 4, 3 Oct. 1953, 1900–2100, (6) 12.8–22.7 mm. S.L., D.N., BLBG.... Hawks Bill Creek, Grand Bahama Island, *Gill* Cr. 4, 3 Oct. 1953, 2130–2330, (1) 21.8 mm. S.L., D.N., BLBG.... 26°09′ N., 78°12′ W., *Gill* Cr. 7, 22 June 1954, (1) 16.5 mm. S.L., S.C. of *Thunnus atlanticus*, BLBG....26°05′ N., 78°12′ W., *Gill* Cr. 4, Nassau to Reg. 1, 11 Oct. 1953, (6) about 12–18 mm. S.L., S.C. of *Sphyraena barracuda* (Walbaum), BLBG....Hatchet Bay, Eleuthera Island, Bahamas, (1) 93.5 mm. S.L., UF 3504....25°16′ N., 80°07′ W., *Combat* Sta. 457, 26 July 1957, (11) 14.8–20.7

mm. S.L., D.N., BLBG.___25°13′ N., 80°10′ W., *Combat* Sta. 455, 26 July 1957, (5) 16.0–18.7 mm. S.L., D.N., BLBG.___25°13′ N., 80°10′ W., *Combat* Sta. 455, 26 July 1957, (1) 39.0 mm. S.L., D.N., BLBG.___25°10′ N., 80°02′ W., *Combat* Sta. 438, 22 July 1957, (7) 16.5–29.5 mm. S.L., D.N., BLBG.___24°04′ N., 79°15′ W., *Combat* Sta. 448, 24 July 1957, (1) 13.5 mm. S.L., D.N., BLBG.___Key West, Fla., (11) 39.0–58.0 mm. S.L., collected by D. S. Jordan, SU 2358.___Pulaski Light, near Tortugas, Fla., (1) 100 mm. S.L., UF.___Tortugas, Fla., Apr. 1956, (2) 95.0–102 mm. S.L., CHML.___West of Loggerhead Key, Fla., (4) 75.5–87.0 mm. S.L., UF.___Sanibel Island, Fla., 14 Aug. 1959, (10) 27.6–51.5 mm. S.L., BLBG.___Sanibel Island, Fla., 19 Aug. 1959, (4) 47.5–58.0 mm. S.L., BLBG.___Cedar Keys, Fla., Sept.–Oct. 1948, (18) 17.3–69.5 mm. S.L., UF 730.___Cedar Keys, Fla., 8–9 Oct. 1948, (1) 34.4 mm. S.L., UF.___Cedar Keys, Fla., 16 Aug. 1953, (18) 25.4–54.7 mm. S.L., UF C–8–1653–4.___Cedar Keys, Fla., 6 Sept. 1953, (1) 41.6 mm. S.L., UF C–9–653–4.___Cedar Keys, Fla., 20 Sept. 1953, (1) 54.0 mm. S.L., UF C–9–2053–3.___Cedar Keys, Fla., 1 Nov. 1953, (3) 21.1–57.0 mm. S.L., UF C–11–153–2.___Cedar Keys, Fla., 13 Nov. 1953, (1) 57.5 mm. S.L., UF C–11–1353–6.___Cedar Keys, Fla., 30 June 1954, (1) 40.6 mm. S.L., UF C–6–3054–5.___Cedar Keys, Fla., (17) 30.9–51.3 mm. S.L., UF.___27°30′ N., 84°14′ W., *Oregon* Sta. 937, 18 Mar. 1954, (4) 92.5–103 mm. S.L., Tr. 38 fathoms, UF 3611.___22°13′ N., 89°43′ W., *Silver Bay* Sta. 404, 12 May 1958, (1) 92.5 mm. S.L., Tr. 25 fathoms, USNM.___22°23′ N., 89°44′ W., *Oregon* Sta. 2174, 11–12 May 1958, (30) 12.7–21.8 mm. S.L., D.N., USNM.___24°50′ N., 92°35′ W., *Oregon* Sta. 2198, 23–24 June 1958, (1) 23.3 mm. S.L., D.N., BLBG.___Jamaica, (3) 66.0–85.0 mm. S.L., collected by J. S. Roberts, SU 4857.___Bizoton, Haiti, 3 Feb. 1927, (1) 42.0 mm. S.L., Sn., USNM 178538.___St. Thomas, Virgin Islands, (1) 45.0 mm. S.L., collected by Beebe, USNM 178812.___Pointe-a-Pitre, Guadaloupe, May 1946, (1) 33.5 mm. S.L., USNM 132624.___English Harbor, Antigua, Leeward Islands, (1) 61.0 mm. S.L., USNM 170300.___Martinique, West Indies, 17 Apr. 1937, (1) 50.0 mm. S.L., collection of Smithsonian Institute Hartford Exped., USNM 117429.___Union Island, Grenadines, (1) 19.5 mm. S.L., collected by Beebe, USNM 169962.___15°57′ N., 82°06′ W., *Oregon* Sta. 1935, 15 Sept. 1957, (1) 72.0 mm. S.L., USNM 185267.___07°55′ N., 57°27′ W., *Oregon* Sta. 2247, 31 Aug. 1958, (4) 70.5–77.5 mm. S.L., Tr. 44–37 fathoms, BLBG.___(23) 36.3–71.6 mm. S.L., SU 1958.___No data, presumably from western North Atlantic, (2) 61.0 and 80.0 mm. S.L., BLBG.

Monacanthus tuckeri

Castle Roads, Bermuda, 11–12 Sept. 1931, (7) 25.0–43.0 mm. S.L., dredge 12–20 ft., USNM 178785.___33°29′ N., 76°40′ W., *Gill* Cr. 3, Reg. 64, 11 Aug. 1953, (1) 21.4 mm. S.L., D.N., BLBG.___Nonsuch, Bermuda, 18 Oct. 1930, (3) 30.5–51.0 mm. S.L., USNM 178859.___Nonsuch, Bermuda, (1) 55.5 mm. S.L., collected by Beebe, USNM 178862.___Bermuda, (2) 36.0 and 43.0 mm. S.L., collected by J. M. Jones, USNM 21249.___29°38′ N., 80°09′ W., *Silver Bay* Sta. 471, 17 June 1958, (1) 17.0 mm. S.L., M.L.N., BLBG.___Settlement Point, Grand Bahama Island, *Gill* Cr. 8, 29 Aug. 1954, (5) 17.4–23.0 mm. S.L., D.N., BLBG.___26°45′ N., 78°55′ W., *Gill* Cr. 4, 3 Oct. 1953, 1600, (1) about 20 mm. S.L., S.C. of *Thunnus atlanticus* (Lesson), BLBG.___Hawks Bill Creek, Grand Bahama Island, *Gill* Cr. 4, 3 Oct. 1953, 1900–2100, (2) 17.9 and 18.7 mm. S.L., D.N., BLBG.___Hawks Bill Creek, Grand Bahama Island, *Gill* Cr. 4, 3 Oct. 1953, 2130–2330, (4) 16.7–20.3 mm. S.L., D.N., BLBG.___26°30′ N., 78°40′ W., *Gill* Cr. 4, 3 Oct. 1953, 1730, (1) about 18 mm. S.L., S.C. of *Thunnus atlanticus*, BLBG.___25°56.5′ N., 77°54′ W., *Gill* Cr. 7, 22 June 1954, (1) about 20 mm. S.L., S.C. of *Katsuwonus pelamis* (Linnaeus), BLBG.___25°20′ N., 77°15′ W., *Gill* Cr. 6, 19 Apr. 1954, (1) 21.0 mm. S.L., S.C. of *Coryphaena hippurus* Linnaeus, BLBG.___Nassau Harbor, Bahamas, 20 Apr. 1958, (3) 15.3–17.2 mm. S.L., ANSP 84471.___New Providence, Hog Island, Bahamas, 22 Mar. 1952, (2) 51.5 and 53.0 mm. S.L., ANSP 72669.___Hog Island, Bahamas, 25 Apr. to 3 May 1957, (3) 16.0–24.0 mm. S.L., ANSP 84482.___Periwinkle Rock, Rose Island, Bahamas, 4 Aug. 1955, (3) 49.0–56.5 mm. S.L., ANSP 84478.___Rose Island, Bahamas, 31 July 1955, (13) 20.8–50.5 mm. S.L., ANSP 84481.___Andros Island, Bahamas, (1) 18.7 mm. S.L., collected by P. Cloud, USNM 174977.___Antigua, Leeward Islands, 20 Apr. 1958, (1) 22.5 mm. S.L., dredge, USNM 183569.___St. Croix, Virgin Islands, West Indies, (4) 20.3–23.3 mm. S.L., CAS 12403.

Stephanolepis hispidus

Georges Bank, *Caryn*, (19) 13.8–46.5 mm. S.L., collected by B. B. Leavitt, BLBG.___Newport, R.I., (1) 111 mm. S.L., collected by S. Powell, USNM 21631.___36°30′ N., 74°33′ W., *Albatross*, (2) 22.5 and 33.0 mm. S.L., USNM 38330.___34°58′ N., 75°54′ W., *Silver Bay* Sta. 1258, 8 Sept. 1959, (1) 86.3 mm. S.L., Tr. 13–14 fathoms, BLBG.___34°56′ N., 75°56′ W., *Silver Bay* Sta. 1257, 8 Sept. 1959, (3) 82.5–173 mm. S.L., Tr. 13–14 fathoms, BLBG.___34°45′ N., 75°38′ W., *Combat* Sta. 386, 17 June 1957, (1) 137 mm. S.L., Tr. 40 fathoms, BLBG.___34°44′ N., 75°53′ W., *Silver Bay* Sta. 1271, 12 Sept. 1959, (1) 59.6 mm. S.L., Tr. 17 fathoms, BLBG.___Beaufort Inlet, N.C., 17 July 1954, (1) 67.5 mm. S.L., UNC 2237.___Beaufort Inlet to Cape Lookout, N.C., Sept. 1956, (5) 79.0–93.5 mm. S.L., UNC 889.___Newport River Narrows, Carteret County, N.C., 8 July 1955, (11) 58.0–74.5 mm. S.L., UNC 210.___Piver's Island, N.C., 8 July 1959, (64) 24.0–44.0 mm. S.L., Sn., BLBG.___Piver's Island, N.C., 8 July 1959, (6) 28.3–38.2 mm. S.L., Sn., BLBG.___Piver's Island, N.C., 10 July 1959, (135) 13.5–48.0 mm. S.L., Sn., BLBG.___Piver's Island, N.C., 10 July 1959, (2) 43.9 and 47.1 mm. S.L., Sn., BLBG.___Piver's Island, N.C., 4 Aug. 1954, (1) 100 mm. S.L., UNC 2545.___Morehead City, N.C., 13 July 1959, (4) 37.0–46.5 mm. S.L., Sn., BLBG.___Morehead City, N.C., 10 July 1959, (3) 30.0–40.0 mm. S.L., BLBG.___Bogue Sound, Carteret County, N.C., 29 July 1958, (2) 38.3 and 94.5 mm. S.L., UNC 2363.___34°41′ N., 76°50′ W., *Silver Bay* Sta. 1288, 20 Sept. 1959, (1) 90.8 mm. S.L., Tr. 7–5 fathoms, BLBG.___34°39′ N., 76°01′ W., *Silver Bay* Sta. 1270, 12 Sept. 1959, (4) 104–108 mm. S.L., Tr. 20 fathoms, BLBG....34°39′ N., 76°27′ W., *Silver Bay* Sta. 1262, 10 Sept. 1959, (1) 92.3 mm. S.L., Tr. 6–7 fathoms, BLBG....34°38′ N., 76°49′ W., *Silver Bay* Sta. 1291, 22 Sept. 1959, (5) 83.1–98.3 mm. S.L., Tr. 8–10 fathoms, BLBG....34°38′ N., 76°40′ W., *Silver Bay* Sta. 1284, 20 Sept. 1959, (1) 87.0 mm. S.L., Tr. 6–8 fathoms, BLBG.... 34°38′ N., 76°40′ W., *Silver Bay* Sta. 1284, 20 Sept. 1959, (3) 79.3–113 mm. S.L., Tr. 6–8 fathoms, BLBG.... 34°38′ N., 76°49′ W., *Silver Bay* Sta. 1240, 6 Sept. 1959, (3) 87.6–97.6 mm. S.L., Tr. 7 fathoms, BLBG....34°37′ N., 77°01′ W., *Silver Bay* Sta. 1311, 24 Sept. 1959, (2) 110 and 124 mm. S.L., Tr. 7 fathoms, BLBG....34°35′ N., 75°15′ W., *Gill* Cr. 7, 13 July 1954, (1) 33.0 mm. S.L., S.C. of *Euthynnus alletteratus* (Rafinesque), BLBG.... 34°35′ N., 77°03′ W., *Silver Bay* Sta. 1310, 24 Sept. 1959, (1) 113 mm. S.L., Tr. 8 fathoms, BLBG....34°35′ N., 76°23′ W., *Silver Bay* Sta. 1250, 7 Sept. 1959, (1) 111 mm. S.L., Tr. 11–10 fathoms, BLBG....34°34′ N., 76°36′ W., *Silver Bay* Sta. 1315, 27 Sept. 1959, (2) 83.4 mm. and 105 mm. S.L., Tr. 8 fathoms, BLBG....34°33′ N., 77°06′ W., *Silver Bay* Sta. 1309, 24 Sept. 1959, (1) 104 mm. S.L., Tr. 9 fathoms, BLBG....34°32′ N., 76°33′ W., *Silver Bay* Sta. 1317, 27 Sept. 1959, (2) 77.6 and 86.6 mm. S.L., Tr. 8 fathoms, BLBG....34°32′ N., 76°49′ W., *Silver Bay* Sta. 1293, 23 Sept. 1959, (1) 181 mm. S.L., Tr. 10–11 fathoms, BLBG....34°32′ N., 76°49′ W., *Silver Bay* Sta. 1293, 23 Sept. 1959, (9) 79.9–105 mm. S.L., Tr. 10–11 fathoms, BLBG....34°32′ N., 75°57′ W., *Silver Bay* Sta. 1269, 12 Sept. 1959, (1) 94.5 mm. S.L., Tr. 25 fathoms, BLBG....34°32′ N., 75°53′ W., *Silver Bay* Sta. 1268, 11 Sept. 1959, (4) 53.4–172 mm. S.L., Tr. 31–30 fathoms, BLBG....34°31′ N., 76°51′ W., *Silver Bay* Sta. 1259, 10 Sept. 1959, (2) 84.0 and 89.2 mm. S.L., Tr. 11 fathoms, BLBG....34°31′ N., 76°53′ W., *Silver Bay* Sta. 1239, 6 Sept. 1959, (4) 74.0–102 mm. S.L., Tr. 14–12 fathoms, BLBG....34°29′ N., 76°49′ W., *Silver Bay* Sta. 1305, 24 Sept. 1959, (4) 97.1–163 mm. S.L., Tr. 12 fathoms, BLBG....34°29′ N., 76°57′ W., *Silver Bay* Sta. 1307, 24 Sept. 1959, (6) 76.1–126 mm. S.L., Tr. 12 fathoms, BLBG....34°27′ N., 76°53′ W., *Silver Bay* Sta. 1306, 24 Sept. 1959, (5) 98.5–172 mm. S.L., Tr. 12 fathoms, BLBG....34°26′ N., 77°05′ W., *Silver Bay* Sta. 1308, 24 Sept. 1959, (11) 89.1–128 mm. S.L., Tr. 9–10 fathoms, BLBG....34°25′ N., 76°51′ W., *Silver Bay* Sta. 1294, 23 Sept. 1959, (4) 96.3–171 mm. S.L., Tr. 12–13 fathoms, BLBG....34°24′ N., 76°46′ W., *Silver Bay* Sta. 1238, 6 Sept. 1959, (3) 84.0–191 mm. S.L., Tr. 14–12 fathoms, BLBG....34°23′ N., 76°54′ W., *Silver Bay* Sta. 1295, 23 Sept. 1959, (2) 179 and 189 mm. S.L., Tr. 13–15 fathoms, BLBG....34°23′ N., 76°54′ W., *Silver Bay* Sta. 1295, 23 Sept. 1959, (3) 75.2–96.7 mm. S.L., Tr. 13–15 fathoms, BLBG....34°22′ N., 77°09′ W., *Gill* Cr. 3, Reg. 68, 11 Aug. 1953, (48) 7.5–32.5 mm. S.L., D.N., BLBG.... 34°22′ N., 75°38′ W., *Gill* Cr. 8, Reg. 74, 30 Sept. 1954, (6) 12.0–23.5 mm. S.L., D.N., BLBG....34°22′ N., 76°13′ W., *Silver Bay* Sta. 1248, 7 Sept. 1959, (2) 86.3 and 96.4 mm. S.L., Tr. 13–15 fathoms, BLBG....34°22′ N., 76°41′ W., *Silver Bay* Sta. 1237, 6 Sept. 1959, (9) 73.6–93.3 mm. S.L., Tr. 14–15 fathoms, BLBG....34°21′ N., 76°34′ W., *Silver Bay* Sta. 1299, 23 Sept. 1959, (4) 49.0–61.6 mm. S.L., Tr. 14 fathoms, BLBG....34°21′ N., 77°34′ W., *Silver Bay* Sta. 1227, 4 Sept. 1959, (5) 93.7–188 mm. S.L., Tr. 7–8 fathoms, BLBG....34°19′ N., 77°19′ W., *Silver Bay* Sta. 1228, 5 Sept. 1959, (4) 87.1–79.4 mm. S.L., Tr. 10 fathoms, BLBG....34°18′ N., 76°32′ W., *Gill* Cr. 3, Reg. 70, 12 Aug. 1953, (16) 17.0–49.0 mm. S.L., D.N., BLBG....34°16′ N., 77°34′ W., *Silver Bay* Sta. 1226, 4 Sept. 1959, (5) 79.0–157 mm. S.L., Tr. 8–7 fathoms, BLBG....34°15′ N., 77°07′ W., *Silver Bay* Sta. 1229, 5 Sept. 1959, (17) 11.0–17.8 mm. S.L., M.L.N., BLBG.... 34°14′ N., 76°01′ W., *Silver Bay* Sta. 1247, 7 Sept. 1959, (3) 68.5–97.3 mm. S.L., Tr. 33–24 fathoms, BLBG.... 34°13′ N., 76°48′ W., *Silver Bay* Sta. 1296, 23 Sept. 1959, (6) 109–168 mm. S.L., Tr. 17 fathoms, BLBG....34°10′ N., 77°30′ W., *Gill* Cr. 8, Reg. 67, 28 Sept. 1954, (11) 10.0–21.5 mm. S.L., D.N., BLBG....34°10′ N., 76°15′ W., *Silver Bay* Sta. 1245, 7 Sept. 1959, (1) 91.2 mm. S.L., Tr. 22 fathoms, BLBG....34°09′ N., 76°35′ W., *Silver Bay* Sta. 1297, 23 Sept. 1959, (5) 94.7–211 mm. S.L., Tr. 20 fathoms, BLBG....34°09′ N., 76°55′ W., *Silver Bay* Sta. 1230, 5 Sept. 1959, (1) 85.0 mm. S.L., Tr. 17 fathoms, BLBG....34°07′ N., 76°32′ W., *Silver Bay* Sta. 1298, 23 Sept. 1959, (2) 94.5 and 106 mm. S.L., Tr. 19 fathoms, BLBG....34°06′ N., 77°46′ W., *Silver Bay* Sta. 1213, 2 Sept. 1959, (5) 76.0–186 mm. S.L., Tr. 7–8 fathoms, BLBG....34°05′ N., 76°45′ W., *Silver Bay* Sta. 1231, 5 Sept. 1959, (1) 87.6 mm. S.L., Tr. 20 fathoms, BLBG.... 34°04′ N., 76°14′ W., *Gill* Cr. 7, Reg. 71, 10 July 1954, (13) 12.5–34.0 mm. S.L., D.N., BLBG....34°03′ N., 77°50′ W., *Silver Bay* Sta. 1212, 2 Sept. 1959, (3) 88.4–180 mm. S.L., Tr. 5–6 fathoms, BLBG....34°02′ N., 76°16′ W., *Gill* Cr. 8, Reg. 71, 29 Sept. 1954, (6) 13.0–21.0 mm. S.L., D.N., BLBG....34°02′ N., 77°35′ W., *Silver Bay* Sta. 1214, 3 Sept. 1959, (7) 141–175 mm. S.L., Tr. 11 fathoms, BLBG....34°01′ N., 76°37′ W., *Silver Bay* Sta. 1316, 27 Sept. 1959, (1) 119 mm. S.L., Tr. 9 fathoms, BLBG....33°57′ N., 77°11′ W., *Gill* Cr. 8, Reg. 66, 28 Sept. 1954, (3) 11.0–14.5 mm. S.L., D.N., BLBG.... 33°57′ N., 77°01′ W., *Silver Bay* Sta. 1222, 4 Sept. 1959, (4) 166–182 mm. S.L., Tr. 17–16 fathoms, BLBG.... 33°57′ N., 77°01′ W., *Silver Bay* Sta. 1222, 4 Sept. 1959, (1) 11.5 mm. S.L., M.L.N., BLBG....33°57′ N., 77°13′ W., *Gill* Cr. 3, Reg. 66, 11 Aug. 1953, (42) 8.4–52.5 mm. S.L., D.N., BLBG....33°56′ N., 77°20′ W., *Silver Bay* Sta. 1215, 3 Sept. 1959, (18) 73.5–174 mm. S.L., Tr. 15 fathoms, BLBG....33°55′ N., 77°52′ W., *Silver Bay* Sta. 1211, 2 Sept. 1959, (3) 75.1–146 mm. S.L., Tr. 5–6 fathoms, BLBG....33°50′ N., 75°59′ W., *Gill* Cr. 7, Reg. 72, 10 July 1954, (1) 55.5 mm. S.L., D.N., BLBG....33°50′ N., 76°55′ W., *Silver Bay* Sta. 1221, 4 Sept. 1959, (5) 117–128 mm. S.L., Tr. 20 fathoms, BLBG....33°49′ N., 75°59′ W., *Gill* Cr. 2, Reg. 72, 10 May 1953, (1) 15.0 mm. S.L., D.N., BLBG....33°47′ N., 77°50′ W., *Silver Bay* Sta. 1210, 2 Sept. 1959, (8) 81.5–207 mm. S.L., Tr. 8 fathoms, BLBG....33°44′ N., 77°00′ W., *Gill* Cr. 3, Reg. 65, 11 Aug. 1953, (1) 11.5 mm. S.L., D.N., BLBG.... 33°44′ N., 76°56′ W., *Gill* Cr. 8, Reg. 65, 28 Sept. 1954, (21) 12.0–26.0 mm. S.L., D.N., BLBG....33°44′ N., 76°58′ W., *Silver Bay* Sta. 1217, 3 Sept. 1959, (9) 121–174 mm. S.L., Tr. 22–23 fathoms, BLBG....33°43′ N., 76°56′ W., *Gill* Cr. 4, Reg. 65, 8 Nov. 1953, (1) 19.0 mm. S.L., D.N., BLBG....33°41′ N., 77°40′ W., *Silver Bay* Sta.

1209, 2 Sept. 1959, (11) 79.7–182 mm. S.L., Tr. 11–12 fathoms, BLBG.___33°29′ N., 76°40′ W., *Gill* Cr. 3, Reg. 64, 11 Aug. 1953, (107) 12.0–48.5 mm. S.L., D.N., BLBG.___33°29′ N., 77°22′ W., *Silver Bay* Sta. 1205, 1 Sept. 1959, (7) 79.5–127 mm. S.L., Tr. 16–20 fathoms, BLBG.___33°24′ N., 76°25′ W., *Gill* Cr. 3, Reg. 63, 11 Aug. 1953, (1) 11.5 mm. S.L., D.N., BLBG.___33°22′ N., 77°38′ W., *Gill* Cr. 4, Reg. 59, 7 Nov. 1953, (1) 40.0 mm. S.L., D.N., BLBG.___33°21′ N., 77°24′ W., *Silver Bay* Sta. 1204, 1 Sept. 1954, (4) 83.7–91.2 mm. S.L., Tr. 15-16 fathoms, BLBG.___33°21′ N., 77°24′ W., *Silver Bay* Sta. 1204, 1 Sept. 1959, (21) 81.2-176 mm. S.L., Tr. 15–16 fathoms, BLBG.___33°19′ N., 77°34′ W., *Gill* Cr. 3, Reg. 59 to Reg. 60, 10 Aug. 1953, (11) about 32 to 49 mm. S.L., S.C. of *Coryphaena hippurus* Linnaeus, BLBG.___33°17′ N., 78°38′ W., *Gill* Cr. 8, Reg. 55, 26 Sept. 1954, (41) 9.0–48.0 mm. S.L., D.N., BLBG.___33°15′ N., 76°23′ W., *Gill* Cr. 2, Reg. 63, 8 May 1953, (3) 11.0–12.5 mm. S.L., BLBG.___33°03′ N., 78°21′ W., *Gill* Cr. 8, Reg. 54, 26 Sept. 1954, (121) 9.5–36.0 mm. S.L., D.N., BLBG.___33°03′ N., 78°21′ W., *Gill* Cr. 7, Reg. 54, 4 July 1954, (46) 8.0–45.0 mm. S.L., D.N., BLBG.___33°03′ N., 77°09′ W., *Combat* Sta. 289, 20 Apr. 1957, (1) 7.0 mm. S.L., D.N., BLBG.___32°58′ N., 78°15′ W., *Gill* Cr. 8, Reg. 53 to Reg. 54, 26 Sept. 1954, (1) about 10 mm. S.L., S.C. of *Euthynnus alletteratus*, BLBG.___Off South Carolina, *Combat*, 18 Apr. 1957, (1) 18.0 mm. S.L., D.N., BLBG.___32°54′ N., 79°16′ W., *Gill* Cr. 4, Reg. 46, 25 Oct. 1953, (2) 42.0 and 52.5 mm. S.L., D.N., BLBG.___32°54′ N., 77°04′ W., *Gill* Cr. 3, Reg. 61, 10 Aug. 1953, (17) 11.5–42.5 mm. S.L., D.N., BLBG.___32°54′ N., 77°04′ W., *Gill* Cr. 2, Reg. 61, 8 May 1953, (3) 10.0–12.5 mm. S.L., D.N., BLBG.___32°48′ N., 78°04′ W., *Gill* Cr. 4, Reg. 53, 27 Oct. 1953, (2) 19.0 and 22.5 mm. S.L., D.N., BLBG.___32°48′ N., 78°04′ W., *Gill* Cr. 5, Reg. 53, 16 Feb. 1954, (15) 11.5–26.0 mm. S.L., D.N., BLBG.___32°43′ N., 76°48′ W., *Gill* Cr. 2, Reg. 62, 8 May 1953, (2) 10.0 and 11.0 mm. S.L., D.N., BLBG.___32°34′ N., 77°48′ W., *Gill* Cr. 4, Reg. 52, 26 Oct. 1953, (14) 10.0–42.5 mm. S.L., D.N., BLBG.___32°34′ N., 77°48′ W., *Gill* Cr. 8, Reg. 52, 26 Sept. 1954, (16) 14.0–41.0 mm. S.L., D.N., BLBG.___32°27′ N., 78°06′ W., *Combat* Sta. 297, 21 Apr. 1957, (3) 14.5–17.5 mm. S.L., D.N., BLBG.___32°27′ N., 78°06′ W., *Combat* Sta. 297, 21 Apr. 1957, (3) 15.0–17.5 mm. S.L., D.N., BLBG.___32°26′ N., 78°43′ W., *Gill* Cr. 7, Reg. 48, 3 July 1954, (3) 6.0–11.5 mm. S.L., D.N., BLBG.___32°24′ N., 78°44′ W., *Gill* Cr. 3, Reg. 48, 6 Aug. 1953, (4) 16.5–43.5 mm. S.L., BLBG.___32°24′ N., 78°45′ W., *Gill* Cr. 8, Reg. 48, 25 Sept. 1954, (17) 7.0–23.5 mm. S.L., D.N., BLBG.___32°11′ N., 78°27′ W., *Gill* Cr. 5, Reg. 49, 15 Feb. 1954, (5) 16.0–33.0 mm. S.L., D.N., BLBG.___32°10′ N., 78°28′ W., *Gill* Cr. 7, Reg. 49, 4 July 1954, (1) 12.0 mm. S.L., D.N., BLBG.___31°56′ N., 78°10′ W., *Gill* Cr. 8, Reg. 50, 26 Sept. 1954, (16) 14.0–41.0 mm. S.L., D.N., BLBG.___31°41′ N., 80°35′ W., *Gill* Cr. 4, Reg. 36, 21 Oct. 1953, (2) 29.0 and 46.5 mm. S.L., P.T., BLBG.___31°41′ N., 80°35′ W., *Gill* Cr. 4, Reg. 36, 21 Oct. 1953, (37) 16–48.5 mm. S.L., D.N., BLBG.___31°40′ N., 80°20′ W., *Gill* Cr. 8, Reg. 37, 21 Sept. 1954, (10) 24.0–40.0 mm S.L., D.N., BLBG.___31°38′ N., 80°14′ W., *Gill* Cr. 4, Reg. 37, 22 Oct. 1953, (336) 10.0–37.5 mm. S.L., D.N., BLBG.___31°38′ N., 80°14′ W., *Gill* Cr. 3, Reg. 37, 5 Aug. 1953, (2) 23.5 and 34.0 mm. S.L., D.N., BLBG.___31°38′ N., 80°15′ W., *Gill* Cr. 7, Reg. 37, 2 July 1954, (28) 8.0–50.0 mm. S. L., D.N., BLBG.___31°36′ N., 79°51′ W., *Gill* Cr. 8, Reg. 38, 21 Sept. 1954, (7) 17.5–29.0 mm. S.L., D.N., BLBG.___31°36′ N., 79°52′ W., *Gill* Cr. 7, Reg. 38, 2 July 1954, (7) 6.5–21.5 mm. S.L., D.N., BLBG.___31°34′ N., 79°28′ W., *Gill* Cr. 4, Reg. 39, 24 Oct. 1953, (1) 20.5 mm. S.L., M.L.N., BLBG.___31°34′ N., 79°28′ W., *Gill* Cr. 4, Reg. 39, 24 Oct. 1953, (1) 15.0 mm. S.L., D.N., BLBG.___31°33′ N., 79°27′ W., *Gill* Cr. 8, Reg. 39, 21 Sept. 1954, (29) 9.0–20.0 mm. S.L., D.N., BLBG.___31°32′ N., 79°28′ W., *Gill* Cr. 3, Reg. 39, 5 Aug. 1953, (4) 13.5–24.0 mm. S.L., D.N., BLBG.___31°21′ N., 80°52′ W., *Gill* Cr. 4, Reg. 35, 21 Oct. 1953, (28) 21.5–54.0 mm. S.L., M.L.N., BLBG.___31°20′ N., 80°53′ W., *Gill* Cr. 8, Reg. 35, 20 Sept. 1954, (2) 21.5 and 27.5 mm. S.L., D.N., BLBG.___St. Simons Island, Ga., 5 Oct. 1955, (280) 20.5–43.0 mm. S.L., Sn., BLBG.___St. Simons Island, Ga., 14 Aug. 1955, (12) 9.0–23.0 mm. S.L., Sn., BLBG.___St. Simons Island, Ga., 26 Dec. 1957, (1) 19.0 mm. S.L., Sn., BLBG.___St. Simons Island, Ga., 11 Oct. 1957, (1) 22.5 mm. S.L., Sn., BLBG.___St. Simons Island, Ga., 26 Sept. 1957, (2) 20.5 and 22.0 mm. S.L., Sn., BLBG.___St. Simons Island, Ga., 27 Aug. 1957, (1) 18.5 mm. S.L., Sn., BLBG.___St. Simons Island, Ga., 26 July 1957, (26) 16.5–28.0 mm. S.L., Sn., BLBG.___St. Simons Island, Ga., 15 July 1957, (1) 15.9 mm. S.L., Sn., BLBG.___St. Simons Island, Ga., 16 May 1957, (15) 20.0–33.0 mm. S.L., Sn., BLBG.___St. Simons Island, Ga., 2 May 1957, (2) 15.0 and 25.0 mm. S.L., Sn., BLBG.___St. Simons Island, Ga., 27 Apr. 1957, (3) 13.5–47.0 mm. S.L., Sn., BLBG.___St. Simons Island, Ga., 16 Apr. 1957, (2) 18.5 and 22.5 mm. S.L., Sn., BLBG.___St. Simons Island, Ga., 18 Mar. 1957, (1) 27.5 mm. S.L., Sn., BLBG.___St. Simons Island, Ga., 20 June 1958, (2) 15.5 and 16.0 mm. S.L., Sn., BLBG.___Jekyll Island Causeway, Ga., 26 Sept. 1957, (3) 17.0–21.5 mm. S.L., Sn., BLBG.___Jekyll Island, Ga., 6 Aug. 1959, (1) 57.5 mm. S.L., BLBG.___Jekyll Island, Ga., 18 Feb. 1959, (1) 34.5 mm. S.L., Sn., BLBG.___Commercial Trawling Area, Brunswick, Ga., 20 Oct. 1955, (1) 59.0 mm. S.L., Tr., BLBG.___31°00′ N., 80°23′ W., *Gill* Cr. 4, Reg. 32, 16 Oct. 1953, (441) 12.5–52.0 mm. S.L., D.N., BLBG.___31°00′ N., 80°46′ W., *Gill* Cr. 4, Reg. 33, 16 Oct. 1953, (72) 9.5–46.0 mm. S.L., D.N., BLBG.___31°00′ N., 80°46′ W., *Gill* Cr. 8, Reg. 33, 15 Sept. 1954, (6) 20.5–32.0 mm. S.L., D.N., BLBG.___31°00′ N., 80°23′ W., *Gill* Cr. 7, Reg. 32, 27 June 1954, (36) 9.5–26.0 mm. S.L., D.N., BLBG.___31°00′ N., 80°46′ W., *Gill* Cr. 7, Reg. 33, 27 June 1954, (6) 30.0–40.5 mm. S.L., D.N., BLBG.___31°00′ N., 80°00′ W., *Gill* Cr. 7, Reg. 31, 27 June 1954, (10) 8.5–17.0 mm. S.L., D.N., BLBG.___31°00′ N., 81°08′ W., *Gill* Cr. 4, Reg. 34, 17 Oct. 1953, (6) 19.0–29.0 mm. S.L., D.N., BLBG.___30°59′ N., 79°14′ W., to 31°00′ N., 79°36′ W., *Gill* Cr. 8, Reg. 29 to Reg. 30, 15 Sept. 1954, (5) 14.0–27.5 mm. S.L., D.N., BLBG.___30°58′ N., 79°38′ W., *Gill* Cr. 7, Reg. 30, 27 June 1954, (2) 13.0 and 40.0 mm. S.L., D.N., BLBG.___30°20′ N., 79°26′ W., *Gill* Cr. 4, Reg. 28, 16 Oct. 1953, (2) 19.0 and 22.5 mm. S.L., D.N., BLBG.___30° 20′ N., 80°35′ W., *Gill* Cr. 3, Reg. 25, 28 July 1953, (1) 11.5 mm. S.L., D.N., BLBG.___30°20′ N., 80°58′ W., *Gill* Cr. 7, Reg. 24, 26 June 1954, (8) 14.0–32.0 mm. S.L., D.N., BLBG.___30°20′ N., 80°36′ W., *Gill* Cr. 7, Reg. 25, 26 June 1954, (74) 8.5–22.5 mm. S.L., D.N., BLBG.___30°00′ N., 80°10′ W., *Silver Bay* Sta. 476, 18 June 1958, (87) 5.4–38.5 mm. S.L., D.N., BLBG.___29°48′ N., 80°12′ W., *Silver Bay* Sta. 470, 17 June 1958, (116) 6.2–21.2 mm. S.L., D.N., BLBG.___29°40′ N., 80°23′ W., *Gill* Cr. 4, Reg. 19, 14 Oct. 1953, (1) 25.0 mm. S.L., D.N., BLBG.___29°40′ N., 81°08′ W., *Gill* Cr. 8, Reg. 21, 14 Sept. 1954, (6) 15.5–34.0 mm. S.L., D.N., BLBG.___29°40′ N., 80°45′ W., *Gill* Cr. 8, Reg. 20, 14 Sept. 1954, (46) 7.5–15.5 mm. S.L., D.N., BLBG.___29°38′ N., 80°12′ W., *Combat* Sta. 474, 14 Aug. 1957, (4) 10.0–51.0 mm. S.L., D.N., BLBG.___29°38′ N., 80°09′ W., *Silver Bay* Sta. 471, 17 June 1958, (59) 5.6–33.8 mm. S.L., D.N., BLBG.___29°31′ N., 80°31′ W., *Combat* Sta. 347, 2 June 1957, (4) 124–155 mm. S.L., Tr. 18 fathoms, BLBG.___29°29′ N., 80°10′ W., *Combat* Sta. 490, 19 Aug. 1957, (2) 16.5 and 34.0 mm. S.L., D.N., BLBG.___29°29′ N., 80°09′ W., *Combat* Sta. 485, 18 Aug. 1957, (5) 15.5–38.0 mm. S.L., D.N., BLBG.___29°26′ N., 80°08′ W., *Combat* Sta. 315, 27 Apr. 1957, (2) 13.0 and 21.0 mm. S.L., D.N., BLBG.___29°22′ N., 80°05′ W., *Silver Bay* Sta. 227, 24 Nov. 1957, (3) 11.5–15.0 mm. S.L., D.N., BLBG.___29°20′ N., 80°04′ W., *Combat* Sta. 316, 27 Apr. 1957, (1) 8.5 mm. S.L., D.N., BLBG.___29°10′ N., 80°19′ W., *Combat* Sta. 336, 1 June 1957, (1) 122 mm. S.L., Tr. 25 fathoms, BLBG.___29°10′ N., 80°19′ W., to 29°19′ N., 80°15′ W., *Combat* Sta. 336–337, 1 June 1957, (62) 10.6–28.7 mm. S.L., D.N., BLBG.___29°07′ N., 80°25′ W., *Gill* Cr. 8, 28 Aug. 1954, (1) 22.0 mm. S.L., S.C. of *Euthynnus alletteratus*, BLBG.___29°00′ N., 79°48′ W., *Gill* Cr. 4, Reg. 15, 14 Oct. 1953, (1) 16.5 mm. S.L., D.N., BLBG.___29°00′ N., 80°32′ W., *Gill* Cr. 4, Reg. 13, 14 Oct. 1953, (1) 31.0 mm. S.L., D.N., BLBG.___29°00′ N., 80°10′ W., *Gill* Cr. 4, Reg. 14, 14 Oct. 1953, (32) 17.0–34.0 mm. S.L., D.N., BLBG.___29°00′ N., 79°26′ W., *Gill* Cr. 4, Reg. 16, 14 Oct. 1953, (23) 13.5–27.0 mm. S.L., D.N., BLBG.___29°00′ N., 80°32′ W., *Gill* Cr. 8, Reg. 13, 12 Sept. 1954, (6) 22.5–30.0 mm. S.L., D.N., BLBG.___Port Canaveral Anchorage, Fla., *Silver Bay*, 22–23 Nov. 1957, (1) 10.5 mm. S.L., D.N., BLBG.___Port Canaveral Anchorage, Fla., *Combat*, (1) 20.0 mm. S.L., D.N., BLBG.___27°40′ N., 80°04′ W., *Gill* Cr. 4, Reg. 5, 12 Oct. 1953, (3) 15.0–39.5 mm. S.L., M.L.N., BLBG.___27°20′N., 80°02′W., *Gill* Cr. 4, Reg. 4, 12 Oct. 1953, (3) 14.0–47.0 mm. S.L., D.N., BLBG.___27°14′ N., 79°50′ W., *Combat* Sta. 462, 29 July 1957, (10) 12.2–14.4 mm. S.L., D.N., BLBG.___26°58′ N., 79°40′ W., *Gill* Cr. 4, Reg. 2, 12 Oct. 1953, (9) 13.2–39.2 mm. S.L., D.N., BLBG.___26°47′ N., 79°53′ W., *Combat* Sta. 459, 28 July 1957, (9) 11.5–61.0 mm. S.L., D.N., BLBG.___26°37′ N., 79°51′ W., *Combat* Sta. 458, 28 July 1957, (1) 12.0 mm. S.L., D.N., BLBG.___25°16′ N., 80°07′ W., *Combat* Sta. 457, 26 July 1957, (12) 10.0–40.5 mm. S.L., D.N., BLBG.___25°13′ N., 80°10′ W., *Combat* Sta. 455, 26 July 1957, (16) 13.0–51.1 mm. S.L., D.N., BLBG.___25°11′ N., 79°56′ W., *Combat Sta.* 443, 22 July 1957, (1) 49.5 mm. S.L., D. N., BLBG.___25°11′ N., 79°56′ W., *Combat* Sta. 443, 22 July 1957, (1) 49.0 mm. S.L., D.N., BLBG.___25°10′ N., 80°02′ W., *Combat* Sta. 438, 22 July 1957, (70) 8.6–56.4 mm. S.L., D.N., BLBG.___East coast of Florida, *Combat* Sta., (5) 111–143 mm. S.L., Tr., BLBG.___Gulf Stream, (1) 100 mm. S.L., CAS 12824.___24°13′ N., 81°42′ W., *Combat* Sta. 436, 21 July 1957, (9) 18.0–42.0 mm. S.L., D.N., BLBG.___Key West, Fla., (1) 50.5 mm. S.L., collected by D. S. Jordan, SU 2358.___Loggerhead Key, Fla., (2) 81.0 and 97.5 mm. S.L., Tr., UF.___Sanibel Island, Fla., 19 Aug. 1959, (2) 36.0 and 42.5 mm. S.L., Sn., BLBG.___Sanibel Island, Fla., 17 Aug. 1959, (1) 40.5 mm. S.L., Sn., BLBG.___Sanibel Island, Fla., 14 Aug. 1959, (26) 20.5–50.0 mm. S.L., Sn., BLBG.___Sanibel Island, Fla., 14 Aug. 1959, (12) 18.6–49.3 mm. S.L., Sn., BLBG.___Gasparilla Bay, Fla., 17 Jan. 1958, (1) 145 mm. S.L., CHML.___Placida, Fla., 1 Jan. 1955, (1) 158 mm. S.L., CHML.___Englewood, Fla., Mar. 1958, (1) 167 mm. S.L., CHML.___Lemon Bay, Fla., 28 Sept. 1955, (1) 143 mm. S.L., CHML.___Tarpon Springs, Fla., Mar. 1930, (1) 151 mm. S.L., UF 4192.___Cedar Keys, Fla., 19 June 1949, (7) 32.8–66.6 mm. S.L., UF.___Cedar Keys, Fla., 19 June 1949, (5) 52.0–66.5 mm. S.L., UF.___Cedar Keys, Fla., 18 Oct. 1953, (2) 22.7 and 27.0 mm. S.L., UF C–10–1853–4.___Cedar Keys, Fla., 20 Sept. 1953, (2) 96.0 and 108 mm. S.L., UF 2510.___Cedar Keys, Fla., 6 Sept. 1953, (1) 102 mm. S.L., UF C–9–653–2.___Cedar Keys, Fla., 6 Sept. 1953, (1) 66.1 mm. S.L., UF C–9–653–4.___Cedar Keys, Fla., 16 Aug. 1953, (2) 61.5 and 83.0 mm. S.L., UF C–8–1653–2.___Cedar Keys, Fla., 16 Aug. 1953, (7) 63.6–88.6 mm. S.L., UF C–8–1653–4.___Cedar Keys, Fla., 16 Aug. 1953, (6) 55.5–74.1 mm. S.L., UF C–8–1653–5.___Cedar Keys, Fla., 16 Aug. 1953, (6) 56.4–74.9 mm. S.L., UF C–8–1653–5.___Cedar Keys, Fla., 16 Aug. 1953, (38) 42.3–90.2 mm. S.L., UF C–8–1653–4.___Cedar Keys, Fla., 25 July 1953, (3) 55.7–82.5 mm. S.L., UF C–7–2553–2.___Cedar Keys, Fla., 12 July 1953, (6) 61.1–89.6 mm. S.L., UF C–7–1253–4.___Cedar Keys, Fla., 12 July 1953, (1) 81.6 mm. S.L., UF C–7–1253–2.___Cedar Keys, Fla., 12 July 1953, (1) 44.8 mm. S.L., UF C–7–1253–1.___Cedar Keys, Fla., 12 July 1953, (18) 39.7–91.1 mm. S.L., UF C–7–1253–4.___Cedar Keys, Fla., 27 May 1953, (1) 53.5 mm. S.L., UF C–5–2753–3.___Cedar Keys, Fla., 27 May 1953, (1) 80.8 mm. S.L., UF C–5–2753–2.___Cedar Keys, Fla., 27 May 1953, (8) 34.3–59.9 mm. S.L., UF C–5–2753–3.___Cedar Keys, Fla., 30 June 1954, (1) 73.1 mm. S.L., UF C–6–3054–1.___Cedar Keys, Fla., 23 Nov. 1957, (7) 24.0–29.0 mm. S.L., UF.___Fort Walton, Fla., Feb.–Aug. 1959, (5) 38.0–41.0 mm. S.L., BLBG.___28°44′ N., 88°08′ W., *Oregon* Sta. 1583, 20–21 July 1956, (60) 14.9–41.3 mm. S.L., D.N., BLBG.___Aransas Anchorage, Tex., 7 June 1954, (1) 27.9 mm. S.L., UF.___5–10 miles north of San Fernando River, Mexico, 22 Mar. 1947, (1) 53.0 mm. S.L., collected by W. W. Anderson, USNM 155576.___24°50′ N., 92°35′ W., *Oregon* Sta. 2198, 23–24 June 1958, (6) 18.0–57.6 mm. S.L., D.N., BLBG.___24°05′ N., 91°46′ W., *Oregon* Sta. 2196, 22 June 1958, (6) 39.5–48.0 mm. S.L., D.N., BLBG.___22°13′ N., 89°43′ W., *Silver Bay* Sta. 404, 12 May 1958, (1) 125 mm. S.L., Tr. 25 fathoms, USNM.___24°26′ N., 81°48′15″ W., *Albatross* Sta. 2315, 15 Jan. 1885, (1) 82.5 mm. S.L., USNM 143091.___07°55′ N., 57°27′ W., *Oregon* Sta. 2247, 31 Aug. 1958, (1) 69.5 mm. S.L., BLBG.---Brazil, *Albatross*, (1) 62.0 mm. S.L., USNM 43319.---No data, (1) 83.1 mm. S.L., CAS 3437.

Stephanolepis setifer

34°38′ N., 74°46′ W., *Gill* Cr. 2, Reg. 80, 12 May 1953, (1) 39.6 mm. S.L., D.N., BLBG.---33°49′ N., 75°59′ W., *Gill* Cr. 2, Reg. 72, 10 May 1953, (1) 18.5 mm. S.L., D.N., BLBG.---33°29′ N., 76°40′ W., *Gill* Cr. 3, Reg. 64, 11 Aug. 1953, (1) 12.5 mm. S.L., D.N., BLBG.---33°15′ N., 76°23′ W., *Gill* Cr. 2, Reg. 63, 8 May 1953, (1) 17.2 mm. S.L., D.N., BLBG.---33°13′ N., 76°55′ W., *Combat* Sta. 290, 20 Apr. 1957, (1) 30.0 mm. S.L., D.N., BLBG.---32°40′ N., 77°40′ W., *Combat* Sta. 296, 21 Apr. 1957, (1) 43.2 mm. S.L., D.N., BLBG.---32°24′ N., 78°45′ W., *Gill* Cr. 8, Reg. 48, 25 Sept. 1954, (1) 20.0 mm. S.L., D.N., BLBG.---Bermuda, (1) 92.5 mm. S.L., collected by Beebe, USNM 178860.---31°42′ N., 79°00′ W., *Gill* Cr. 5, Reg. 41, 14 Feb. 1954, (1) 17.3 mm. S.L., D.N., BLBG.---31°29′ N., 78°41′ W., *Gill* Cr. 2, Reg. 40, 5 May 1953,(1) 24.5 mm. S.L., D.N., BLBG.---30°20′ N., 79°50′ W., *Gill* Cr. 8, Reg. 27, 14 Sept. 1954, (1) 20.5 mm. S.L., D.N., BLBG.---30°18′ N., 80°12′ W., *Gill* Cr. 3, Reg. 26, 29 July 1953, (1) 27.4 mm. S.L., D.N., BLBG.---29°48′ N., 80°12′ W., *Silver Bay* Sta. 470, 17 June 1958, (1) 34.9 mm. S.L., D.N., BLBG.---29°38′ N., 80°12′ W., *Combat* Sta. 474, 14 Aug. 1957, (18) 23.0–39.6 mm. S.L., D.N., BLBG.---29°28′ N., 80°09′ W., *Combat* Sta. 326, 30 May 1957, (1) 32.0 mm. S.L., hooked through eye on trolling rig, BLBG.---29°28′ N., 80°09′ W., *Combat* Sta. 326, 30 May 1957, (3) 34.7–38.2 mm. S.L., D.N., BLBG.---29°19′ N., 80°18′ W., *Combat* Sta. 343, 1 June 1957, (1) 41.5 mm. S.L., D.N., BLBG.---29°19′ N., 80°18′ W., *Combat* Sta. 339, 1 June 1957, (1) 37.5 mm. S.L., D.N., BLBG.---29°16′ N., 80°04′ W., *Combat* Sta. 328, 30 May 1957, (1) 49.5 mm. S.L., D.N., BLBG.---29°10′ N., 80°19′ W., *Combat* Sta. 336, 1 June 1957, (1) 39.0 mm. S.L., D.N., BLBG.---29°00′ N., 79°26′ W., *Gill* Cr. 4, Reg. 16, 14 Oct. 1953, (1) 29.0 mm. S.L., D.N., BLBG.---27°14′ N., 79°50′ W., *Combat* Sta. 462, 29 July 1957, (6) 13.6–36.8 mm. S.L., D.N., BLBG.---27°00′ N., 79°18′ W., *Gill* Cr. 3, Reg. 1, 25 July 1953, (1) 51.5 mm. S.L., D.N., BLBG.---26°58′ N., 79°40′ W., *Gill* Cr. 4, Reg. 2, 12 Oct. 1953, (5) 17.0–26.5 mm. S.L., D.N., BLBG.---26°47′ N., 79°53′ W., *Combat* Sta. 459, 28 July 1957, (14) 27.5–58.0 mm. S.L., D.N., BLBG.---25°10′ N., 80°02′ W., *Combat* Sta. 438, 22 July 1957, (2) 40.5 and 56.5 mm. S.L., D.N., BLBG.---25°16′ N., 80°07′ W., *Combat* Sta. 457, 26 July 1957, (3) 47.5–53.5 mm. S.L., D.N., BLBG.---25°13′ N., 80°10′ W., *Combat* Sta. 455, 26 July 1957, (1) 39.0 mm. S.L., Tr. 40–50 fathoms, BLBG.---25°13′ N., 80°10′ W., *Combat* Sta. 455, 26 July 1957, (1) 35.5 mm. S.L., D.N., BLBG.---28°42′ N., 86°36′ W., *Albatross*, (1) 38.5 mm. S.L., USNM 84566.---24°13′ N., 81°42′ W., *Combat* Sta. 436, 21 July 1957, (4) 36.0–54.0 mm. S.L., D.N., BLBG.---24°05′ N., 91°46′ W., *Oregon* Sta. 2196, 22 June 1958, (6) 39.0–49.5 mm. S.L., D.N., BLBG.---24°50′ N., 92°35′ W., *Oregon* Sta. 2198, 23–24 June 1958, (4) 39.0–52.5 mm. S.L., D.N., BLBG.---Cuba, (1) 108 mm. S.L., collected by Poey, USNM 9841.---Punta Colorado, Cuba, 21 May 1914, (1) 39.0 mm. S.L., Sn., USNM 82562.---St. Lucia, Windward Islands to Cayo Hutio, Cuba, 2 May 1914, (1) 82.5 mm. S.L., Tr. 2–4 fathoms, USNM 82558.---Palisadoes, Jamaica, 19 June 1957, (2) 15.0 and 16.5 mm. S.L., UF C–6–1957–1 J.---Jamaica, B.W.I., (10) 62.5–101 mm. S.L., collected by J. S. Roberts, SU 4772.---Jamaica, (2) 94.0 and 136 mm. S.L., collected by C. B. Adams, USNM 6066.--- Bizoton Wharf, Haiti, (6) 29.7–49.5 mm. S.L., collected by Beebe, USNM 178066.---Haiti, (10) 61.5–106 mm. S.L., collected by Beebe, USNM 178126.---Haiti, (1) 50.5 mm. S.L., collected by Beebe, USNM 17861.---Fox Bay, Colon, Atlantic Panama, (1) 68.5 mm. S.L., collected by Meek and Hildebrand, USNM 81510.---Fox Bay, Colon, Atlantic Panama, (1) 71.5 mm. S.L., collected by Meek and Hildebrand, USNM 81509.---16°22′ N., 83°31′ W., *Oregon* Sta. 1863, 20 Aug. 1957, (13) 11.3–21.6 mm. S.L., D.N., BLBG.---15°57′ N., 82°06′ W., *Oregon* Sta. 1935, 15 Sept. 1957, (2) 76.5 and 85.0 mm. S.L., USNM 185267.

Amanses pullus

Vineyard Sound, Mass., 3 Sept. 1914, (1) 83.0 mm. S.L., D.N., USNM 85772.---34°14′ N., 76°03′ W., *Silver Bay*, 15 Sept. 1959, (3) 41.2–57.7 mm. S.L., D.N., BLBG.---31°57′ N., 78°09′ W., *Gill* Cr. 3, Reg. 50, 6 Aug. 1953, (2) 42.0 and 46.0 mm. S.L., D.N., BLBG.---30°26′ N., 78°20′ W., *Gill* Cr. 5, 21 Jan. 1954, (1) about 42 mm. S.L., S.C. of *Coryphaena hippurus* Linnaeus, BLBG.---30°16′ N., 80°21′ W., *Combat* Sta. 70, 31 Aug. 1956, (1) 66.5 mm. S.L., Tr. 22 fathoms, TU 14749.---30°00′ N., 80°10′ W., *Silver Bay* Sta. 476, 18 June 1958, (1) 50.0 mm., M.L.N., BLBG.---29°41′ N., 80°18′ W., *Gill* Cr. 3, 28 July 1953, (1) 55.5 mm. S.L., S.C. of *Coryphaena hippurus*, BLBG.---29°38′ N., 80°12′ W., *Combat* Sta. 474, 14 Aug. 1957, (8) 45.5–92.0 mm. S.L., D.N., BLBG.---29°29′ N., 80°10′ W., *Combat* Sta. 490, 19 Aug. 1957, (2) 54.0 and 55.5 mm. S.L., D.N., BLBG.---28°18′ N., 79°28′ W., *Gill* Cr. 8, Reg. 8, 12 Sept. 1954, (1) 43.0 mm. S.L., D.N., BLBG.---28°05′ N., 78°24′ W., *Silver Bay* Sta. 446, 10 June 1958, (1) 35.0 mm. S.L., D.N., BLBG.---28°00′ N., 78°00′ W., *Gill* Cr. 3, Spc. 8, 18 July 1953, (1) 69.5 mm. S.L., D.N., BLBG.---27°41′ N., 79°40′ W., *Gill* Cr. 8, Reg. 6, 12 Sept. 1954, (1) 42.5 mm. S.L., D.N., BLBG.---27°40′ N., 79°18′ W., *Gill* Cr. 8, Reg. 7, 12 Sept. 1954, (1) 46.0 mm. S.L., D.N., BLBG.---27°02′ N., 79°23′ W., *Gill* Cr. 3, 25 July 1953, (1) about 75 mm. S.L., S.C. of *Coryphaena hippurus*, BLBG.---27°00′ N., 79°18′ W., *Gill* Cr. 6, Reg. 1, 25 Apr. 1954, (1) 66.0 mm. S.L., D.N., BLBG.---Palm Beach Inlet, Fla., 11 June 1958, (1) 158 mm. S.L., UF 7266, RC–6–1158–2.---Entrance Point, North Bimini, B.W.I., 14 July 1957, (1) 72.0 mm. S.L., TU 17801.---Settlement Point, Grand Bahama Island, *Gill* Cr. 8, 29 Aug. 1954, (3) 42.0–49.0 mm. S.L., D.N., BLBG.---Nassau, Bahamas, *Albatross*, (1) 136 mm. S.L., USNM 38375.---26°47′ N., 79°53′ W., *Combat* Sta. 459, 28 July 1957, (1) 72.0 mm. S.L., D.N., BLBG.---29°29′ N., 80°09′ W., *Combat* Sta. 485, 18 Aug. 1957, (3) 50.5–64.5 mm. S.L., D.N., BLBG.---26°11′ N., 78°15′ W., *Gill* Cr. 7, 22 June 1954, 1730, (1) 33.0 mm. S.L., S.C. of *Katsuwonus pelamis* (Linnaeus), BLBG.---26°21.2′ N., 76°46.5′ W., *Gill* Cr. 3, 23 July 1953, (1) about 51 mm. S.L., S.C. of *Coryphaena hippurus*, BLBG.___26°10′ N., 78°13′ W., *Gill* Cr. 7, 22 June 1954, 1722, (1) 44. 0 mm. S.L., S.C. of *Katsuwonus pelamis* BLBG.___26°04′ N., 78°08′ W., *Gill* Cr. 9, 15 Nov. 1954, (3) 17.5 to about 35 mm. S.L., S.C. of *Katsuwonus pelamis*, BLBG.___26°27′ N., 76°44′ W., *Gill* Cr. 7, Std., 13–14 June 1954, (1) 46.5 mm. S.L., D.N., BLBG.___25°20′ N., 77°15′ W., *Gill* Cr. 6, 19 Apr. 1954, (1) about 38 mm. S.L., S.C. of *Coryphaena hippurus*, BLBG.___25°16′ N., 80°07′ W., *Combat* Sta. 457, 26 July 1957, (1) 51.0 mm. S.L., D.N., BLBG.___24°13′ N., 81°42′ W., *Combat* Sta. 436, 21 July 1957, (2) 41.5 and 43.5 mm. S.L., D.N., BLBG.___23°40.5′ N., 76°50′ W., *Gill* Cr. 7, 19 June 1954, (2) 33.0 and 36.0 mm. S.L., S.C. of *Corphaena hippurus*, BLBG.___Tortugas, Fla., (1) 105 mm. S.L., collected by W. H. Longley, USNM 116997.___Fort Myers, Fla., 5 Sept. 1956, (1) 115 mm. S.L., spit up by a grouper, CHML.___29°26′ N., 87°32′ W., *Oregon* Sta. 792, 8 June 1953, (1) 89.0 mm. S.L., Tr. 56–57 fathoms, TU 6064.___26°10′ N., 96°25′ W., *Oregon* Sta. 1089, 4 June 1954, (1) 92.5 mm. S.L., Tr. 40 fathoms, TU 10845.___26°40′ N., 92°00′ W., *Oregon* Sta. 1035, 8 May 1954, (14) 61.0–83.0 mm. S.L., Tr. 890 fathoms, TU 10933.___24°05′ N., 91°46′ W., *Oregon* Sta. 2196, 22 June 1958, (1) 36.5 mm. S.L., D.N., BLBG.___North of Cuba, (3) 44.0–49.0 mm. S.L., collected by Beebe, USNM 178016.___Cabanas Bay, Cuba, 8–9 June 1914, (1) 46.0 mm. S.L., USNM 82566.___Cayo Hutia Light, Cuba, 12 May 1914, (1) 85.0 mm. S.L., USNM 82557.___Cuba, (1) 322 mm. S.L., USNM 32096.___Cuba, (1) 138 mm. S.L., collected by Poey, USNM 9852.___Jamaica, (2) 127 and 131 mm. S.L., collected by J. S. Roberts, SU 4943.___Ocho Rios, Jamaica, 22 June 1957, (1) 78.5 mm. S.L., UF C–6–2257–1J.___Eaton Hall Cove, Jamaica, 14 June 1958, (1) 63.0 mm. S.L., UF C–6–1458–1J.___Jamaica, (1) 325 mm. S.L., collection of Institute of Jamaica, USNM 37694.___Jamaica, (1) 288 mm. S.L., collection of Institute of Jamaica, USNM 37693.___Port-au-Prince market, Haiti, 19 Dec. 1944, (1) 100 mm. S.L., USNM 132120.___Port-au-Prince, Haiti, (5) 87.0–118 mm. S.L., collected by A. Curtis, USNM 133749.___Haiti, (1) 128 mm. S.L., collected by Beebe, USNM 178119.___Arroyo, Porto Rico, 1899, (1) 138 mm. S.L., collection of USFC, SU 8266.___Porto Rico, (1) 142 mm. S.L., collected by C. F. Cole, USNM 162780.___Porto Rico, *Fish Hawk*, (1) 136 mm. S.L., USNM 126425.___Barbuda Island, Leeward Islands, (1) 49.0 mm. S.L., collected by Beebe, USNM 183446.___Windward Island, Castries, (2) 107 and 113 mm. S.L., collected by Beebe, USNM 178598.___Port of Fortaleza, Mucuripe, Brazil, Aug. 1945, (1) 182 mm. S.L., SU 52304.___Bahia, Brazil, *Albatross*, (1) 124 mm. S.L., USNM 43323.___Port of Recife, Brazil, (2) 103 and 123 mm. S.L., SU 52305.

ADDENDUM

During the course of this study, particular attention was directed to the fact that species of the genus *Stephanolepis* were not known to occur in the Bahama Islands—despite the occurrence of both *Stephanolepis setifer* and *S. hispidus* in the currents of the Florida Current passing the west side of the Bahamas. After the manuscript was in press, 6 specimens of *Stephanolepis* were received from James E. Böhlke, Academy of Natural Sciences of Philadelphia, who had recently determined the generic identity of these specimens from the Bahaman collections of the Chaplin Bahaman Shore Fish Program:

(1) 113- and 115-mm. males and a 92.5-mm. female from Chaplin Program Station 526, Hatchet Bay, Eleuthera Island, Bahamas, 3 miles offshore, 30 ft., various stations of the *George M. Bowers*, April 20 to May 3, 1960.

(2) 106- and 113-mm. males from Chaplin Program Station 513B, Hatchet Bay, Eleuthera Island, Bahamas, 30 to 35 ft., collected by the *George M. Bowers*, February 6–13, 1960.

(3) 32.5-mm. immature specimen, ANSP 72575, New Providence, Bahamas, collected by C. C. G. Chaplin, 1949.

We would expect all these specimens to be *Stephanolepis setifer*, rather than *S. hispidus*, because our records indicate that *S. setifer* is a more offshore and insular inhabitant, while we have recorded *S. hispidus* only from continental waters; but there are inconsistancies between characters of these specimens and our recorded definition of *S. setifer* that must be pointed out.

The 32.5-mm. specimen has D. 29, A. 29, P_1 13 on both sides (more pectoral rays than previously recorded for *S. setifer*); a fairly deep body (58.1% S.L.); and a broken-line effect on the sides, but no spots on the snout or breast. On the basis of the dorsal and anal ray counts and pigment on the side, we would identify this specimen as *S. setifer*.

The 115-mm. male from Sta. 526 in Hatchet Bay has D. 30, A. 30; the 113-mm. male from this station has D. 30, A. 31 (there appears to be a minuet 31st dorsal ray); both specimens have 13 pectoral rays on each side. The pigment of these specimens is the same as that of the Cuban specimens of *S. setifer* in fig. 32, which species they undoubtedly represent. However, the high dorsal and anal fin-ray counts of the 113-mm. specimen indicate that this key character must be qualified, at least in identifying specimens from the Bahamas.

The 106-mm. male from Sta. 513B has D. 29, A. 29, P_1 12; the 113-mm. male from this station has D. 30, A. 30, P_1 13. Both specimens are faded, and lack spots on the snout and breast, but do have short dim lines on the side, and most probably are *S. setifer*.

The 92.5-mm. female (with large macroscopic eggs) from Sta. 526 has D. 30, A. 29, and P_1 12. There are no spots on the snout and breast and no broken lines on the sides; instead large dark blotches are present on the sides. The pigment and relatively large body depth (56.8% S.L.) are more like *S. hispidus* than *S. setifer*. However, considering the conflicting characters of distribution and pigmentation, and the intermediate fin-ray counts, we cannot identify this single specimen to species. (February 13, 1961.)

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