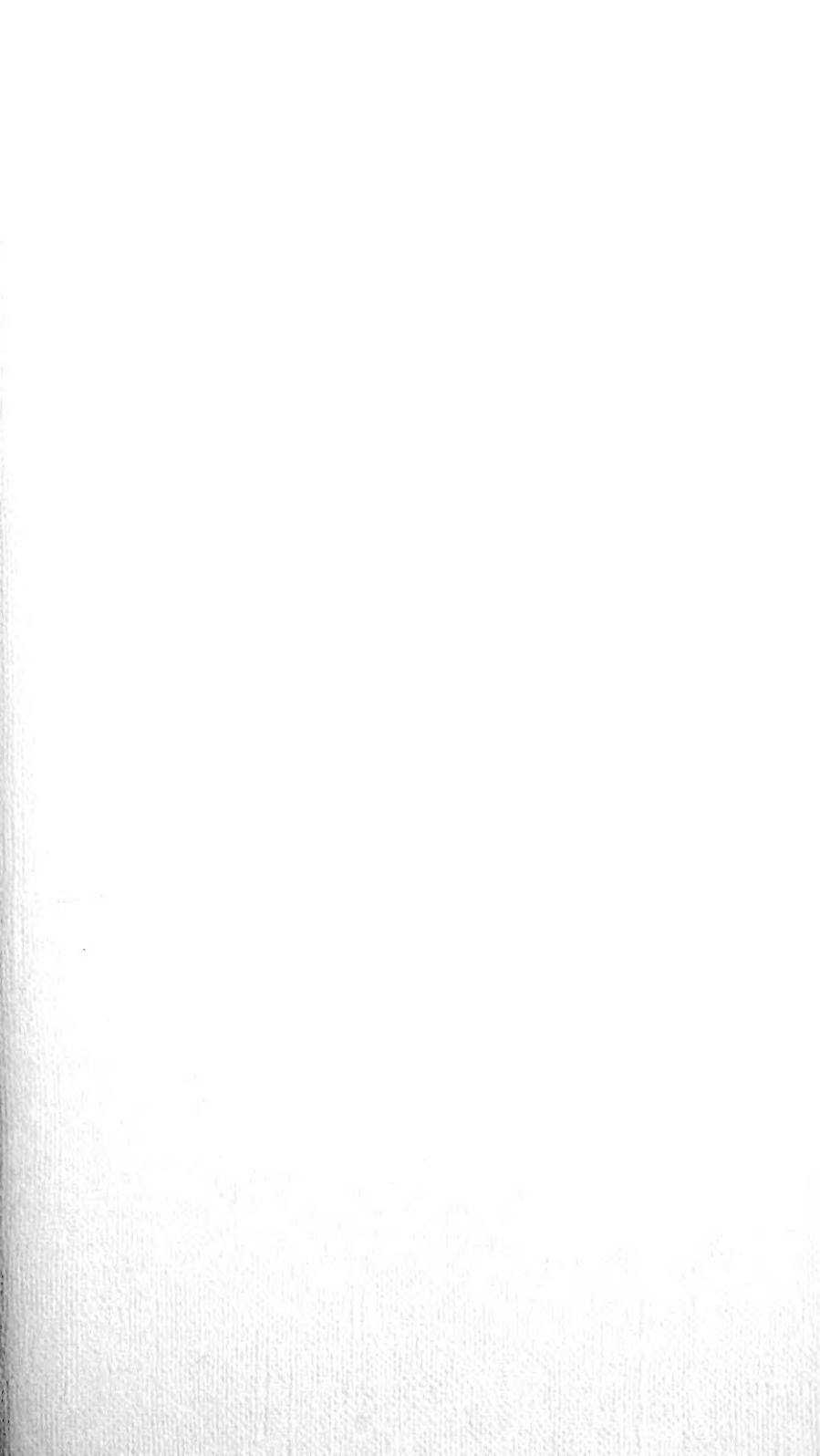


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ALLAN HANCOCK ATLANTIC EXPEDITION

REPORT NUMBER 10

FISHES FROM THE SOUTHERN CARIBBEAN
COLLECTED BY
VELERO III IN 1939

BY

DAVID K. CALDWELL

AND

MELBA C. CALDWELL



UNIVERSITY OF SOUTHERN CALIFORNIA PRESS
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By DAVID K. CALDWELL ¹

Los Angeles County Museum

and

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INTRODUCTION

Information on the distribution of marine shore fishes in the southern Caribbean is sketchy at best. Schultz (1949) and Weibezahn (1955) reported on shore fishes from the eastern area, from Venezuela, and from the west Meek and Hildebrand (1923-28) made even more detailed studies in their monumental work on the marine fishes of Panama. Limited faunal works (*e.g.*, Fowler, 1953) have dealt with restricted areas between.

In April, 1939, the Allan Hancock Foundation research vessel VELERO III, under the direction of Captain Hancock, made a short cruise to the mainland Caribbean coasts of Panama, Colombia and Venezuela and to several of the major islands which lie just to the north. Garth (1945) gave an account of the cruise and included the exact localities of the collecting stations, as well as charts and other pertinent information. Reference should be made to that report for details of the activities at each station and for the limited ecological data available. A few specimens were not collected at regular stations. The localities and any other pertinent data for this material are indicated in the appropriate place in our Annotated List of Specimens.

We emphasize that this report is intended only to be a list of the fishes collected during that cruise and primarily is presented to announce the existence of the material for the benefit of interested specialists and to provide materials for broad zoogeographic studies by others. It should be noted that times on station often were brief, that collecting methods were limited, and that all collections were made during the one month of April and therefore there is no seasonal influence.

While we attempted to make determinations as definitive as possible, and have commented appropriately within the text, in many cases we have failed to make specific, or even generic, identifications. This failure usually was due in various degrees to (1) the small size, poor condition and/or lack of needed series, (2) the need for a specialist to make definitive studies of available material in a group (this effort was beyond

the stated aim of our work), and (3) our cognizance of revisions being undertaken by others which would have made superfluous our doing the necessary research for the proper identification of some of our specimens.

For general determinations, we have leaned heavily on Meek and Hildebrand (1923-28), Jordan and Evermann (1898-1900) and Evermann and Marsh (1902). Schultz (1949), Nichols (1929-1930) and Beebe and Tee-Van (1928) also were found to be especially useful. In those cases in which there were recent definitive studies of restricted groups available to us, we made use of them and they are appropriately cited within the body of the text.

In general, again inasmuch as such was beyond the intended scope of this report, we have not attempted to point out range extensions. There are some, and also new additions to the faunas of the countries and islands visited by VELERO III. These all will be obvious to interested workers. For the convenience of zoogeographers, we have included a geographical summary at the end of this paper.

A few of the fishes had been identified to species by Miss Janet Haig prior to our taking over the collection for study. Most had been sorted to family. We reexamined all of the specimens, and, along with all of the unidentified material, take full responsibility for our name changes of her identified material (mostly bringing her names up to date) and for our use of her determinations with which we were in agreement. Her preliminary efforts often were of great help to us.

The prefix AHF refers to Allan Hancock Foundation fish collection catalog numbers. This collection is presently located on the campus of the University of Southern California in Los Angeles. The "A" number with each lot is the field station number and refers to the locality from which the material was obtained (see Garth, 1945). Unless otherwise noted, lengths are standard length.

Our arrangement of orders and families is phylogenetic and where possible follows that used by Briggs (1958). Genera within families and species within genera are arranged alphabetically.

We are indebted to Drs. John S. Garth and Jay M. Savage for bringing this collection to our attention and for placing it at our disposal for study and report.

ANNOTATED LIST OF SPECIMENS
Order AMPHIOXI

Branchiostomidae

Branchiostoma platae Hubbs (?)

- Material:* A 1-39, 1 (19.2 mm. T. L.), AHF 2618, from Caledonia Bay, Panama.
- A 13-39, 5 (15.9—26.9 mm. T. L.), AHF 2614, from 1 mi. S. W. of Cape la Vela, Colombia.
- A 14-39, 15 (16.3—49.5 mm. T. L.), AHF 2613, from 2 mi. S. W. of Cape la Vela, Colombia.
- A 15-39, 10 (18.8—29.3 mm. T. L.), AHF 2616, from 2 mi. off Bahia Honda, Colombia.
- A 18-39, 1 (22.5 mm. T. L.), AHF 2619, from 8 mi. S. W. of San Nicolaas Bay, Aruba Island, Netherlands West Indies.
- A 22-39, 6 (45.7—53.8 mm. T. L.), AHF 2615, from Tortuga Island, Venezuela.
- A 24-39, 3 (16.6—25.0 mm. T. L.), AHF 2612, from Cubagua Island, Venezuela.
- A 27-39, 8 (ca. 23—39.7 mm. T. L.), AHF 2617, from Cubagua Island, Venezuela.
- A 32-39, 32 (7.1—23.7 mm. T. L.), AHF 2611, from 3 mi. N. of Coche Island, Venezuela.

Remarks: Our material generally fit this species as discussed by Bigelow and Farfante (1948). All of the material appeared to belong to the same species, but some of our identifications were questioned because of poor condition or small size of some of the specimens in a lot. They appeared to be the same, and their association with large individuals of this species made calling them the same species seem appropriate.

In general, the shape of the caudal and in most instances the dorsal chamber counts were consistent with the data given by Bigelow and Farfante. The myotome counts generally were low, however, and sometimes even out of the range given by those authors.

In one lot of large specimens in excellent condition (AHF 2615), the range of the number of dorsal chambers was 268 to 318, and that of the myotomes 55 (in four) to 58.

Order BATOIDEI

Torpedinidae

Generic determination of material in this family was made with the aid of Bigelow and Schroeder (1953)

Narcine brasiliensis (Olfers)

Material: A 39-39, 1 (305.0 mm. T. L.), AHF 2429, from Rocky Bay, Tobago Island, West Indies.

Diplobatis guamachensis Martin

Material: A 24-39, 1 (142.0 mm. T. L.), AHF 2428, from Cubagua Island, Venezuela.

Order ISOSPONDYLI

Unidentified Isospondyli larvae

Material: A 6-39, 1 (32.2 mm.), AHF 2833, from Caledonia Bay, Panama.

A 12-39, 5 (12.6—23.9 mm.), AHF 2834, from 11 mi. S. W. of Cape la Vela, Colombia.

Remarks: The latter specimens were in poor condition.

Albulidae

Albula vulpes (Linnaeus) ?

Material: A 6-39, 10 (42.5—56.7 mm.), AHF 2621, from Caledonia Bay, Panama.

A 49-39, 4 (32.9—72.1 mm.), AHF 2620, from Caledonia Bay, Panama.

Remarks: The dorsal fin ray count for our material on an average ran higher (16 to 19, usually 18 or 19) than the 14 to 17 count given by Gehringer (1959: 620) for this species. However, Gehringer did not include the genus *Dixonina* Fowler (1911) in his discussion, and Beebe (1942: table 1) showed that the dorsal fin ray count in the western Atlantic *D. nemoptera* Fowler can range from 16 to 19. One specimen of *D. nemoptera* that we examined, from Jamaica, had 17 dorsal fin rays.

The tips of the dorsal fin rays of our largest specimen (from AHF 2620) unfortunately were broken and we therefore cannot say with

certainty if the last dorsal ray was elongated as in *Dixonina*. Neither were we sure if the last anal fin ray was elongated. The rest of our material was too small for certain demonstration of this character, but the appearance of the last dorsal and anal rays gave us the impression that they could have been in the process of elongation. We were unable to ascertain from the literature at what standard length this elongation takes place.

Consequently, although we strongly suspect that at least some of our specimens may be *Dixonina nemoptera*, we here designate them all as *Albula vulpes* on the basis of the non-elongate last dorsal and anal fin rays.

Dussumieriidae

Jenkinsia lamprotaenia (Gosse)

Material: A 23-39, 1 (43.4 mm.), AHF 2629, from Tortuga Island, Venezuela.

Remarks: Our single very soft specimen had a prominent silvery lateral band, nearly the diameter of the eye. With toothed premaxillae, 14 anal rays, and 26 (possibly only 25) lower-limb gill rakers, it clearly belongs to this species (see Whitehead, 1963: 351 f.). Furthermore, the relatively high gill raker count makes our specimen typical of the Venezuelan population, which Whitehead (p. 354) apparently considered to be of the subspecies *J. l. viridus* (Bean). We must question such designation on the basis of range; *J. l. viridus* is said to occur in Venezuela and Bermuda, with *J. l. lamprotaenia* (Gosse) between.

Clupeidae

Generic and some specific determinations for our material in this family were made with the aid of Storey (1938) and Meek and Hildebrand (1923). Species within the genus *Harengula* were determined with the aid of Rivas (1950).

Harengula clupeola (Cuvier)

Material: A 6-39, 760 (23.7—55.1 mm.), AHF 2624, from Caledonia Bay, Panama.

A 54-39, 1 (74.9 mm.), AHF 2623, from Caledonia Bay, Panama.

A 23-39, 1 (87.1 mm.), AHF 3023, from Tortuga Island,

Venezuela.

A 40-39, 2 (36.7, 45.5 mm.), AHF 2622, from Buccoo Bay, Tobago Island, West Indies.

Remarks: One specimen, AHF 2623, was taken from the stomach of a needlefish, *Strongylura* sp.

Harengula humeralis (Cuvier)

Material: A 40-39, 4 (36.0—46.9 mm.), AHF 2625, from Buccoo Bay, Tobago Island, West Indies.

Harengula pensacolae caribbaea Rivas

Material: A 54-39, 16 (62.4—93.8 mm.), AHF 2626, from Caledonia Bay, Panama.

A 34-39, 9 (52.1—66.6 mm.), AHF 2627, from Port of Spain, Trinidad Island, West Indies.

Harengula pensacolae majorina Storey

Material: A 39-39, 144 (40.8—108.8 mm.), AHF 2628, from Rockly Bay, Tobago Island, West Indies.

Remarks: The scute counts for our material (31) fit the description of *majorina*, according to Rivas (1950). On the other hand, the eye diameter in head (3.1—3.4) was as in *caribbaea*.

Odontognathus compressus Meek and Hildebrand

Material: A 39-39, 1 (60.9 mm.), AHF 2630, from Rockly Bay, Tobago Island, West Indies.

Opisthonema oglinum (Lesueur)

Material: A 34-39, 3 (112.0—154.6 mm.), AHF 2631, from Port of Spain, Trinidad Island, West Indies.

Sardinella anchovia Valenciennes

Material: A 34-39, 29 (72.5—97.4 mm.), AHF 2632, from Port of Spain, Trinidad Island, West Indies.

? **Sardinella anchovia** Valenciennes ?

Material: A 23-39, 111 (ca. 50—ca. 68 mm.), AHF 2633, from Tortuga Island, Venezuela.

Remarks: Although they appeared to be of this genus and species, we questioned the determination of these specimens on the basis of recent work by Rivas (1950: 277). He noted that there are always more than 32 ventral scutes in this genus, although Meek and Hildebrand (1923: 181) listed 25 to 35. We found 27 to 32 in a sample from our material.

The anal fin ray count in material from this lot ranged from 15 to 17. We found 83 and 89 lower-limb gill rakers in stained material from two specimens. One specimen so examined had 45 vertebrae, and its depth was 4.5 in standard length and its head 3.4 in standard length.

Engraulidae

Material in this family was determined with the aid of Hildebrand (1943).

Anchoa cubana (Poey) ?

Material: A 39-39, 10 (46.1—53.4 mm.), AHF 2317, from Rockly Bay, Tobago Island, West Indies.

Remarks: This material keyed out in Hildebrand to this species, but it did not fit his description well; possibly this was due to the poor condition of the specimens.

Four examples had 15 dorsal fin rays and 20 to 23 anal. One specimen had 12 pectoral fin rays, three had 13, two had 14 and three had 15. Six individuals had 15 to 19 upper-limb gill rakers, and eight had 20 to 29 lower-limb gill rakers. The depth in standard length of three specimens ranged only from 5.8 to 5.9.

Anchoa ginsburgi Hildebrand ?

Material: A 6-39, 14 (26.7—63.5 mm.), AHF 2634, from Caledonia Bay, Panama.

Remarks: Six specimens had 15 to 16 dorsal fin rays and 19 to 22 anal. The pectoral fin ray counts of three examples ranged only from 14 to 15. The upper-limb gill raker counts of six specimens ranged from 15 to 17, and the lower-limb counts of seven ranged from 19 to 20. The depth in standard length of three individuals ranged from 5.4 to 5.7. The axillary scale in our material was somewhat longer than Hildebrand indicated for this species.

Anchoa lamprotaenia Hildebrand

- Material:* A 49-39, 3 (52.3—62.9 mm.), AHF 2636, from Caledonia Bay, Panama. Two small specimens (25.7, 32.1 mm.) from the same field lot, but with a different catalog number (AHF 2637) apparently belong to this species.
- A 21-39, 1 (ca. 54 mm.), AHF 2311, from Tortuga Island, Venezuela.
- A 23-39, 1 (61.4 mm.), AHF 2312, from Tortuga Island, Venezuela.
- A 39-39, 12 (46.6—81.3 mm.), AHF 2316, from Rockly Bay, Tobago Island, West Indies
- A 40-39, 39 (52.3—65.7 mm.), AHF 2635, from Buccoo Bay, Tobago Island, West Indies. A single specimen, bent nearly double (ca. 60 mm.), from the same field lot but with a different catalog number (AHF 2835), apparently belongs to this species.

Anchoa lyolepis (Evermann and Marsh)

- Material:* A 39-39, 96 (43.8—53.5 mm.), AHF 2315, from Rockly Bay, Tobago Island, West Indies.
- A 40-39, 243 (46.7—57.3 mm.), AHF 2638, from Buccoo Bay, Tobago Island, West Indies.

Anchoa parva (Meek and Hildebrand)

- Material:* A 39-39, 1 (50.9 mm.), AHF 2639, from Rockly Bay, Tobago Island, West Indies.

Anchoviella eurystole (Swain and Meek) ?

- Material:* A 40-39, 2 (66.6, 74.5 mm.), AHF 2640, from Buccoo Bay, Tobago Island, West Indies.

Remarks: This locality is far out of the geographical range (Woods Hole, Massachusetts, to Beaufort, North Carolina, or possibly to the east coast of Florida) given by Hildebrand (p. 114) for this species. Because of this, and inasmuch as our material nearly keys out to the closely-related *A. perfasciata* (Poey) as well, which does occur in the West Indies, we question the specific determination.

Data from one specimen were recorded as follows: Standard length, 74.5 mm.; depth 6.2 in S. L.; head 3.5 in S. L.; eye 3.9 in head; longest gill raker $\frac{3}{4}$ of eye diameter; about 40 scales in lateral series; 15 dorsal fin rays, 15 anal and 16 pectoral; gill rakers 26 + 29 on the first arch.

The depth in standard length of a 66.6-mm. specimen was 7.1.

Order INIOMI

Synodontidae

Determinations of the material in this family were made with the aid of a manuscript key to the family made available to us by William W. Anderson and Jack W. Gehringer of the United States Bureau of Commercial Fisheries. Their key will appear in a section of a forthcoming volume of the Sears Foundation series, *Fishes of the Western North Atlantic*.

Saurida sp.

Material: A 52-39, 1 (43.1 mm.), AHF 2836, from Caledonia Bay, Panama.

Remarks: The condition of the material precluded specific determination.

Trachinocephalus myops (Forster) ?

Material: A 7-39, 1 (anterior portion only), AHF 2837, from Caledonia Bay, Panama.

Remarks: This poor specimen, cut off shortly behind the pelvic fin insertions, had no vomer and possessed eight rays in each pelvic fin. It was clearly of this genus and is almost certainly *T. myops*.

Order APODES

Moringuidae

Aphthalmichthys caribbeus Gill and Smith

Material: A 57-39, 1 (295 mm. T. L.), AHF 3041, from Caledonia Bay, Panama.

Remarks: We did not see this specimen. Dr. James E. Böhlke, who is studying it at this writing, wrote that it is currently recognized as this genus and species, but that a future change in both names is likely.

Muraenidae

Anarchias yoshiae Kanazawa

Material: A 18-39, 1 (ca. 37 mm. T. L.), AHF 2787, and 2 (ca. 45, ca. 67 mm. T. L.), AHF 2839, from 8 mi. S. W. of San Nicolaas Bay, Aruba Island, Netherlands West Indies.

A 44-39, 1 (ca. 38 mm. T. L.), AHF 2841, and 1 (ca. 78 mm. T. L.), AHF 2840, from 4 mi. N. of Tortuga Island, Venezuela.

Remarks: These specimens, significant range extensions, were determined with the aid of Kanazawa (1952).

Echidna catenata (Bloch)

Material: A 57-39, 2 (ca. 400, ca. 500 mm. T. L.), AHF 2642, from Caledonia Bay, Panama.

Enchelycore nigricans (Bonnaterre)

Material: A 50-39, 1 (197 mm. T. L.), AHF 2770, from Caledonia Bay, Panama.

A 57-39, 4 (161.6—ca. 408 mm. T. L.), AHF 2643, from Caledonia Bay, Panama.

Gymnothorax albimentis (Evermann and Marsh)

Material: A 57-39, 2 (ca. 53, 98.4 mm. T. L.), AHF 2785, from Caledonia Bay, Panama.

Remarks: Our determination of the larger specimen, especially, is questionable.

Gymnothorax funebris Ranzani

Material: A 57-39, 1 (ca. 133 mm. T. L.), AHF 2786, from Caledonia Bay, Panama.

Gymnothorax moringa (Cuvier)

Material: A 57-39, 3 (102—178 mm. T. L.), AHF 2771, from Caledonia Bay, Panama.

Gymnothorax vicinus (Castelnau)

Material: A 57-39, 8 (158—259 mm. T. L.), AHF 2644, from Caledonia Bay, Panama.

Rabula longicauda (Peters)

Material: A 6-39, 1 (ca. 118 mm. T. L.), AHF 2769, from Caledonia Bay, Panama.

Remarks: This was the only Atlantic species listed by Jordan and Evermann (1896: 391). Actually, our material better fit the description of *R. panamensis* (Steindachner) as given by Meek and Hildebrand (1923: 161).

? Rabula sp.

Material: A 2-39, 1 (ca. 57 mm. T. L.), AHF 2842, from Caledonia Bay, Panama.

Remarks: This small specimen, with the origin of the dorsal fin above and only slightly before the gill openings, lacked pectoral fins, and had the dorsal and anal fins confluent around the tip of the tail—all of which are typical of the genus. The dorsal and posterior part of the anal fins were alternately pigmented with nearly equal-sized blocks of dark and light.

If our specimen is properly assigned in the genus *Rabula*, it is likely the same species as the above specimen, based on locality.

Echelidae**Ahlia egmontis** (Jordan)

Material: A 57-39, 10 (ca. 162—ca. 270 mm. T. L.), AHF 2784, from Caledonia Bay, Panama.

Ophichthidae**Aplatophis chauliodus** Böhlke

Material: A 10-39, 1 (173.0 mm. T. L.), AHF 2464 (Paratype), from Caledonia Bay, Panama.

Remarks: This specimen was used by Böhlke (1956) in forming his original description of this genus and species.

Sphagebranchus anguiformis (Peters) ?

- Material:* A 13-39, 9 (ca. 66—ca. 299 mm. T. L.), AHF 2843, from 1 mi. S. W. of Cape la Vela, Colombia.
A 14-39, 1 (ca. 220 mm. T. L.), AHF 2844, from 2 mi. S. W. of Cape la Vela, Colombia.
A 15-39, 6 (ca. 62—ca. 283 mm. T. L.), AHF 2845, from 2 mi. off Bahia Honda, Colombia.

Order **HETEROGNATHI****Characidae****Roeboides dayi** (Steindachner) ?

- Material:* No Station number, April 6, 1939, 2 (40.7, 41.2 mm.), AHF 2641, from near a dock in the river at Barranquilla, Colombia.

Remarks: This material was determined with the aid of Schultz (1944). One specimen appeared to fit well the description given by Schultz for *R. d. dayi* (Steindachner) and the other was intermediate between that subspecies and *R. d. dientonito* Schultz. Inasmuch as both of our specimens were taken at the same time from the same locality, the validity of the latter form is questioned.

Order **SYNENTOGNATHI****Belonidae**

The material in this family was determined with the aid of Berry and Rivas (1962).

Strongylura marina (Walbaum)

- Material:* A 39-39, 8 (257—433 mm.), AHF 2646, from Rockly Bay, Tobago Island, West Indies.

Hemiramphidae**Hyporhamphus unifasciatus** (Ranzani)

- Material:* A 6-39, 10 (93.4—173.4 mm.), AHF 2649, from Caledonia Bay, Panama.
A 49-39, 1 (155.2 mm.), AHF 2648, from Caledonia Bay, Panama.

A 54-39, 2 (46.2, 50.5 mm.), AHF 2651, from Caledonia Bay, Panama.

A 21-39, 1 (116.7 mm.), AHF 2650, from Tortuga Island, Venezuela.

A 39-39, 10 (91.0—170.9 mm.), AHF 2647, from Rockly Bay, Tobago Island, West Indies.

Remarks: Measurements made to the tip of the upper jaw.

Exocoetidae

Material in this family was identified primarily with the aid of Breder (1938). Bruun (1935) also was consulted. For those specimens with no station data (as given by Garth, 1945), we presume the captures were made at the surface.

Cypselurus heterurus (Rafinesque)

Material: No station number, April 7, 1939, 2 (198, 222 mm.), AHF 2653, collected one day out from Barranquilla, Colombia, off the coast of Colombia.

No station number, April 25, 1939, 3 (125—198 mm.), AHF 2655, collected on a night run in the vicinity off Barranquilla, Colombia.

No station number, April 24, 1939, 1 (215 mm.), AHF 2652, collected on a night run between Curaçao Island, Netherlands West Indies, and Barranquilla, Colombia.

A 23-39, 1 (202 mm.), AHF 2654, from Tortuga Island, Venezuela.

Exocoetus obtusirostris Günther

Material: No station number, April 25, 1939, 3 (74—122 mm.), AHF 2658, collected on a night run between Barranquilla, Colombia, and Caledonia Bay, Panama.

No station number, April 25, 1939, 1 (86.1 mm.), AHF 2659, from the Gulf of Darien, Colombia.

No station number, April 25, 1939, 5 (68.8—84.2 mm.), AHF 2657, from the Gulf of Darien, Colombia.

No station number, April 24, 1939, 15 (111—158 mm.), AHF 2656, collected on a night run between Curaçao Island, Netherlands West Indies, and Barranquilla, Colombia.

Hirundichthys affinis (Günther)

Material: No station number, April 25, 1939, 16 (69—95 mm.), AHF 2660, from the Gulf of Darien, Colombia.

No station number, April 24, 1939, 12 (114—157 mm.), AHF 2661, collected on a night run between Curaçao Island, Netherlands West Indies, and Barranquilla, Colombia.

Parexocoetus brachypterus hillianus (Gosse)

Material: No station number, April 25, 1939, 1 (109 mm.), AHF 2663, collected on a night run between Barranquilla, Colombia, and Caledonia Bay, Panama.

No station number, April 25, 1939, 4 (97—101 mm.), AHF 2662, from the Gulf of Darien, Colombia.

No station number, April 24, 1939, 2 (115, 117 mm.), AHF 2664, collected on a night run between Curaçao Island, Netherlands West Indies, and Barranquilla, Colombia.

Order **MICROCYPRINI**? **Cyprinodontidae**? **Cyprinodontidae, Genus and species undetermined**

Material: No station number, April 22, 1939, 1 (20.8 mm.), AHF 2846, from a tide pool on Curaçao Island, Netherlands West Indies.

Remarks: Having but a single specimen, of undetermined sex, we questioned even our family designation.

Poeciliidae**Mollienesia sphenops vandepolli** (Van Lidth de Jeude)

Material: A 16-39, 3 (17.6—20.4 mm.), AHF 2847, from a fresh-water pool at Pta. Basora, Aruba Island, Netherlands West Indies.

Remarks: These specimens were determined by William A. Bussing.

Order SOLENICHTHYES

Syngnathidae

The material in the genera *Corythoichthys* and *Syngnathus* was determined with the aid of Herald (1942); that in the genus *Hippocampus* with the aid of Ginsburg (1937).

Corythoichthys brachycephalus (Poey)

Material: A 57-39, 2 (46.9, 50.9 mm.), AHF 2327, from Caledonia Bay, Panama.

Syngnathus dunckeri Metzelaar

Material: A 22-39, 1 (55.1 mm.), AHF 2326, from Tortuga Island, Venezuela.

Syngnathus rousseau Kaup

Material: A 22-39, 1 (94.0 mm.), AHF 2325, from Tortuga Island, Venezuela.

A 24-39, 2 (80.0, 116.0 mm.), AHF 2324, from Cubagua Island, Venezuela.

Hippocampus hudsonius punctulatus Guichenot

Material: A 28-39, 1 (67.9 mm.), AHF 2329, from Cubagua Island, Venezuela.

Hippocampus reidi Ginsburg

Material: A 7-39, 1 (23.9 mm.), AHF 2328, from Caledonia Bay, Panama.

Order ANACANTHINI

Bregmacerotidae

Bregmaceros atlanticus Goode and Bean ?

Material: A 2-39, 1 (21.9 mm.), AHF 2868, from Caledonia Bay, Panama.

Remarks: This small specimen was in very poor condition.

Order **BERYCOMORPHI****Holocentridae**

Material in this family was determined with the aid of Woods (1955).

Holocentrus ascensionis (Osbeck)

- Material:* A 57-39, 5 (56.0—72.5 mm.), AHF 2321, from Caledonia Bay, Panama
A 59-39, 1 (180.5 mm.), AHF 2848, from Caledonia Bay, Panama.

Holocentrus vexillarius Poey

- Material:* A 49-39, 1 (45.0 mm.), AHF 2318, from Caledonia Bay, Panama.
A 50-39, 14 (46.0—64.1 mm.), AHF 2319, from Caledonia Bay, Panama.
A 57-39, 92 (34.0—67.0 mm.), AHF 2320, from Caledonia Bay, Panama.

Order **PERCOMORPHI****Serranidae****Diplectrum radiale** (Quoy and Gaimard)

- Material:* A 14-39, 1 (23.3 mm.), AHF 2680, from 2 mi. S. W. of Cape la Vela, Colombia.
A 18-39, 15 (13.4—28.9 mm.), AHF 2681, from 8 mi. S. W. of San Nicolaas Bay, Aruba Island, Netherlands West Indies.
A 28-39, 1 (23.4 mm.), AHF 2679, from Cubagua Island, Venezuela.

Remarks: While we follow Briggs (1958: 272) in using this specific name, we wish to point out that in relative length of second and third dorsal spines, number of lower-limb gill rakers and number of pectoral fin rays our material more nearly fit *D. bivittatum* (Valenciennes) as discussed by Ginsburg (1948).

Epinephelus morio (Cuvier)

Material: A 59-39, 1 (210.0 mm.), AHF 2682, from Caledonia Bay, Panama.

Mycteroperca falcata (Poey)

Material: A 28-39, 2 (28.1, 29.3 mm.), AHF 2683, from Cubagua Island, Venezuela.

Rypticus subbifrenatus Gill

Material: A 57-39, 7 (34.7—46.4 mm.), AHF 2684, from Caledonia Bay, Panama.

A 41-39, 1 (48.7 mm.), AHF 2685, from Buccoo Reef, Tobago Island, West Indies.

Remarks: Our material in this genus originally was identified with the aid of Schultz and Reid (1939). Later our determinations were corroborated by Mr. Walter R. Courtenay, Jr., who currently is revising the Atlantic members of this genus.

Serranus atrobranchus (Cuvier)

Material: A 13-39, 1 (33.8 mm.), AHF 2870, from 1 mi. S. W. of Cape la Vela, Colombia.

Remarks: Although our specimen was in very poor (soft) condition, it satisfactorily fit the description of this species as given by Robins and Starck (1961).

Serranus baldwini (Evermann and Marsh)

Material: A 18-39, 1 (25.9 mm.), AHF 2871, from 8 mi. S. W. of San Nicolaas Bay, Aruba Island, Netherlands West Indies.

A 44-39, 1 (22.3 mm.), AHF 2783, from 4 mi. N. of Tortuga Island, Venezuela.

Remarks: Our smaller specimen (AHF 2783) was in very poor condition; the larger example (AHF 2871) was in good condition. In both cases, the color pattern satisfactorily fit the description of that for this species as presented by Robins and Starck (1961).

Apogonidae

Apogon maculatus (Poey)

Material: A 50-39, 1 (44.7 mm.), AHF 2851, from Caledonia Bay, Panama.

A 57-39, 6 (26.8—38.0 mm.), AHF 2852, from Caledonia Bay, Panama.

Remarks: This material was determined with the aid of Meek and Hildebrand (1925).

The largest specimen (AHF 2851) was very soft and faded.

Apogonichthys stellatus (Cope)

Material: A 14-39, 1 (29.5 mm.), AHF 2850, from 2 mi. S. W. of Cape la Vela, Colombia.

Carangidae

In addition to the major general works cited in the introduction to this paper, reference was made to the following papers in identifying the material in this family: Ginsburg (1952), genera and some species; Berry (1959), species of the genus *Caranx*; Fields (1962), species of the genus *Trachinotus*.

Alectis crinitus (Mitchill)

Material: A 34-39, 2 (167.0, 171.0 mm.), AHF 2686, from Port of Spain, Trinidad Island, West Indies.

Caranx hippos (Linnaeus)

Material: A 6-39, 2 (43.0, 43.5 mm.), AHF 2645, from Caledonia Bay, Panama.

A 21-39, 1 (53.0 mm.), AHF 2687, from Tortuga Island, Venezuela.

A 34-39, 1 (138.0 mm.), AHF 2688, from Port of Spain, Trinidad Island, West Indies.

Caranx latus Agassiz

- Material:* A 49-39, 5 (37.0—60.5 mm.), AHF 2691, from Caledonia Bay, Panama.
A 57-39, 1 (45.0 mm.), AHF 2692, from Caledonia Bay, Panama.
A 21-39, 1 (52.0 mm.), AHF 2689, from Tortuga Island, Venezuela.
A 39-39, 3 (96.0—172.0 mm.), AHF 2690, from Rockly Bay, Tobago Island, West Indies.

Chloroscombrus chrysurus (Linnaeus)

- Material:* A 34-39, 18 (28.5—148.0 mm.), AHF 2693, from Port of Spain, Trinidad Island, West Indies.
No station number, April 17, 1939, 1 (30.0 mm.), AHF 2695, from the S. end of Trinidad Island, West Indies.

Selar crumenophthalmus (Bloch)

- Material:* A 40-39, 33 (113.0—137.5 mm.), AHF 2696, from Buccoo Bay, Tobago Island, West Indies.

Trachinotus glaucus (Bloch)

- Material:* A 21-39, 2 (49.0, 94.0 mm.), AHF 2697, from Tortuga Island, Venezuela.
A 39-39, 10 (57.0—103.0 mm.), AHF 2698, from Rockly Bay, Tobago Island, West Indies.
A 40-39, 4 (102.0—110.0 mm.), AHF 2699, from Buccoo Bay, Tobago Island, West Indies.

Trachinotus carolinus (Linnaeus)

- Material:* A 39-39, 1 (79.5 mm.), AHF 2700, from Rockly Bay, Tobago Island, West Indies.

Trachurus lathamii Nichols ?

- Material:* A 26-39, 7 (32.0—43.0 mm.), AHF 2694, from Cubagua Island, Venezuela.

Remarks: The tentative specific determination was made on the basis of the remarks made by Ginsburg (1952: 87).

Centropomidae

Centropomus undecimalis (Bloch)

Material: A 39-39, 1 (236.0 mm.), AHF 2809, from Rockly Bay, Tobago Island, West Indies.

Remarks: Our specimen agreed satisfactorily with the recent discussion of this species by Chávez (1961; 1963).

Lutjanidae

Lutjanus apodus (Walbaum)

Material: A 57-39, 3 (80.2—104.3 mm.), AHF 2708, from Caledonia Bay, Panama.

Rhomboplites aurorubens (Cuvier)

Material: A 34-39, 1 (100.7 mm.), AHF 2707, from Port of Spain, Trinidad Island, West Indies.

Pomadasyidae

Anisotremus virginicus (Linnaeus)

Material: A 55-39, 1 (114.4 mm.), AHF 2705, from Caledonia Bay, Panama.

Conodon nobilis (Linnaeus)

Material: A 6-39, 1 (32.4 mm.), AHF 2703, from Caledonia Bay, Panama.

A 21-39, 5 (48.4—56.1 mm.), AHF 2701, from Tortuga Island, Venezuela.

A 39-39, 16 (40.3—85.5 mm.), AHF 2702, from Rockly Bay, Tobago Island, West Indies.

Haemulon flavolineatum (Desmarest)

Material: A 55-39, 1 (108.8 mm.), AHF 2704, from Caledonia Bay, Panama.

Remarks: This determination, and the one following, was made with the aid of Courtenay (1961).

Haemulon plumieri (Lacépède)

Material: A 59-39, 1 (145.8 mm.), AHF 2706, from Caledonia Bay, Panama.

Orthopristis ruber (Cuvier)

Material: A 34-39, 2 (145.5, 158.5 mm.), AHF 2873, from Port of Spain, Trinidad Island, West Indies.

Remarks: Our material fit well the description included by Schultz (1949: 134) for this species.

Pomadasyς corvinaeformis (Steindachner) ?

Material: A 6-39, 4 (42.5—48.5 mm.), AHF 2869, from Caledonia Bay, Panama.

A 21-39, 2 (47.5, 52.9 mm.), AHF 2872, from Tortuga Island, Venezuela.

Remarks: Our determination was questionable because of the small size of our specimens.

Leiognathidae**Eucinostomus argenteus** Baird and Girard

Material: A 57-39, 2 (54.0, 54.1 mm.), AHF 2709, from Caledonia Bay, Panama.

Eucinostomus gula (Cuvier)

Material: A 34-39, 8 (92.7—111.0 mm.), AHF 2711, from Port of Spain, Trinidad Island, West Indies.

A 43-39, 4 (102.9—107.9 mm.), AHF 2710, from 7 mi. N. of Tortuga Island, West Indies.

Eucinostomus pseudogula Poey

Material: A 6-39, 5 (61.0—75.3 mm.), AHF 2714, from Caledonia Bay, Panama.

A 39-39, 3 (81.5—84.3 mm.), AHF 2712, from Rockly Bay, Tobago Island, West Indies.

A 43-39, 1 (124.3 mm.), AHF 2713, from 7 mi. N. of Tortuga Island, Venezuela.

Sciaenidae

Most of the material in this family was identified with the aid of Meek and Hildebrand (1925) and Schultz (1949).

Cynoscion leiarchus (Cuvier)

Material: A 34-39, 1 (198.3 mm.), AHF 2715, from Port of Spain, Trinidad Island, West Indies.

No station number, April 17, 1939, 3 (60.9—68.5 mm.), AHF 2716, from the S. end of Trinidad Island, West Indies.

Isopisthus parvipinnis (Cuvier)

Material: A 34-39, 3 (140.6—144.2 mm.), AHF 2717, from Port of Spain, Trinidad Island, West Indies.

Larimus breviceps Cuvier

Material: A 6-39, 70 (24.7—72.0 mm.), AHF 2724, from Caledonia Bay, Panama.

A 49-39, 80 (19.9—67.9 mm.), AHF 2725, from Caledonia Bay, Panama.

A 53-39, 1 (22.0 mm.), AHF 2726, from Caledonia Bay, Panama.

Menticirrhus martinicensis (Cuvier)

Material: A 6-39, 1 (92.4 mm.), AHF 2720, from Caledonia Bay, Panama.

A 49-39, 1 (35.5 mm.), AHF 2718, from Caledonia Bay, Panama.

A 39-39, 1 (109.5 mm.), AHF 2719, from Rockly Bay, Tobago Island, West Indies.

Micropogon furnieri (Desmarest)

Material: A 34-39, 1 (170.3 mm.), AHF 2721, from Port of Spain, Trinidad Island, West Indies.

Ophioscion panamensis Schultz

Material: No station number, April 17, 1939, 1 (73.3 mm.), AHF 2722, from the S. end of Trinidad Island, West Indies.

Remarks: This material was identified with the aid of Schultz (1945).

Ophioscion punctatissimus Meek and Hildebrand

Material: A 39-39, 12 (61.2—114.8 mm.), AHF 2723, from Rockly Bay, Tobago Island, West Indies.

Remarks: This material was determined with the aid of Schultz (1945).

Stellifer rastrifer (Jordan) ?

Material: No station number, April 17, 1939, 3 (44.3—47.1 mm.), AHF 2816, from the S. end of Trinidad Island, West Indies.

Remarks: Our determination was questionable because of the small size of our specimens and their poor condition.

Umbrina coroides Cuvier

Material: A 21-39, 15 (33.6—93.3 mm.), AHF 2730, from Tortuga Island, Venezuela.

A 39-39, 13 (35.4—144.0 mm.), AHF 2729, from Rockly Bay, Tobago Island, West Indies.

A 40-39, 1 (115.8 mm.), AHF 2731, from Buccoo Bay, Tobago Island, West Indies.

Remarks: Dorsal soft-ray counts were made on 18 of our specimens. One specimen had 26 soft-rays, six had 27, nine had 28 and two had 29.

Three individuals so examined had six anal soft-rays.

Three specimens so examined had 49, 51 and 52 lateral line scales, respectively.

Umbrina broussoneti Cuvier ?

Material: A 6-39, 18 (34.0—167.5 mm.), AHF 2727, from Caledonia Bay, Panama.

A 49-39, 207 (20.0—68.0 mm.), AHF 2728, from Caledonia Bay, Panama.

Remarks: Apparently there are two species of *Umbrina* in the southern Caribbean, most readily distinguished by the number of dorsal fin soft-rays. One species, *U. coroides*, has a high dorsal soft-ray count of 26 to 29 (in our material, see above). The second species, which we tentatively refer to here as *U. broussoneti*, has fewer dorsal soft-rays. In our material, of 21 specimens, one had 23 dorsal soft-rays, seven had 24, twelve had 25 and one had 26.

In describing *U. coroides*, Cuvier (*In* Cuvier and Valenciennes, 1830: 187) gave for it a dorsal soft-ray count of 29. This then is the high-numbered dorsal soft-rays species we encountered. This same author (also p. 187) briefly described a low-numbered dorsal soft-rays *Umbrina* with only 25 rays. This second species he named *U. broussonetii*. Nearly a century later, Metzelaar (1919: 72) also described a low-numbered dorsal soft-rays *Umbrina*, *U. gracilicirrhus*, from Venezuela. We believe that these last two species are the same, and distinct from *U. coroides*. *U. broussonetii* has priority for the low-numbered rays type.

Jordan and Evermann (1898: 1466) tentatively recognized two species: *U. coroides* and *U. broussonetii*. Schultz (1949: 153) also recognized two: *U. coroides* and *U. gracilicirrhus*. Jordan, Evermann and Clark (1930: 350), we believe in error, recognized all three species. We believe also that Günther (1860: 277) was in error when he synonymized *U. coroides* with *U. broussonetti*.

Meek and Hildebrand (1925: 613) listed a low-numbered rays (24-25) *Umbrina* from Panama which they called *U. coroides*. If our conclusions about our material, also from Panama, are correct, it then appears that Meek and Hildebrand had *U. broussonetti* instead of *U. coroides*.

The lateral line scale count in *U. broussoneti* also is generally lower than that of *U. coroides* (see above): eight examples respectively had 43, 44, 45, 46, 47, 47 and 50 scales.

In five of our specimens so examined, all had six anal soft-rays.

Mullidae

The material in this family was determined with the aid of Caldwell (1963).

Mullus auratus Jordan and Gilbert

Material: A 12-39, 1 (32.7 mm.), AHF 2736, from 11 mi. S. W. of Cape la Vela, Colombia.

Remarks: The specimen was a pelagic sea stage (see Caldwell, 1963), and data included by Garth (1945: 32) show that indeed it was collected at the surface at night under a light.

Sparidae**Archosargus rhomboidalis** (Linnaeus)

Material: A 34-39, 1 (155.5 mm.), AHF 2732, from Port of Spain, Trinidad Island, West Indies.

Remarks: The use of the specific name *rhomboidalis* in preference to the more often used *A. unimaculatus* (Bloch) was recently discussed by Caldwell (1957: 86).

Chaetodontidae**Chaetodon striatus** Linnaeus

Material: A 50-39, 1 (18.0 mm.), AHF 2734, from Caledonia Bay, Panama.

A 55-39, 1 (20.0 mm.), AHF 2733, from Caledonia Bay, Panama.

A 57-39, 2 (22.5, 32.0 mm.), AHF 2735, from Caledonia Bay, Panama.

Pomacanthus arcuatus (Linnaeus)

Material: A 57-39, 1 (12.0 mm.), AHF 2737, from Caledonia Bay, Panama.

Pomacentridae

The material in the genus *Eupomacentrus* was determined with the aid of Rivas (1960).

Abudefduf saxatilis (Linnaeus)

Material: A 57-39, 42 (11.8—42.7 mm.), AHF 2752, from Caledonia Bay, Panama.

Abudefduf taurus (Müller and Troschel)

Material: A 50-39, 2 (17.1, 20.5 mm.), AHF 2751, from Caledonia Bay, Panama.

A 57-39, 15 (14.4—38.0 mm.), AHF 2750, from Caledonia Bay, Panama.

Remarks: We use the specific name *taurus* in preference to the sometime-used *A. analogus* (Gill) upon the advice of Loren P. Woods (personal communication, 1960).

Eupomacentrus fuscus (Cuvier)

Material: A 49-39, 1 (16.6 mm.), AHF 2741, from Caledonia Bay, Panama.

A 50-39, 14 (10.3—38.0 mm.), AHF 2740, from Caledonia Bay, Panama.

A 55-39, 1 (58.2 mm.), AHF 2739, from Caledonia Bay, Panama.

A 57-39, 112 (20.0—43.6 mm.), AHF 2738, from Caledonia Bay, Panama.

A 41-39, 2 (41.5, 60.5 mm.), AHF 2742, from Buccoo Reef, Tobago Island, West Indies.

Eupomacentrus leucostictus (Müller and Troschel)

Material: A 7-39, 1 (46.0 mm.), AHF 2744, from Caledonia Bay, Panama.

A 50-39, 3 (36.5—59.3 mm.), AHF 2745, from Caledonia Bay, Panama.

A 57-39, 65 (28.4—58.5 mm.), AHF 2743, from Caledonia Bay, Panama.

Eupomacentrus pictus (Castelnau)

Material: A 55-39, 9 (15.5—44.0 mm.), AHF 2746, from Caledonia Bay, Panama.

A 41-39, 1 (39.8 mm.), AHF 2748, from Buccoo Reef, Tobago Island, West Indies.

A 44-39, 3 (37.7—45.7 mm.), AHF 2747, from 4 mi. N. of Tortuga Island, Venezuela.

Eupomacentrus planifrons (Cuvier)

Material: A 55-39, 3 (30.5—46.5 mm.), AHF 3027, from Caledonia Bay, Panama.

Labridae**Halichoeres bivittata** (Bloch)

Material: A 50-39, 5 (15.6—37.6 mm.), AHF 2858, from Caledonia Bay, Panama.

A 55-39, 2 (35.5—44.1 mm.), AHF 2862, and 1 (92.1 mm.), AHF 2856, from Caledonia Bay, Panama.

A 57-39, 46 (10.0—60.1 mm.), AHF 2860, from Caledonia Bay, Panama.

Thalassoma bifasciatum (Bloch)

Material: A 55-39, 17 (36.9—65.8 mm.), AHF 2855, and 2 (76.5, 86.6 mm.), AHF 2861, from Caledonia Bay, Panama.

?Labridae, Genus and species undetermined

Material: A 12-39, 1 (ca. 20 mm.), AHF 2791, from 11 mi. S. W. of Cape la Vela, Colombia.

A 13-39, 1 (ca. 9 mm.), AHF 2853, from 1 mi. S. W. of Cape la Vela, Colombia.

A 24-39, 1 (ca. 12 mm.), AHF 2801, from Cubagua Island, Venezuela.

Remarks: All of this material was of questionable determination because of its small size and very poor condition.

Scaridae

Determinations for material in this family were made with the aid of Schultz (1958).

Scarus croicensis Bloch

Material: A 57-39, 4 (48.1—61.2 mm.), AHF 2867, from Caledonia Bay, Panama.

***Sparisoma rubripinnis* (Valenciennes) ?**

Material: A 57-39, 2 (48.0, 50.4 mm.), AHF 2866, from Caledonia Bay, Panama.

Remarks: Our specimens may have been *S. radians* (Valenciennes). However, they lacked prominent canine teeth in the upper jaw and possessed bifurcate cirri on the anterior nasal tentacles. The small size was also a factor in the questioned determination.

? *Sparisoma* sp.

Material: A 50-39, 1 (21.7 mm.), AHF 2859, from Caledonia Bay, Panama.

A 57-39, 3 (13.3—25.8 mm.), AHF 2857, from Caledonia Bay, Panama.

A 15-39, 1 (27.5 mm.), AHF 2854, from 2 mi. off Bahia Honda, Colombia.

A 18-39, 4 (20.5—30.1 mm.), AHF 2863, from 8 mi. S. W. of San Nicolaas Bay, Aruba Island, Netherlands West Indies.

A 22-39, 1 (37.3 mm.), AHF 2864, from Tortuga Island, Venezuela.

A 28-39, 2 (23.9, 31.1 mm.), AHF 2865, from Cubagua Island, Venezuela.

Remarks: We do not wish definitely to imply that we believe all of these specimens belong to the same species. All were small and faded, and they even may not all be of the genus *Sparisoma*.

? *Scaridae*, Genus and species undetermined

Material: A 22-39, 1 (20.7 mm.), AHF 2795, from Tortuga Island, Venezuela.

A 28-39, 2 (13.1, 15.8 mm.), AHF 3028, from Cubagua Island, Venezuela.

Remarks: These very small specimens, possibly Labridae, were in poor condition.

Acanthuridae

Determinations for the material in this family were made with the aid of Randall (1956).

Acanthurus bahianus Castelnau

Material: A 57-39, 13 (26.0—42.0 mm.), AHF 2753, from Caledonia Bay, Panama.

Dactyloscopidae**Gillellus semicinctus** Gilbert ?

Material: A 18-39, 2 (26.1, 29.0 mm.), AHF 2794, and 1 (28.3 mm.), AHF 3040, from 8 mi. S. W. of San Nicolaas Bay, Aruba Island, Netherlands West Indies.

Remarks: Our generic determination of this material was made with the aid of Myers and Wade (1946).

Our specific identification was made with the aid of Kanazawa (1952: 86) and our material also satisfactorily fit the description for this species as included by Jordan and Evermann (1898: 2298). We have questioned it because neither Kanazawa nor Briggs (1958: 285) extended its western Atlantic range south of the Gulf of Mexico and the Florida Keys, and because Dr. James E. Böhlke wrote that a revision of this family that he is currently undertaking may show it to be an undescribed species.

Trichiuridae**Trichiurus lepturus** Linnaeus

Material: No station number, April 17, 1939, 2 (each ca. 575 mm. T. L.), AHF 2322, from the S. end of Trinidad Island, West Indies.

Gobiidae**Barbulifer** sp.

Material: A 57-39, 12 (12.7—20.5 mm.), AHF 3033, from Caledonia Bay, Panama.

Remarks: This material apparently represents an undescribed species currently under study by Dr. James E. Böhlke.

Bathygobius soporator (Valenciennes)

- Material:* A 8-39, 1 (40.4 mm.), AHF 2790, from Caledonia Bay, Panama.
A 50-39, 12 (17.5—65.3 mm.), AHF 2805, from Caledonia Bay, Panama.
A 57-39, 63 (14.9—73.3 mm.), AHF 2807, from Caledonia Bay, Panama.
A 16-39, 1 (28.9 mm.), AHF 2793, from Pta. Basora, Aruba Island, Netherlands West Indies.
A 41-39, 2 (40.5, 73.4 mm.), AHF 2803, from Buccoo Reef, Tobago Island, West Indies.

Bollmannia boqueronensis Evermann and Marsh ?

- Material:* A 4-39, 2 (ca. 18.5, ca. 20 mm.), AHF 3029, from Caledonia Bay, Panama.
A 52-39, 1 (ca. 33 mm.), AHF 2806, from Caledonia Bay, Panama.

Remarks: The largest of these specimens (AHF 2806) appeared to be the species illustrated by Evermann and Marsh (1902: 298). Our specimen had the dark pigment spot on the spinous dorsal interray membrane. Our other two specimens (AHF 3029), although in very poor condition, by locality and the possession of the dark spinous dorsal spot by the larger, may be the same species.

Coryphopterus glaucofraenum Gill

- Material:* A 2-39, 3 (23.3—32.1 mm.), AHF 2788, from Caledonia Bay, Panama.
A 4-39, 1 (32.0 mm.), AHF 2789, from Caledonia Bay, Panama.
A 28-39, 3 (24.5—29.5 mm.), AHF 2799, from Cubagua Island, Venezuela.
A 35-39, 2 (30.5, 34.5 mm.), AHF 2802, from Port of Spain, Trinidad Island, West Indies.

Remarks: Determination of this material was made with the aid of Böhlke and Robins (1960).

Coryphopterus glaucofraenum Gill ?

Material: A 24-39, 1 (22.4 mm.), AHF 3032, from Cubagua Island, Venezuela.

Remarks: This determination was questionable because of the poor condition of the specimen.

? Gobionellus sp.

Material: A 27-39, 2 (ca. 18.5, ca. 23 mm.), AHF 3035, from Cubagua Island, Venezuela.

A 28-39, 1 (26.2 mm.), AHF 3036, from Cubagua Island, Venezuela.

Remarks: Our material was in poor condition and we hesitated even to place it to genus. However, our specimens best fit this genus as discussed by Ginsburg (1932). All of the specimens appeared to be of the same species.

? Gobiosoma sp.

Material: A 27-39, 1 (26.3 mm.), AHF 2798, from Cubagua Island, Venezuela.

A 28-39, 1 (23.2 mm.), AHF 3034, from Cubagua Island, Venezuela.

Remarks: Our material was in poor condition and we hesitated even to assign it to genus. However, our specimens seemed best to fit this genus as discussed by Ginsburg (1933). The two specimens may not be of the same species.

Lophogobius cyprinoides (Pallas)

Material: A 45-39, 1 (ca. 33 mm.), AHF 2808, from Santa Anna Harbor, Curaçao Island, Netherlands West Indies.

Microgobius sp.

Material: A 22-39, 1 (43.1 mm.), AHF 2800, from Tortuga Island, Venezuela.

Remarks: The condition of our specimen, primarily a loss of scales, precluded satisfactory specific determination.

Gobionellus boleosoma (Jordan and Gilbert)

Material: A 57-39, 2 (27.4, 33.7 mm.), AHF 3030, from Caledonia Bay, Panama.

? *Gobiidae*, Genus and species undetermined

Material: A 28-39, 1 (40.7 mm.), AHF 2811, from Cubagua Island, Venezuela.

Remarks: This well-preserved striped specimen keyed to this family in Jordan and Evermann (1898) and in Meek and Hildebrand (1923). However, at this writing we have been unable to place it to a more finite taxon.

*Callionymidae**Callionymus boekei* Metzelaar

Material: A 13-39, 4 (12.5—20.7 mm.), AHF 2754, from 1 mi. S. W. of Cape la Vela, Colombia.

A 15-39, 1 (13.9 mm.), AHF 2756, from 2 mi. off Bahia Honda, Colombia.

A 18-39, 5 (14.6—22.3 mm.), AHF 2755, from 8 mi. S. W. of San Nicolaas Bay, Aruba Island, Netherlands West Indies.

Remarks: This material was determined with the aid of Parr (1930). A sample of several specimens all had a dorsal fin-ray count of IV-9 and an anal fin ray count of 8. The preopercular processes of all were exactly as figured by Parr (1930: 129).

Callionymus pauciradiatus Gill ?

Material: A 2-39, 1 (24.5 mm.), AHF 2758, from Caledonia Bay, Panama.

A 28-39, 1 (22.2 mm.), AHF 2757, from Cubagua Island, Venezuela.

Remarks: Our specific determination was made, questionably, using Parr (1930). Our two specimens best fit this species on the basis of their fin ray counts: D. IV-6, A. 4 in the first; D. III-6, A. 4 in the second. However, the configuration of the preopercular spine processes in our specimens were as figured for *C. dubiosus* Parr by Parr (1930: 129). The description of *C. pauciradiatus* in Metzelaar (1919: 149) could apply to our material, and it seems to us that his description of the preopercular processes could apply to Parr's figure for those of *C. dubiosus*. As suggested by Parr (p. 130), the two species may not be distinct.

Blenniidae

Blennius pilicornis Cuvier

Material: A 27-39, 1 (43.9 mm.), AHF 2772, from Cubagua Island, Venezuela.

A 28-39, 1 (36.8 mm.), AHF 2773, from Cubagua Island, Venezuela.

Remarks: Our material was determined to species with the aid of Tavalga (1954).

Entomacrodus nigricans Gill

Material: A 57-39, 1 (29.1 mm.), AHF 2759, from Caledonia Bay, Panama.

Entomacrodus nigricans Gill ?

Material: A 14-39, 1 (ca. 15 mm.), AHF 2792, from 2 mi. S. W. of Cape la Vela, Colombia.

A 24-39, 1 (ca. 12 mm.), AHF 2796, from Cubagua Island, Venezuela.

Remarks: These small specimens were in extremely poor condition, but based on remaining pigment and overall appearance as compared to the identifiable specimen (AHF 2759) noted above, we suggest that they may be this species.

? Blenniidae, Genus and species undetermined

Material: A 44-39, 1 (ca. 14 mm.), AHF 2804, from 4 mi. N. of Tortuga Island, Venezuela.

Remarks: This small specimen was in very poor condition.

Chaenopsidae

Chaenopsis sp. A.

Material: A 18-39, 1 (45.4 mm.), AHF 2838, from 8 mi. S. W. of San Nicolaas Bay, Aruba Island, Netherlands West Indies.

Remarks: The determination of our material to this genus (see also species B. below) was made with the aid of Böhlke (1957) and Stephens (1963). Dr. Stephens is studying the material at this writing and tells us that each of our two specimens may represent an undescribed species.

Chaenopsis sp. B.

Material: A 28-39, 1 (ca. 63 mm.), AHF 2774, from Cubagua Island, Venezuela.

Tripterygiidae**Enneanectes pectoralis** (Fowler)

Material: A 16-39, 1 (23.4 mm.), AHF 932, from Pta. Basora, Aruba Island, Netherlands West Indies.

Remarks: This specimen was not seen by us. It was identified and reported upon elsewhere by Rosenblatt (1960: 16).

It should be noted that Rosenblatt was in error in listing this specimen as coming from Antigua.

Clinidae**Labrisomus guppyi** (Norman) ?

Material: A 57-39, 9 (31.4—89.4 mm.), AHF 2882, from Caledonia Bay, Panama.

A 41-39, 1 (108.6 mm.), AHF 2878, from Buccoo Reef, Tobago Island, West Indies.

Remarks: All of the material in this genus was determined with the aid of Springer (1959).

Labrisomus kalisherai (Jordan) ?

Material: A 25-39, 1 (35.1 mm.), AHF 2875, from Cubagua Island, Venezuela.

Malacoctenus gilli (Steindachner)

Material: A 41-39, 1 (ca. 40 mm.), AHF 2877, from Buccoo Reef, Tobago Island, West Indies.

Remarks: All of our material in this genus was determined with the aid of Springer (1959).

Malacoctenus macropus (Poey) ?

Material: A 57-39, 6 (29.5—34.1 mm.), AHF 2883, from Caledonia Bay, Panama.

? *Malacoctenus* sp.

Material: A 2-39, 2 (28.0, 28.5 mm.), AHF 2874, from Caledonia Bay, Panama.

Remarks: This material was in poor condition.

Paraclinus fasciatus (Steindachner)

Material: A 18-39, 3 (23.9—26.8 mm.), AHF 2775, from 8 mi. S. W. of San Nicolaas Bay, Aruba Island, Netherlands West Indies.

Remarks: Our material was determined with the aid of Springer (1955).

Starksia guttata (Fowler)

Material: A 41-39, 2 (ca. 31, 33.0 mm.), AHF 2768, from Buccoo Reef, Tobago Island, West Indies.

Remarks: Our material was determined with the aid of Böhlke and Springer (1961). Those authors questioned (p. 50) whether this species was distinct from the older *S. ocellata* (Steindachner). Inasmuch as the color patterns of our specimens more closely approximated *S. guttata*, as illustrated by Böhlke and Springer (1961: fig. 13), we use that name.

Starksia sluiteri (Metzelaar) ?

Material: A 46-39, 1 (ca. 12.5 mm.), AHF 2880, from Vista Alegre, Curaçao Island, Netherlands West Indies.

Remarks: Our specimen was very small, but its color pattern satisfactorily approximated that illustrated for this species by Böhlke and Springer (1961: fig. 11).

Clinidae, Genus and species undetermined

Material: A 57-39, 1 (ca. 14.5 mm.), AHF 2881, from Caledonia Bay, Panama.

A 57-39, 1 (11.8 mm.), AHF 2884, from Caledonia Bay, Panama.

A 25-39, 1 (ca. 38.5 mm.), AHF 2876, from Cubagua

Island, Venezuela.

A 44-39, 1 (ca. 28.5 mm.), AHF 2879, from 4 mi. N. of Tortuga Island, Venezuela.

Remarks: We do not believe that all of this material necessarily belonged to the same species or even to the same genus. Because of condition and/or small size, we hesitated to do more than assign it to this family.

Brotulidae

Dinematchthys cayorum (Evermann and Kendall)

Material: A 1-39, 1 (26.8 mm.), AHF 2776, from Caledonia Bay, Panama.

A 50-39, 1 (34.9 mm.), AHF 2777, from Caledonia Bay, Panama.

A 57-39, 11 (27.4—45.4 mm.), AHF 2778, from Caledonia Bay, Panama.

Ophidiidae

Ophidiidae, Genus and species undetermined

Material: A 13-39, 2 (ca. 20 mm.; and an anterior fragment only, ca. 15 mm.), AHF 2779, from 1 mi. S. W. of Cape la Vela, Colombia.

A 15-39, 2 (33.3, ca. 38 mm.), AHF 2780, from 2 mi. off Bahia Honda, Colombia.

Remarks: This material was so small and in such poor condition that we hesitated even to assign it to a genus. However, it appeared to conform most closely to either the genus *Otophidium* or the genus *Ophidion*.

Carapidae

Material in this family was determined with the aid of Arnold (1956).

Carapus bermudensis (Jones) ?

Material: A 1-39, 1 (ca. 66.0 mm. T. L.), AHF 2782, from Caledonia Bay, Panama.

A 56-39, 2 (59.5, 110.0 mm.), AHF 2781, from Caledonia Bay, Panama.

Remarks: Arnold's key is primarily for adults, and our specimens were too small for certain identification. However, they fit the generic description well, and the specific description well enough so that with their agreement with the geographical range given by Arnold, we had little hesitation in assigning them to this species.

Sphyraenidae

Material in this family was determined with the aid of deSylva (1963).

Sphyraena borealis DeKay

Material: A 40-39, 5 (169.5—194.0 mm.), AHF 2665, from Buccoo Bay, Tobago Island, West Indies.

Sphyraena guachancho Cuvier

Material: A 21-39, 1 (55.1 mm.), AHF 2849, from Tortuga Island, Venezuela.

A 39-39, 1 (84.0 mm.), AHF 2666, from Rockly Bay, Tobago Island, West Indies.

Mugilidae**Mugil curema** Valenciennes

Material: A 6-39, 2 (144.0, 158.0 mm.), AHF 2667, from Caledonia Bay, Panama.

A 23-39, 1 (29.7 mm.), AHF 2669, from Tortuga Island, Venezuela.

A 39-39, 1 (145.0 mm.), AHF 2668, from Rockly Bay, Tobago Island, West Indies.

Atherinidae

Material in this family was determined with the aid of Jordan and Hubbs (1919) and Schultz (1948).

Atherina harringtonensis araea Jordan and Gilbert

- Material:* A 12-39, 9 (50.1—58.5 mm.), AHF 2671, from 11 mi. S. W. of Cape la Vela, Colombia.
A 23-39, 38 (47.7—61.7 mm.), AHF 2670, from Tortuga Island, Venezuela.

Thyrinops chagresi (Meek and Hildebrand) ?

- Material:* A 49-39, 1 (33.3 mm.), AHF 2672, from Caledonia Bay, Panama.

Remarks: Our specimen was small, but characters given by Jordan and Hubbs (1919) placed it in this genus, and those in Meek and Hildebrand (1923: 266) in this species.

Reasons for the use of this generic name were discussed by Caldwell, Ogren and Giovannoli (1959: 22).

Polynemidae**Polydactylus virginicus** (Linnaeus)

- Material:* A 6-39, 86 (26.4—128.5 mm.), AHF 2673, from Caledonia Bay, Panama.
A 49-39, 414 (32.0—118.0 mm.), AHF 2675, from Caledonia Bay, Panama.
A 21-39, 7 (58.5—68.5 mm.), AHF 2678, from Tortuga Island, Venezuela.
A 39-39, 92 (42.5—150.0 mm.), AHF 2674, from Rocky Bay, Tobago Island, West Indies.
A 40-39, 4 (51.5—71.0 mm.), AHF 2677, from Buccoo Bay, Tobago Island, West Indies.
No station number, April 17, 1939, 1 (53.0 mm.), AHF 2676, from the S. end of Trinidad Island, West Indies.

Order **SCLEROPAREI****Scorpaenidae**

The material belonging to this family was determined with the aid of Ginsburg (1953).

Scorpaena bergi Evermann and Marsh

Material: A 18-39, 4 (39.7—92.0 mm.), AHF 2815, from 8 mi. S. W. of San Nicolaas Bay, Aruba Island, Netherlands West Indies.

Scorpaena bergi Evermann and Marsh ?

Material: A 13-39, 7 (13.4—16.3 mm.), AHF 2812, from 1 mi. S. W. of Cape la Vela, Colombia.

A 15-39, 5 (12.8—25.5 mm.), AHF 2814, from 2 mi. off Bahia Honda, Colombia.

Remarks: The specific determination of these specimens was questioned because of their small size.

Scorpaenidae, Genus and species undetermined

Material: A 14-39, 5 (15.0—22.8 mm.), AHF 2813, from 2 mi. S. W. of Cape la Vela, Colombia.

Remarks: Further identification was not attempted because of the small size and poor condition of the specimens. However, by inference they may have been *S. bergi* (see above localities).

Triglidae**Prionotus** sp.

Material: A 13-39, 3 (17.3—28.8 mm.), AHF 2817, from 1 mi. S. W. of Cape la Vela, Colombia.

Remarks: Our specimens were small and the characters used by Ginsburg (1950) and Teague (1951) were sometimes difficult to verify and may not have been fully developed. Using Ginsburg's key, our specimens best fit *P. nudigula* Ginsburg. Using Teague's key, they best fit *P. beani* Goode, but this determination was made with much less confidence than that made using Ginsburg.

Dactylopteridae**Dactylopterus volitans** (Linnaeus)

Material: A 54-39, 3 (36.3—43.4 mm.), AHF 2749, from Caledonia Bay, Panama.

Remarks: Taken from the stomach of a needlefish, *Strongylura* sp.

Order HAPLODOCI
Batrachoididae

Batrachoides surinamensis (Bloch and Schneider) ?

Material: A 35-39, 1 (51.0 mm.), AHF 2767, from Port of Spain, Trinidad Island, West Indies.

Remarks: We questioned our determination because we found but one subopercular spine instead of the two indicated for this species by Meek and Hildebrand (1928: 915). The lack of a second spine may be due to individual variation as yet undescribed, to age (our specimen was much smaller than those Meek and Hildebrand described), or to anomaly. In other respects our specimen satisfactorily fit the descriptions of this species given by Meek and Hildebrand and by Jordan and Evermann (1898: 2314).

Although in color it superficially resembled the genus *Opsanus*, our specimen clearly lacked the axillary pore of this genus that was noted by Schultz and Reid (1937) or the ridged axillary structure of the closely related genus *Amphichthys* noted by Walters and Robins (1961: 13) and illustrated by Breder (1925: fig. 1).

Nautopaedium porosissimum (Valenciennes)

Material: A 53-39, 1 (18.1 mm.), AHF 2314, from Caledonia Bay, Panama.

A 18-39, 1 (88.0 mm.), AHF 2313, from 8 mi. S. W. of San Nicolaas Bay, Aruba Island, Netherlands West Indies.

Remarks: This material was determined with the aid of Hubbs and Schultz (1939).

Porichthys pauciradiatus Caldwell and Caldwell

Material: A 7-39, 1 (33.9 mm.), AHF 3037 (Holotype), from Caledonia Bay, Panama.

A 7-39, 6 (18.4—34.3 mm.), AHF 2766 (Paratypes), from Caledonia Bay, Panama.

Remarks: This species was described by Caldwell and Caldwell (1963) on the basis of this material. Considerable assistance in determining the material as new was obtained by consulting Hubbs and Schultz (1939).

Thalassophryne megalops Bean and Weed

Material: A 15-39, 1 (61.6 mm.), AHF 2764, from 2 mi. off Bahia Honda, Colombia.

A 18-39, 4 (20.3—73.2 mm.), AHF 2765, from 8 mi. S. W. of San Nicolaas Bay, Aruba Island, Netherlands West Indies.

Remarks: Bean and Weed (1910) and Meek and Hildebrand (1928: 921) indicated the need for color descriptions of this apparently rare species. We therefore include photographs (Plates I and II) of our material from Aruba (AHF 2765). The color pattern on our other specimen (AHF 2764) was similar but faded.

Order **XENOPTERYGII****Gobiesocidae**

Determinations for material in this family were made with the aid of Briggs (1955).

Acyrtus artius Briggs

Material: A 57-39, 4 (14.2—17.0 mm.), AHF 2308, from Caledonia Bay, Panama.

Arcos macrophthalmus (Günther)

Material: A 1-39, 2 (18.5, 19.1 mm.), AHF 2306, from Caledonia Bay, Panama.

A 25-39, 2 (each 18.0 mm.), AHF 2305, from Cubagua Island, Venezuela.

Gobiesox nigripinnis (Peters)

Material: A 16-39, 1 (33.8 mm.), AHF 2309, from Pta. Basora, Aruba Island, Netherlands West Indies.

A 30-39, 1 (21.8 mm.), AHF 2307, from Cubagua Island, Venezuela.

Tomicodon fasciatus fasciatus (Peters)

Material: A 8-39, 1 (19.0 mm.), AHF 2303, from Caledonia Bay, Panama.

A 25-39, 2 (14.5, 16.5 mm.), AHF 2304, and 2 (16.0, 16.6 mm.), AHF 2797, from Cubagua Island, Venezuela.

Order **HETEROSOMATA****Bothidae**

Determinations for material in this family were made with the aid of Norman (1934).

Etropus sp.

- Material:* A 7-39, 5 (18.0—31.0 mm.), AHF 2825, from Caledonia Bay, Panama.
A 48-39, 1 (42.0 mm.), AHF 2818, from 5 mi. N. W. of Galera Point light, Colombia.

Paralichthys triocellatus Ribeiro

- Material:* A 4-39, 1 (22.8 mm.), AHF 2820, from Caledonia Bay, Panama.
A 14-39, 1 (53.8 mm.), AHF 2824, from 2 mi. S. W. of Cape la Vela, Colombia.

Bothidae, Genus and species undetermined

- Material:* A 53-39, 1 (41.7 mm.), AHF 2822, from Caledonia Bay, Panama.
A 13-39, 14 (16.7—25.0 mm.), AHF 2819, from 1 mi. S. W. of Cape la Vela, Colombia.
A 14-39, 2 (21.9, 33.2 mm.), AHF 3031, from 2 mi. S. W. of Cape la Vela, Colombia.
A 18-39, 1 (23.3 mm.), AHF 2821, from 8 mi. S. W. of San Nicolaas Bay, Aruba Island, Netherlands West Indies.
A 28-39, 1 (41.7 mm.), AHF 2823, from Cubagua Island, Venezuela.

Remarks: The size or condition of this material made attempts at further identification impractical. Also, we do not wish to imply that all belong to the same genus and species.

Cynoglossidae

Determinations for material in this family were made with the aid of Ginsburg (1951).

Symphurus plagusia plagusia (Bloch and Schneider)

Material: A 7-39, 2 (81.0, 117.0 mm.), AHF 2828, from Caledonia Bay, Panama.

Symphurus sp.

Material: A 13-39, 8 (17.5—19.6 mm.), AHF 2819 and AHF 2826, from 1 mi. S. W. of Cape la Vela, Colombia.

A 42-39, 1 (25.9 mm.), AHF 2827, from 7 mi. N. of Margarita Island, Venezuela.

Remarks: The small size of this material made identification impractical.

Order **DISCOCEPHALI****Echeneidae****Echeneis naucrates** Linnaeus

Material: No station number, April 18, 1939, 1 (ca. 360 mm.), AHF 2810, from Port of Spain, Trinidad Island, West Indies.

Order **PLECTOGNATHI****Monacanthidae**

Material in this family was identified with the aid of Berry and Vogele (1961).

Monacanthus ciliatus (Mitchill)

Material: A 2-39, 1 (42.0 mm.), AHF 2760, from Caledonia Bay, Panama.

Stephanolepis hispidus (Linnaeus)

Material: A 28-39, 1 (20.2 mm.), AHF 2761, from Cubagua Island, Venezuela.

Diodontidae**Chilomycterus antillarum** Jordan and Rutter

Material: A 24-39, 1 (84.6 mm.), AHF 2762, from Cubagua Island, Venezuela.

A 27-39, 1 (56.1 mm.), AHF 2763, from Cubagua Island, Venezuela.

Order **PEDICULATI**
Antennariidae

Determinations for material in this family were made with the aid of Schultz (1957).

Antennarius verrucosus Bean

Material: A 7-39, 1 (20.8 mm.), AHF 2829, from Caledonia Bay, Panama.

? **Antennarius** sp.

Material: A 13-39, 1 (14.3 mm.), AHF 2830, from 1 mi. S. W. of Cape la Vela, Colombia.

A 15-39, 1 (6.4 mm.), AHF 2832, from 2 mi. off Bahia Honda, Colombia.

A 18-39, 3 (7.7—17.5 mm.), AHF 2831, from 8 mi. S. W. of San Nicolaas Bay, Aruba Island, Netherlands West Indies.

Remarks: The small size of these specimens prevented satisfactory specific determinations, and made even the use of this generic name questionable.

The specimens were all very similar in appearance and may have been the same species. On the other hand, they appeared different from the identified species noted above.

GEOGRAPHICAL SUMMARY

In order to facilitate the use of this report by workers interested in more limited geographical areas than it covers, we include below a list of materials taken at or near each mainland country or at or near each island visited by the Expedition. For the specific locality within the major political subdivision used here, the reader is referred to the particular species or other taxon in the Annotated List of Specimens above. Even more finite details in turn can be had by consulting Garth (1945).

CARIBBEAN PANAMA:

Branchiostoma platae
Isospondyli larva
Albula vulpes ?
Harengula pensacolatae caribbaea
H. clupeiola
Anchoa ginsburgi ?
A. lamprotaenia
Saurida sp.
Trachinocephalus myops ?
Apthalmichthys caribbeus
Echidna catenata
Enchelycore nigricans
Gymnothorax albimentis
G. funebris
G. moringa
G. vicinus
Rabula longicauda
? *Rabula* sp.
Ahlia egmontis
Aplatophis chauliodus
Hyporhamphus unifasciatus
Corythoichthys brachycephalus
Hippocampus reidi
Bregmaceros atlanticus ?
Holocentrus ascensionis
H. vexillarius
Epinephelus morio
Rypticus subbifrenatus
Apogon maculatus
Caranx hippos
C. latus
Lutjanus apodus
Anisotremus virginicus
Conodon nobilis
Haemulon flavolineatum
H. plumieri
Pomadasys corvinaeformis ?
Eucinostomus argenteus
E. pseudogula
Larimus breviceps
Menticirrhus martinicensis
Umbrina broussoneti ?

Chaetodon striatus
Pomacanthus arcuatus
Abudefduf saxatilis
A. taurus
Eupomacentrus fuscus
E. leucostictus
E. pictus
E. planifrons
Halichoeres bivittata
Thalassoma bifasciatum
Scarus croicensis
Sparisoma rubripinnis ?
? *Sparisoma* sp.
Acanthurus bahianus
Barbulifer sp.
Bathygobius soporator
Bollmannia boqueronensis ?
Coryphopterus glaucofraenum
Gobionellus boleosoma
Callionymus pauciradiatus ?
Entomacrodus nigricans
Labrisomus guppyi ?
Malacoctenus macropus ?
? *Malacoctenus* sp.
Clinidae, Gen. et sp. ?
Dinematichthys cayorum
Carapus bermudensis (?)
Mugil curema
Thyrinops chagresi ?
Polydactylus virginicus
Dactylopterus volitans
Nautopaedium porosissimum
Porichthys pauciradiatus
Acyrtus artius
Arcos macrophthalmus
Tomicodon f. fasciatus
Etropus sp.
Paralichthys triocellatus
Bothidae, Gen. et sp. ?
Symphurus p. plagusia
Monacanthus ciliatus
Antennarius verrucosus

CARIBBEAN COLOMBIA:

- Branchiostoma platae* (?)
 Isospondyli larvae
Sphagebranchus anguiformis ?
Roeboides dayi ?
Cypselurus heterurus
Exocoetus obtusirostris
Hirundichthys affinis
Parexocoetus brachypterus hillianus
Diplectrum radiale
Serranus atrobranchus
Apogonichthys stellatus
Mullus auratus
 ? Labridae, Gen. et sp. ?
 ? *Sparisoma* sp.
Callionymus boekei
Entomacrodus nigricans ?
 Ophidiidae, Gen. et sp. ?
Atherina harringtonensis araea
Scorpaena bergi ?
 Scorpaenidae, Gen. et sp. ?
Prionotus sp.
Thalassophryne megalops
Etropus sp.
Paralichthys triocellatus
 Bothidae, Gen. et sp. ?
Symphurus sp.
 ? *Antennarius* sp.

ARUBA ISLAND,

NETHERLANDS WEST INDIES:

- Branchiostoma platae* (?)
Anarchias yoshiae
Mollienesia sphenops vandepolli
Diplectrum radiale
Serranus baldwini
 ? *Sparisoma* sp.
Gillellus semicinctus ?
Bathygobius soporator
Callionymus boekei
Chaenopsis sp. A.
Enneanectes pectoralis
Paraclinus fasciatus
Scorpaena bergi
Nautopaedium porosissimum
Thalassophryne megalops
Gobiox nigripinnis
 Bothidae, Gen. et sp. ?
 ? *Antennarius* sp.

CURAÇAO ISLAND,
NETHERLANDS WEST INDIES:

? Cyprinodontidae, Gen. et sp. ?
Lophogobius cyprinoides
Starksia sluiteri?

TORTUGA ISLAND, VENEZUELA:

Branchiostoma platae (?)
Harengula clupeola
Jenkinsia lamprotaenia
? *Sardinella anchovia* ?
Anchoa lamprotaenia
? *Channomuraena* sp.
Hyporhamphus unifasciatus
Cypselurus heterurus
Syngnathus dunckeri
S. rousseau
Serranus baldwini
Caranx hippos
C. latus
Trachinotus glaucus
Conodon nobilis
Pomadasys corvinaeformis ?
Eucinostomus gula
E. pseudogula
Umbrina coroides
Eupomacentrus pictus
? *Sparisoma* sp.
? Scaridae, Gen. et sp. ?
Microgobius sp.
? Blenniidae, Gen. et sp. ?
Clinidae, Gen. et sp. ?
Sphyraena guachancho
Mugil curema
Atherina harringtonensis araea
Polydactylus virginicus

CUBAGUA ISLAND, VENEZUELA:

Branchiostoma platae (?)
Diplobatis guamachensis
Syngnathus rousseau
Hippocampus hudsonius punctulatus
Diplectrum radiale
Mycteroperca falcata

Trachurus lathami ?
 ? Labridae, Gen. et sp. ?
 ? *Sparisoma* sp.
 ? Scaridae, Gen. et sp. ?
Coryphopterus glaucofraenum
C. glaucofraenum ?
 ? *Gobionellus* sp.
 ? *Gobiosoma* sp.
 Gobiidae, Gen. et sp. ?
Callionymus pauciradiatus ?
Blennius pilicornis
Chaenopsis sp. B.
Entomacrodus nigricans ?
Labrisomus kalisherae ?
 Clinidae, Gen. et sp. ?
Arcos macropthalmus
Tomicodon f. fasciatus
Gobiesox nigripinnis
 Bothidae, Gen. et sp. ?
Stephanolepis hispidus
Chilomycterus antillarum

MARGARITA ISLAND, VENEZUELA:

Symphurus sp.

COCHE ISLAND, VENEZUELA:

Branchiostoma platae (?)

TRINIDAD ISLAND, WEST INDIES:

Harengula pensacolae caribbaea
Opisthonema oglinum
Sardinella anchovia
Alectis crinitus
Caranx hippos
Chloroscombrus chrysurus
Rhomboplites aurorubens
Orthopristis ruber
Eucinostomus gula
Cynoscion leiarchus
Isopisthus parvipinnis
Micropogon furnieri

Ophioscion panamensis
Stellifer rastrifer ?
Archosargus rhomboidalis
Trichiurus lepturus
Coryphopterus glaucofraenum
Polydactylus virginicus
Batrachoides surinamensis ?
Echeneis naucrates

TOBAGO ISLAND, WEST INDIES:

Narcine brasiliensis
Harengula clupeola
H. humeralis
H. pensacolae majorina
Odontognathus compressus
Anchoa cubana ?
A. lamprotaenia
A. lyolepis
A. parva
Anchoviella eurystole ?
Strongylura marina
Hyporhamphus unifasciatus
Rypticus subbifrenatus
Caranx latus
Selar crumenophthalmus
Trachinotus glaucus
T. carolinus
Centropomus undecimalis
Conodon nobilis
Eucinostomus pseudogula
Menticirrhus martinicensis
Ophioscion punctatissimus
Umbrina coroides
Eupomacentrus fuscus
E. pictus
Bathygobius soporator
Labrisomus guppyi ?
Malacotenus gilli
Starksia guttata
Sphyraena guachancho
S. borealis
Mugil curema
Polydactylus virginicus

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PLATES

PLATE I

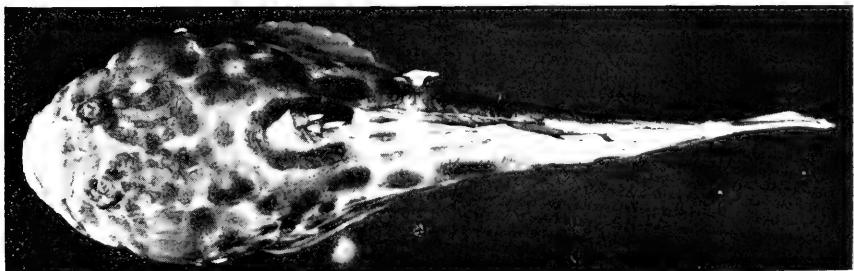
Fig. 1. Lateral view of a 73.2-mm. specimen of the toadfish *Thalassophryne megalops* Bean and Weed, from Aruba Island, Netherlands West Indies. AHF 2765. (Photograph by Armando Solis, Los Angeles County Museum)



PLATE II

Variation in the dorsal color pattern of the toadfish *Thalassophryne megalops* Bean and Weed, from Aruba Island, Netherlands West Indies. AHF 2765.

- Fig. 2. Dorsal view of three specimens. *Upper*: 20.3 mm.; *Middle*: 35.7 mm.; *Lower*: 36.1 mm. (Photograph by Armando Solis, Los Angeles County Museum)
- Fig. 3. Dorsal view of same 73.2-mm. specimen shown in figure 1. (Photograph by Armando Solis)





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