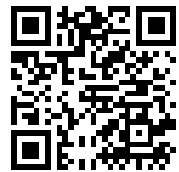

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A PRELIMINARY CATALOGUE

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OF THE

REPTILES, FISHES AND LEPTOCARDIANS

OF THE BERMUDAS,

WITH DESCRIPTIONS OF FOUR SPECIES OF FISHES BELIEVED
TO BE NEW.

BY G. BROWN GOODE.

[FROM THE AMERICAN JOURNAL OF SCIENCE AND ARTS; VOL. XIV, OCT., 1877.]

NEW HAVEN:
TUTTLE, MOREHOUSE & TAYLOR, PRINTERS.
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PRELIMINARY CATALOGUE.



IN a previous paper* I enumerated seventy-four species of fishes collected in the Bermudas in 1872. Another visit to these islands during the past winter has enabled me, with the coöperation of Mr. J. Matthew Jones, who kindly allowed me the use of his collections and note books, to increase the number to one hundred and sixty-three. Of these one hundred and forty-eight have been sufficiently studied to enable me to give their names in this preliminary list. I hope at an early day to discuss the fishes of the Bermudas in a more extended paper. Since there is a peculiar interest in the chorological relations of the members of an insular fauna, I have in a general way designated the distribution of each species by the use of letters. W. indicates the West Indian province, U. the eastern coast of the United States north of Georgia, E. the Eastern Atlantic, including Madeira, the Canary Islands and the Mediterranean, and P. the Indo-Pacific waters. These however do not show faunal relations accurately, since in this way it is impossible to distinguish those species which are resident in any particular district from mere stragglers. Those species which are peculiar to Bermuda are marked "B." and are eight in number; two of these, with *Carassius auratus*, introduced, occupy the land-locked brackish marshes. Two species, *Eucinostomus Lefroyi* and *Haliperca phæbe*, occur only in Bermuda and Cuba. The Bermudian fauna shares with the West Indies one hundred and sixteen species (or seventy-nine per cent), of which fifty-eight (or forty per cent) are peculiar to the West Indies, never having been recorded elsewhere, while a large number of others have their centers of distribution in that region, individuals having made their way in summer to the

* Catalogue of the Fishes of the Bermudas, based chiefly upon the collections of the United States National Museum. By G. Brown Goode, Assistant Curator U. S. National Museum. (Bulletin U. S. Nat. Mus., No. 5.) Washington: Government Printing Office. 82 pp. 8vo. 1876.

coasts of the United States or Europe. With the eastern United States, Bermuda shares forty-seven species, five of which are otherwise recorded only from our waters, all of these, viz: *Ceratacanthus aurantiacus*, *Zonichthys fasciatus*, *Lagodon rhomboides*, *Synodus felens*, and *Eulamia obscura*, will doubtless prove to be members of the West Indian fauna, and be found to occur in the islands adjoining the coast of Florida. With the waters of the Pacific and Indian Oceans, it has in common thirty-two species. Should *Glyphidodon caelestinus* Solander, prove identical with *G. saxatilis*, another species will be added to this list.

The following are the numbers of species common to two or more faunas, the letters having significations as explained above:—B. W. U., 37; B. W. E., 36; B. W. P., 25; B. P. E., 22; B. U. E., 21; B. W. U. P., 3; B. W. U. E., 6; B. W. E. P., 7; B. W. U. P. E., 12.

The reptiles, it will be observed, are all pelagic except the lizard, which is peculiar to Bermuda and most closely related to the West African species of the genus.

CATALOGUE.

Class, REPTILIA.

Order, *Lacertilia*.

Eumeces longirostris Cope. Lizard. B.

Order, *Testudinata*.

Sphargis coriacea Rond. Leather Back Turtle.
Thalassochelys caouana L. Loggerhead Turtle.
Eretmochelys imbricata L. Hawksbill Turtle.
Chelonia mydas Schw. Green Turtle.

Class, PISCES.

Sub-class, TELEOSTEI.

Order, *Pediculati*.

Pterophryne picta (Val.) Goode. Devil Fish. W.
Pterophryne principis (Val.) Goode. W.

Order, *Plectognathi*.

Orthogoriscus mola (L.) Schn. Sun Fish. P. E. W. U.
Paradiodon hystrix (L.) Blkr. Sea Hedgehog. P. E. W.
Diodon novem-maculatus Cuv. P. W.
Chilomycterus reticulatus (L.) Bibron. Sea Porcupine. E. W.
Tetrodon rostratus Bloch. E.
Chlichthys Spengleri (Bloch) Goode. Swallow. E. W.
Ostracium quadricorne L. Cow Fish. E. W.
Ostracium triquetrum L. Cuckold. W.
Lactophrys trigonus (L.) Poey. U. W.
Balistes capricus Gmel. Turbot. P. E. W. U.
Balistes vetula L. Blue Turbot. W. U.
Canthidermis maculatus (Gmel) Blkr. Ocean Turbot. P. E. W.
Canthorhinus occidentalis (Gthr.) Goode. W. U.
Canthorhinus setifer Benn. var. beta. P. E. W. U.
Alutarius scriptus (Osbeck) Blkr. P. E. W.
Ceratacanthus aurantiacus (Müch.) Gill. B. U.

Order, *Lophobranchii*.

- Hippocampus antiquorum* Leach. Sea Horse. P. E. W.
Hippocampus guttulatus Cuv. Sea Horse.
Syngnathus Jonesii Gthr. B.

Order, *Hemibranchii*.

- Centriscus scolopax* L. E. U.
Fistularia serrata Cuv. P. U. B.
Aulostoma maculatum Val. Trumpet Fish. W.

Order, *Teleocephali*.

- Rhomboidichthys lunatus* (L.) Gthr. Plaice. W.
Rhomboidichthys ocellatus (Agass.) Gthr. W.
Hemirhombus aramaca (Cuv.) Gthr. W.
Hemirhombus soleasformis (Agass.) Gthr. W.
Lefroyia bermudensis Jones. B.
Brotula barbata (Schn.) Cuv. W.
 Undetermined gadoid fish.
Blennius crinitus C. & V. W.
Blennius (species undetermined).
Blennius (species undetermined).
Blennius (species undetermined).
Labrosomus nuchipinnis (Q. & G.) Gill. E. W. U.
Salarias texilis Q. & G. W.
Gobius soporator C. & V. Molly Miller. E. W.
Dactylopterus volitans (L.) Cuv. Flying Gurnard. E. W. U.
Scorpaena Plumieri Schn. Prickly Hind. W. U.
Scarus radians Val. Spanish Porgy. W.
Scarus Catesbyi Lac. W.
Pseudoscopus vetula (Schn.) Gill. Blumber. W.
Pseudoscopus quadrispinosus (C. & V.) Guich. Rainbow. W.
Pseudoscopus cœruleus (Bloch) Gthr. Gillingbore. W.
Pseudoscopus croicensis (Bloch) Goode. W.
Pseudoscopus psittacus (L.) Gthr. Parrot Fish. W.
 ? *Pseudoscopus acutus* Poey. Mud Belly. W.
Chærojulis radiatus (L.) Goode. Blue Fish. W.
Chærojulis bivittatus (Bloch) Poey. Slippery Dick. W.
Lachnolæmus falcatus (L.) Val. Hog Fish. W.
Harpe rufus (L.) Gill. Spanish Hog Fish; Spanish Lady Fish. E. W.
Julis bifasciatus (Bloch) Gthr. W.
Julis nitidissima Goode, (new species) 1. B.
Pomacentrus leucostictus M. & T. W.
Glyphidodon saxatilis L. Cow Pilot; Sergeant Major. E. W. U.
Eucinostomus gula (C. & V.) Goode. Shad. W.
Eucinostomus Lefroyi Goode. Long Bone Shad. W.
Acanthurus nigricans (L.) Gill. Doctor Fish. W. U.
Sarothrodus bimaculatus (Bloch) Poey. Four-eyed Fish. W.
Sarothrodus capistratus (L.) Poey. W.
Holacanthus ciliaris (L.) Lacep. Angel Fish. W. U.
Holacanthus tricolor (Bloch) Lacep. Black Angel Fish. W.
Xiphias gladius L. Sword Fish. E. W. U.
Thyrsites prometheus (C. & V.) Gthr. Cat Fish. E.
Orcynus alliteratus (Raf.) Gill. Mackerel. E. P. W. U.
Orcynus thynnus (L.) E. U.
Auxis Rochei (Risso) Gthr. Frigate mackerel. E. P. W.
Decapterus punctatus (Agass.) Gill. Round Robin. W. U.
Trachurops crumenophthalmus (Bloch) Gill. Goggle-Eye. P. W. U.
Paratractus pisquetos (C. & V.) Gill. Jack. W. U.
Carangus (near *C. falcatus*). Gwelly.
Carangus carangus (Bloch) C. & V. P. E. W.
Carangus dentex (Bloch) C. & V. E. W.
Trachynotus ovatus (L.) Gthr. Alewife. P. E. W. U.

- Trachynotus goreensis C. & V. E. W.
 Naucrates ductor L. Pilot Fish. E. P. W. U.
 Zonichthys fasciatus (Bloch) Sw. Bonito. U.
 Seriola Dumerilii Risso. Bonito. E. P.
 Coryphæna pelagica (L.) Risso. Dolphin. E.
 Nomeus Gronovii (Gmel.) Gthr. P. E.
 Centrolophus (species undetermined). E.
 Brama Rayi Schn. E.
 Malacanthus Plumieri (Bloch) C. & V. Whiting. W.
 Mulloides flavovittatus (Poey) Gthr. Goat Fish. W.
 Hypeneus maculatus (Bloch) Cuv. Goat Fish. W. U.
 Holocentrum sogo Bloch. Squirrel. W. U.
 Pareques acuminatus (Schn.) Gill. Cluck; Black Grunt. W.
 Calamus megacephalus (Sw.) Poey. Goat's Head Porgy. W.
 Calamus orbitarius Poey. Sheep's Head Porgy. W.
 Sargus variegatus (Lac.) Goode. Bream. E.
 Sargus argenteus C. & V. W.
 Lagodon rhomboides, (L.) Holbrook. Spanish Porgy. U.
 Pimelepterus Boscii Lac. Chub. E. U.
 Pristipoma (species undetermined). Sailor's Choice.
 Hæmylum capeuna (Licht.) Goode. White Grunt. W. U.
 Hæmylum xanthopteron C. & V. Yellow Grunt. W.
 Hæmylum macrostoma Gthr. Streaked Grunt. W.
 Lutjanus caxis (Schn.) Poey. Gray Snapper. W.
 Lutjanus buccanella (C. & V.). Black-Fin Red Snapper. W.
 Lutjanus aya (Bloch) Gill. Red Snapper. W.
 Lutjanus (species undetermined). Silk Snapper.
 Lutjanus (species undetermined). Schoolmaster.
 Ocyurus chrysurus (Bloch) Gill. Yellow Tail: Yelting. W.
 Trisotropis undulosus (Cuv.) Gill. W.
 var. quadratus Goode, MS. Black Rock Fish.
 var. venatus Goode, MS. Geg.
 var. rubromaculatus Goode, MS.
 Trisotropis guttatus (Schn.) Gill. Red Rock Fish. W.
 Trisotropis (species undetermined). Salmon Rock Fish. W.
 Epinephelus striatus (Bloch) Gill. Hamlet; Grouper. W.
 Epinephelus guttatus (Gmel.) Goode. Hind. W.
 Enneacentrus punctatus (L.) Poey. E. W.
 var. guativere Goode, MS. Coney; Butter Fish.
 var. ouatalibi Goode, MS. Nigger Fish.
 Petrometopon guttatus (L.) Gill. W.
 Serranus (species undetermined). Graysby.
 Serranus (species undetermined). Mutton Hamlet.
 Haliperca phebe Poey. Phebe. W.
 Hypoplectrus puella (Cuv.) Gill. Cataphebe. W.
 Rhypticus saponaceus (Schn.) Cuv. Soap Fish. E. W. U.
 Undetermined percoid fish.
 Elacate canadus (L.) Gill. Cubby-yew. P. E. W. U.
 Apogon imberbis (L.) Gthr.
 Priacanthus macrophthalmus C. & V. E. W. U.
 Echeneis remora L. Suck Fish. P. E. W. U.
 Leptecheneis naucrates (L.) Gill. Suck Fish. P. E. W. U.
 Sphyræna spet (Hauy) Goode. Barracuda. E.
 Sphyræna picuda Schn. Sennet. E. W.
 Regalecus gladius (Walb.) C. & V. Sea Serpent. E. P.
 Mugil liza Val. Mullet. W.
 Atherina harringtonensis Goode, (new species) 3. Russ Fry. B.
 Belone Jonesii Goode, (new species) 2. Hound Fish. B.
 Belone hians C. & V. Long Gar Fish. W.
 Hemirhamphus Pleii Val. Gar Fish. W.
 Exocoetus exiliens Gmel. Butterfly Fish. W. U.
 Exocoetus bahiensis Rans. Flying Fish. P. W.

Exocoetus Roberti *M. & T.* Flying Fish. W.
Exocoetus Rondeletii *C. & V.* Flying Fish. E. W.
Cypselurus furcatus (*Mitch.*) *Weinl.* Flying Fish. P. W. U.
Fundulus Bermudæ *Gthr.* Pond Mullet. B.
Fundulus rhizophoræ *Goode*, (new species) 4. B.
Synodus lacerta *C. & V.* Snake Fish. E.
Synodus foetens (*L.*) *Gill.* Snake Fish. U.
Trachinocephalus myops (*Schn.*) *Gill.* Snake Fish. P. U.
Albula oonorhynchus *Schn.* Bone Fish. P. E. W. U.
Megalops thrissoides (*Schn.*) *Gthr.* Tarpon. W. U.
Sardinella anchovia *Val.* Anchovy. W.
Harengula macrophthalma (*Ranz.*) *Goode.* Pilchard. W.
Opisthonema thrissa (*L.*) *Gill.* Herring. W. U.
Engraulis chcerostomus *Goode.* Hog Mouth Fry. B.
Carassius auratus (*L.*) *Btkr.* Gold Fish.

Order, *Apodea*.

Anguilla rostrata (*Les.*) *DeKay.* Pond Eel. P. U.
Gymnothorax moringa (*Cuv.*) *Goode.* Speckled Maray. E. W.
Gymnothorax punctatus (*Cust.*) *Goode.* Small Yellow Spotted Maray. P.
Thyrsoidea maculipinnis *Kaup.* Green Maray. W.
Muraena Sanctæ-Helenæ, *Gthr.* E.
Echidna catenata (*Bloch*) *Btkr.* W.
Ophisurus longus *Poey.* Sand Eel. W.
Ophichthys triserialis (*Kaup.*) *Gthr.* Spotted Sand Eel. P. W.
Leptocephalus (species undetermined).

Sub-class, GANOIDEA.

Order, *Glaniosomi*.

Acipenser, sp. Sturgeon.

Sub-class, ELASMOBRANCHII.

Order, *Raiz*.

Ætobatis narinari (*Euphr.*) *M. & H.* Whip Ray. P. W. U.

Order, *Squali*.

Isuropsis, sp. Mackerel Shark.
Sphyrna zygsena (*L.*) *M. & H.* Hammer-Head Shark. P. E. W. U.
Eulamia obscura (*Les.*) *Gill.* Shark. U.
Mustelus canis (*Mitch.*) *DeKay.* Nurse Shark. U.
Ginglymostoma cirratum (*Gmel.*) *M. & H.* W. U.
 Curious form in collection of J. M. Jones, genus and species undetermined.

Class, LEPTOCARDII.

Order, *Cirrostromi*.

Branchiostoma lubricum *Costa.* P. E. W. U.

DESCRIPTIONS OF NEW SPECIES.

1. *Julis nitidissima*, sp. nov.

This species agrees in many particulars with that described by Dr. Gunther under the name *Julis nitida*, from Jamaican specimens in the British Museum.* There are, however, various diagnostic characters which it seems desirable to express in the form of a description, at the same time designating the Bermuda fish by a distinct specific name which, by its similarity to that of the species which it so much resembles,

* Catalogue of Fishes in the British Museum, vol. iv, p. 190, 1862.

will indicate my suspicion that, upon comparison of the specimens, the two species may prove to be identical.

The fish is quite small, rarely exceeding three inches in length, and is very abundant among the outer reefs, swimming among the Gorgonias and Plexauras, six or eight fathoms below the surface, a very conspicuous object by reason of its brilliant yellow colors. It is extremely shy and it was only after repeated trials that I succeeded in capturing a single specimen, which took a small hook baited for chubs.

The diagnostic characters which separate *Julis nitida* from *Julis nitidissima* appear to consist in (1) the relative proportions of head and body, (2) the relative proportions of pectorals and ventral fins, (3) the number of rows of scales below lateral line, and (4) in the coloration. The latter character is, however, of minor importance, it being quite possible that a faded museum specimen of the fish before me might have assumed the colors described by Dr. Günther.

The specimen described is small, though apparently adult, its total length being about three and one-half inches (m. 0.103). The body is much compressed, its greatest width (m. 0.009) being about three-eighths of its greatest height (m. 0.023), which is contained in the total length about four and one half times. Length of head (m. 0.025) contained in total length four and one half times (in fresh specimen three and three quarters, it having been contracted by preservation in spirits). No posterior canine teeth. Length of snout (m. 0.008) equal to length of operculum (m. 0.008) and to four-fifths of greatest width of head (m. 0.01). Width of interorbital area (m. 0.007) somewhat less. Orbit circular, its diameter (m. 0.005) equal to greatest height of dorsal.

Dorsal inserted slightly in advance of origin of ventral at a distance (m. 0.003) equal to three times the greatest width of the head, length of base (m. 0.027) slightly greater than length of head. Length of first dorsal spine (m. 0.004) half the length of snout; greatest height of spinous dorsal (m. 0.005) equal to diameter of orbit. Greatest height of soft dorsal (m. 0.008) double that of first dorsal spine.

Distance of anal from snout (m. 0.052) twice the length of head, which is about equal to length of anal base (m. 0.024). First anal spine (m. 0.003) half the length of second anal spine (m. 0.007) and one-third the length of longest ray (m. 0.01).

Caudal lobes slightly produced, their length (m. 0.016) two-thirds that of the head and twice that of the snout. Least height of tail (m. 0.012) equal to length of ventrals.

Pectoral inserted at a distance from the snout (m. 0.028) equal to the length of the base of the dorsal, its length (m. 0.021) slightly less than the greatest height of the body.

Ventrals inserted at a distance from the snout (m. 0·081) a trifle greater than the dorsal. Length (m. 0·012) three-sevenths of that of the pectorals, not two-thirds as in *Julis nitida*—the most important of the diagnostic characters.

Radial formula, D. viii, 13. A. ii, 11.

Number of scales in lateral line, 26; in transverse line, 2:9.

Coloration:—Top of head and back brilliant sulphur-yellow; this color, above the pectorals, extending to middle of row of scales beneath lateral line, also present upon cheeks, opercles, and lips, and to ventral fins. A semicircular spot of the same occupying the major part of the caudal fin, extending posteriorly quite to the margin. Throat, belly and sides of tail white with a rich, deep roseate tinge. A band of maroon, as wide as the eye, crossing the snout passes back through the eye nearly to the tip of the opercular flap. A series of six broad irregular blotches of bottle green, somewhat quadrate in outline, each covering about the width of four transverse rows of scales, extends from the opercle, above the pectorals and across the downward curve of the lateral line to the base of the caudal. The posterior blotch is prolonged upon the outer rays of the caudal to the tips forming a crescent shaped figure. Dorsal fin at margin transparent, white, at the base yellow, the intermediate space brownish green, deeper in shade anteriorly, and between the second and fifth ray, forming a blotch, similar to that indicated in the description of *Julis nitida*. Pectorals transparent. Anal rose color with yellow transparent margin. Ventrals yellow. Caudal, as hitherto described, yellow with exterior lobes brownish green.

2. *Belone Jonesii*, sp. nov.

The total length of the specimen selected as a type of the species is eighteen inches (m. 0·60).

The body is slightly compressed, its greatest height, above the ventrals (m. 0·03) one-twentieth of total length, its greatest width (m. 0·022) about one twenty-eighth of the same. Free portion of tail somewhat depressed, quadrate, its height (m. 0·01) one-third of greatest height of body. Caudal carinæ moderate.

Length of head (m. 0·196) contained about three and two-fifths times in total length, and about three and one-fourth of length without caudal. Upper surface of head somewhat depressed, striated, with a broad shallow median groove, which expands posteriorly into a wide, somewhat depressed triangular area. Superciliary region sharply striated.

Length of snout (m. 0·12) equal to length of maxillary (m. 0·12), contained five times in total length, and containing post-orbital length of head (m. 0·04) thrice. Length of mandible (m. 0·14) slightly less than distance from snout to nape (m.

0.157) and ten times the vertical diameter of the eyes (m. 0.014). Lower jaw projects four millimeters beyond the tip of upper jaw. Horizontal diameter of eye (m. 0.019) equal to width of interorbital area (m. 0.019) and to length of operculum (m. 0.019) and about one-eighth of length of head.

Teeth large, sharp, not very close. Maxillary teeth about sixty, the largest three millimeters in length; mandibular teeth about sixty, the largest two millimeters in length. Vomerine teeth none.

Distances from insertion of dorsal to snout (m. 0.433) slightly greater than that of anal (m. 0.431). Length of dorsal (m. 0.097) equal to distance from insertion of dorsal to insertion of ventral. Greatest height of dorsal (m. 0.026) equal to greatest width of head (m. 0.025).

Anterior rays longest, their length (m. 0.03) one-tenth of distance from ventral to snout. Length of last ray (m. 0.013) about one-third of that of anterior rays.

Length of anal (m. 0.085) less than that of dorsal. Posterior rays half the length (m. 0.007) of posterior dorsal ray. Anal fin terminating anteriorly to dorsal at a distance equal to length of first dorsal ray.

Ventrals inserted at distance from snout (m. 0.34) greater than half the length of body, and midway between anterior margin of orbit and base of median caudal rays. Length (m. 0.028) slightly exceeding greatest width of head.

Pectoral inserted at distance from snout (m. 0.191) equal to ten times width of interorbital space; its length (m. 0.045) slightly exceeding postorbital length of head.

Caudal forked, the length of inferior rays (m. 0.053) exceeding that of superior rays (m. 0.04) by about the length of median rays (m. 0.012).

Radial formula—D, 9 + 14 : A, 14 + 7 : C, 5 + 10—9 + 6 : P, 13 : V, 5.

Branchiostegals, 12.

Number of scales in lateral line (estimated), 380.

Coloration:—Above deep green, below silvery white, opercles and cheeks silvery white. Anterior rays of dorsal and pectoral fins, with caudal carinæ blackish.

I take great pleasure in giving to this species the name of my friend Mr. J. Matthew Jones, F.L.S., President of the Nova Scotian Institute of Natural Sciences, who has for two winters been associated with me in the study of the Bermudian fauna.

The "Hound Fish," as it is called in Bermuda, is a graceful, active species, attains the length of three feet or more. It frequents swift tide courses where it preys upon small fishes, particularly the schools of *Atherina* and *Engraulis*. It takes the hook well.

3. *Atherina Harringtonensis*, sp. nov.

The length of the specimen selected as type of the species is one and one-half inches (m. 0.055), the measurement being that of a specimen which has been in strong alcohol for four months. From the discrepancy between this measurement and a partial set of measurements taken from a fresh specimen of the same species I infer that the shrinkage in the length of the body has been quite considerable, probably from six to eight millimeters. The proportions given below are taken from the alcoholic specimen. In the study of fresh specimens allowance should be made for discrepancies caused by this shrinkage. The proportions of the head do not appear to have been changed by the alcohol.

The height of body (m. 0.07) is contained in length about eight times ($8\frac{1}{2}$ in fresh specimen), its width about twice in its height.

Length of head (m. 0.011) about equal to length of caudal peduncle (m. 0.01) and contained five times in total length ($5\frac{1}{4}$ in fresh specimen).

Diameter of eye (m. 0.004) about one-third the length of head, the length of snout somewhat less than that of post-orbital portion of head, also equal to length of maxillary, and slightly greater than width of inter-orbital area (m. 0.0037). Greatest width of head (m. 0.006) about double the length of snout. Length of mandible (m. 0.005) about equal to that of post-orbital portion of head. Cleft of mouth quite oblique, maxillary extending to the vertical from anterior margin of orbit. Lower jaw slightly the longer; mouth very protractile; teeth small, inconspicuous.

Spinous dorsal inserted behind extremity of ventral, at a distance from snout (m. 0.03) greater here than half the length of body. Anal directly beneath dorsal, their lengths of base (m. 0.007) being equal. Greatest height of anal (m. 0.005) greater than that of dorsal (m. 0.003).

Length of ventral (m. 0.006) two-thirds that of pectoral (m. 0.009) which exceeds three-fourths that of head.

Radial formula:—D. VII, I, 10: A. I, 11.

Number of scales in lateral line about forty-five; in transverse line about six.

Coloration:—Greenish white, a narrow silvery band extending from gill-opening to tail, covering the third row (from above) of scales and the edges of the contiguous rows above and below.

The "Russ Fry" occurs in immense quantities in all the lagoons and protected bays of the Bermudas. The schools swim near the surface of the water and are preyed upon by all the carnivorous species. They are particularly abundant in the beautiful little lagoon called Harrington Sound.

4. *Fundulus rhizophoræ*, sp. nov.

The length of the specimen selected as type is six centimeters. Height of body at insertion of pectorals (m. 0·015) one-fourth of total length, at ventral (m. 0·009) about one seventh, at base of caudal (m. 0·0075) one-eighth.

Head much depressed, its length (m. 0·017) contained three and one-eighth in total. Snout broad, obtuse, depressed, its length (m. 0·006) slightly longer than orbital diameter and contained in length of head about three times. Inter-orbital area broad and flat, its width (m. 0·007) less than length of post-orbital portion of head (m. 0·009) and greater than length of operculum (m. 0·006). Diameter of orbit (m. 0·0045) half the length of post-orbital tract.

Origin of dorsal fin equidistant from tip of caudal and anterior margin of snout, and over the eighteenth scale of lateral line. Distance from snout (m. 0·018) three-tenths of total length; extreme height (m. 0·006) one-tenth, and length of base (m. 0·008) two-fifteenths.

First anal ray below third dorsal ray; length of base (m. 0·005) one-twelfth of total length. Extreme height (m. 0·011) double length of base, and nearly double the extreme height of dorsal.

Ventral inserted slightly in advance of middle of body (distance from snout, m. 0·029), its length (m. 0·007) equal to width of inter-orbital area.

Pectoral inserted at distance from snout (m. 0·02) equal to one-third of total length; length (m. 0·009) equal to post-orbital length of head.

Length of caudal (m. 0·01) equal to height of anal and about one-sixth of total.

Radial formula:—D. 12 : A. 11.

Number of scales in lateral line thirty-five; rows in transverse line twelve or thirteen.

Coloration:—Ground color light tawny yellow with about fifteen regular transverse bands of greenish brown, each about two scales in width, obscure anteriorly but distinct upon posterior half of body.

This little minnow occurs abundantly in Basden Pond, a brackish marshy body of water at the eastern end of the main island, among the arching roots of the mangrove (*Rhizophora mangle*). It is known as the "Pond Mullet," but may more appropriately be called the Mangrove Minnow. The specimens described are young males, not in breeding colors.

