

SUMMARY OF THE SCIENTIFIC RESULTS OF THE FISH COMMISSION EXPEDITION TO PORTO RICO.

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The expedition of the United States Fish Commission steamer *Fish Hawk* to Porto Rico in the winter of 1898-99 had for its primary object a general study of the aquatic resources of that island. The fishes and fisheries naturally received most attention, but every opportunity was embraced to make extensive collections in all other groups of aquatic animals. A considerable collection of algae was also made.

As stated in the preface to this Bulletin, these collections were assigned, for study and report, to specialists in the various groups. Seventeen reports have been received from those who kindly undertook the critical study of the collections assigned them. These reports were each first published as separate pamphlets, and all are now brought together in the two volumes constituting the Bulletin of the Fish Commission for 1900.

Owing to conditions lying without the control of the Commission, no reports have been received from the specialists to whom the few remaining groups were assigned.

The *Fish Hawk* arrived in the harbor of San Juan, Porto Rico, on the morning of January 2, 1899, and the investigations were begun by the naturalists on the afternoon of that day. From San Juan the vessel cruised entirely around the island, making stops of one to several days each at Aguadilla, Mayaguez, Puerto Real de Cabo Rojo, Ponce, Arroyo, Hucares, Fajardo, Isabel Segunda on Vieques Island, and at Ensenada Honda, Culebra Island. Two trips were made to St. Thomas for coal. With these places as centers of operation, work was done by the vessel and by shore parties at various places in the vicinity of each. Expeditions were made by shore parties to Arecibo, Bayamon, Caguas, Yauco, Aibonito, and El Yunque.

Returning to San Juan February 21, the investigations were brought to a close, and at noon of the next day the *Fish Hawk* sailed for Key West.

The number of days spent about the island was therefore fifty-two, but the actual number of days during which investigations could be carried on was only about thirty-eight. When the brief time devoted to the investigations is considered, the results are highly satisfactory, as is shown by the summary here given.

The results have been published in 20 different articles or special reports, covering a total of nearly 1,000 pages, with 51 colored plates, 75 other plates, 195 text figures, and 3 maps.

An examination of the several reports shows that the collections made by the expedition contain a total of 1,582 species of animals, among which are 9 new genera and 194 new species. The number of species obtained in each group, and the number of new genera and species in each, are shown in the following tabular statement:

Group.	Total number of species listed.	Number of new genera.	Number of new species.
Fishes	291	3	33
Mollusks	653		42
Brachyurans and macrurans	221	2	27
Anomurans	53	1	9
Stomatopods	5		2
Isopods	17	2	8
Cirripeds	4		
Polychaetous annelids	85		32
Leeches	2	1	2
Nemerteans	8		3
Echinoderms	87		8
Aleyonarians	26		5
Stony corals	32		2
Actinians	13		1
Sponges	49		20
Foraminifera	36		
	1,582	9	194

The following is a complete list of the papers resulting from the *Fish Hawk* expedition, together with a list of all the new genera and species described in each. Following each title is given the actual date of publication of each paper in which new species are described, and following each new name is given the page upon which it occurs in the original paper:

WILCOX, W. A.—Notes on the Foreign Fishery Trade and Local Fisheries of Porto Rico. <Rept. U. S. Fish Com. for 1899, pp. 1 to 34, plates 1 to 6.

EVERMANN, BARTON WARREN, and MARSH, MILLARD CALEB.—Descriptions of new genera and species of Fishes from Porto Rico. <Report U. S. Fish Com. for 1899, pp. 351 to 362. Date of publication, December 19, 1899.

	Page.		Page.
Lyeodontis jordani	352	Malacoctenus eulebre	357
Stolephorus gilberti	352	Malacoctenus moorei	358
Stolephorus garmani	352	Malacoctenus puertoricensis	358
Prionodes baldwini	353	Auchenistius	359
Calamus kendalli	354	Auchenistius stahl	359
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Sicydium caguaita	355	Auchenopterus rubescens	360
Gobius bayamonensis	355	Auchenopterus cingulatus	361
Bollmannia boqueronensis	356	Auchenopterus fajardo	361
Microgobius meeki	356	Coralliozetus	362
Gillias	357	Coralliozetus cardonæ	362
Gillias jordani	357		

EVERMANN, BARTON WARREN.—General report on the investigations in Porto Rico of the United States Fish Commission steamer *Fish Hawk* in 1899. <Bull. U. S. Fish Com. for 1900, part 1, pp. 1 to 26.

WILCOX, WILLIAM A.—The Fisheries and Fish Trade of Porto Rico. <Bull. U. S. Fish Com. for 1900, part 1, pp. 27 to 48, with 5 text illustrations.

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EVERMANN, BARTON WARREN, and MARSH, MILLARD CALEB.—The Fishes of Porto Rico. <Bull. U. S. Fish Com. for 1900, part 1, pp. 49 to 350, colored plates 1 to 49, 3 maps, and 142 text figures. Date of publication, December 29, 1900.

Page.		Page.	
71	Aphthalmichthys caribbeus *	275	Scorpaena albifimbria
73	Sphagebranchius ophioneus	276	Scorpaena bergii
78	Lycodontis albimentis	279	Pontinus beanorum
89	Stolephorus lyolepis	318	Emblemaria pandionis
143	Apogon sellicauda	326	Citharichthys arenaceus
158	Mycteroperca bowersi	339	Haliutichthys smithii
177	Neomænis megalophthalmus		

DALL, WILLIAM HEALY, and SIMPSON, CHARLES TORREY.—The Mollusca of Porto Rico. Bull. U. S. Fish Com. for 1900, part 1, pp. 351-524, plates 53 to 58. Date of publication, November 29, 1901.

Page.		Page.	
365	Tethys cervina	424	Cerithiopsis pupa
367	Pleurobranchius lacteus	432	Omalaxis exquisita
382	Terebra juanica	433	Rissoa epima
385	Drillia ? actinoeyela	433	Rissoa portoricana
386	Drillia gundlachi	434	Megalomastoma croceum curtum
386	Drillia ponciana	440	Cocculina portoricensis
386	Drillia melonesiana	452	Ischnochiton hozonis
386	Drillia interpleura	465	Pecten mayaguezensis
388	Mangilia asarea	472	Saxicavella sagrinata
389	Mangilia aguadillana	474	Sphenia antillensis
391	Oliya caribaensis	479	Tellina persica
393	Marginella evadne	481	Macoma pseudomera
401	Nassarina metabrunnea	485	Meretrix aresta
401	Phos oxyglyptus	486	Meretrix culebrana
405	Columbella calliglypta	487	Circe insularis
405	Columbella perpicta	489	Cardium serratum multilineatum
412	Scala eulita	490	Thyasira conia
413	Eulima patula	492	Lucina phenax
414	Niso portoricensis	493	Myrtea pristiphora
414	Turbonilla portoricensis	496	Diplodonta notata
415	Turbonilla insularis		

RATHBUN, MARY J.—The Brachyura and Macrura of Porto Rico. <Bull. U. S. Fish Com. for 1900, part 2, pp. 1 to 127 and 129* to 137*, colored plates 1 and 2, 24 text figures. Date of publication, November 28, 1901.

Page.		Page.	
9	Tetraplax	92	Callianassa marginata
10	Chasmocarcinus cylindricus	92	Callianassa minima
20	Pinnotheres ostracarius	95	Axius defensus
21	Pinnixa minuta	96	Axius inaequalis
22	Dissodactylus encopei	98	Homoriscus
31	Hexapanopeus quinqueidentatus	98	Homoriscus portoricensis
39	Pilumnus nudimanus	102	Parapeneus americanus
41	Pilumnus marshi	108	Alpheus armatus
56	Collodes levis	111	Jousseaumca trigona
63	Thoe aspera	112	Automate evermanni
65	Telocophrys ornatus	115	Hippolysmata moorei
67	Mithrax plumosus	117	Pandulus longicauda
80	Leiolambrus nitidus	120	Ortmannia
83	Heterocrypta lapidea	122	Pontonia grayi
90	Clythrocerus perpusillus	122	Corallicaris atlantica

BENEDICT, JAMES E.—The Anomuran Collections made by the *Fish Hawk* expedition to Porto Rico. <Bull. U. S. Fish Com. for 1900, part 2, pp. 129 to 148, plates 3 to 6, 3 text figures. Date of publication, October 4, 1901.

Page.		Page.	
135	Pisosoma angustifrons	144	Paguristes moorei
135	Pisosoma serrata	144	Paguristes puncticeps
139	Pagurus marshi	145	Paguristes rectifrons
141	Pagurias	146	Paguristes grayi
143	Paguristes tenuirostris	146	Munida evermanni

* This species was described by Doctors Gill and Smith in Science, new series, vol. XI, No. 286, p. 973, June 22, 1900, from a specimen obtained by Mr. George M. Gray at San Geronimo, Porto Rico.

BIGELOW, ROBERT PAYNE.—The Stomatopoda of Porto Rico. <Bull. U. S. Fish Com. for 1900, part 2, pp. 149 to 160, 13 text figures. Date of publication, October 4, 1901.

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BIGELOW, MAURICE A.—The Cirripedia collected near Porto Rico by the *Fish Hawk* expedition in 1898-99. <Bull. U. S. Fish. Com. for 1900, part 2, pp. 177 to 180.

TREADWELL, AARON L.—The Polychætous Annelids of Porto Rico. <Bull. U. S. Fish. Com. for 1900, vol. 2, pp. 181 to 210, 81 text figures. Date of publication, October 4, 1901.

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MOORE, J. PERCY.—Descriptions of two new Leeches from Porto Rico. <Bull. U. S. Fish Com. for 1900, part 2, pp. 211 to 222, plates 12 and 13. Date of publication, October 4, 1901.

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CLARK, HUBERT LYMAN.—The Echinoderms of Porto Rico. <Bull. U. S. Fish Com. for 1900, part 2, pp. 231 to 263, plates 14 to 17. Date of publication, October 4, 1901.

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HARGITT, CHARLES W., and ROGERS, CHARLES G.—The Aleyonaria of Porto Rico. <Bull. U. S. Fish Com. for 1900, part 2, pp. 265 to 287, plates 1 to 4. Date of publication, December 13, 1901.

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DUERDEN, J. E.—Report on the Actinians from the vicinity of Porto Rico. <Bull. U. S. Fish Com. for 1900, part 2, 13 plates, 4 text figures. Date of publication, April 8, 1902.

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WILSON, H. V.—The Sponges collected in Porto Rico in 1899 by the United States Fish Commission steamer *Fish Hawk*. <Bull. U. S. Fish Com. for 1900, part 2, pp. 375-399, 30 text figures. Date of publication, March 28, 1902.

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