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A LIST OF PARASITES FROM MARINE AND COASTAL ANIMALS OF FLORIDA

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A research program² to study the diseases and parasites of marine and coastal animals has been in progress since September 10, 1955. The following list of parasites represents species collected by the authors and by Florida State Conservation officers up to January 1, 1959. Table I is a parasite-host list. It contains the scientific names of the parasites as well as the phyla and families to which the parasites belong. Also, the scientific names of the hosts and the localities from which the hosts were collected are included in Table I.

A list of selected references important in making identifications and designations of parasites and hosts is given at the end of this paper.

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TABLE I
Parasite-Host List

PARASITE	HOST(S)	LOCALITY
PHYLUM ANNELIDA		
Hirudinea		
Piscicolidae		
<i>Myzobdella lugubris</i> Leidy	<i>Callinectes sapidus</i> (Rathbun)	Bulow Creek, Volusia County
PHYLUM ARTHROPODA		
Isopoda		
Bopyridae		
<i>Bopyrella richardsonae</i> Nierstrasz, Brender a Brandis (<i>Sp. inq.</i>)	<i>Alpheus heterochaelis</i> (Say)	Boca Ciega Bay
<i>Bopyrina abbreviata</i> Richardson	<i>Hippolyte</i> sp.	Maximo Point, Boca Ciega Bay
<i>Bopyrina urocardis</i> Richardson	<i>Periclimenes longicaudatus</i>	Maximo Point, Boca Ciega Bay
<i>Probopyrus floridensis</i> Richardson	<i>Palaeomonetes paludosus</i> (Gibbes)	Cross Bayou at Park Blvd., Pinellas County
<i>Probopyrus pandalicola</i> (Packard)	<i>Palaeomonetes intermedius</i> Holthius (<i>Sp. inq.</i>)	Mullet Key, Boca Ciega Bay

¹Contribution No. 38.

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TABLE I—*Continued*

PARASITE	HOST(S)	LOCALITY
<i>Urobopyrus</i> sp. (n. sp.)	New genus and new species of Processidae (according to Dr. F. A. Chace, Jr.) Copepoda Lernaeopodidae	Boca Ciega Bay
<i>Brachiella concava</i> C. B. Wilson	<i>Dasyatis sabina</i> (Le Sueur) Euryphoridae	Bayboro Harbor, Tampa Bay
<i>Gloiopotes ornatus</i> C. B. Wilson	<i>Istiophorus americanus</i> (Cuv. and Val.)	15 miles offshore from Pass-a-Grille, Gulf of Mexico
PHYLUM PLATYHELMINTHES		
	Cestoda	
	Bothriocephalidae	
<i>Bothriocephalus manubriiformis</i> Linton, 1889	<i>Istiophorus albicans</i> (Latrielle)	15 miles offshore from Pass-a-Grille, Gulf of Mexico
	Otobothriidae	
<i>Poecilancistrum robustum</i> (Chandler, 1935) Dollfus, 1942	<i>Cynoscion nebulosus</i> (Cuv. and Val.)	Boca Ciega Bay, Florida
	Pterobothriidae	
<i>Eutetrarhynchus lineatus</i> (Linton, 1909) Dollfus, 1942	<i>Ginglymostoma cirratum</i> (Bonnaterre)	Sunshine Skyway, Tampa Bay
	Lacistrorhynchidae	
<i>Grillotia</i> sp.	<i>Ginglymostoma cirratum</i> (Bonnaterre)	Sunshine Skyway, Tampa Bay
	Trematoda	
	Acanthocolpidae	
<i>Lepidauchen hysterospina</i> Manter, 1931	<i>Lagodon rhomboides</i> (Linn.)	Bayboro Harbor, Tampa Bay
<i>Manteria brachyderus</i> (Manter, 1940) Cabellero, 1950	<i>Oligoplites saurus</i> (Bloch and Schneider)	Bayboro Harbor, Tampa Bay
<i>Pleorchis americanus</i> Luhe, 1906	<i>Cynoscion nebulosus</i> (Cuv. and Val.)	Bayboro Harbor, Tampa Bay
<i>Stephanostomum ditrematis</i> (Yamaguti, 1939) Manter, 1947	<i>Caranx hippos</i> (Linn.)	Bayboro Harbor, Tampa Bay
<i>Stephanostomum imparaspine</i> (Linton, 1905) Manter, 1940	<i>Rachycentron canadus</i> (Linn.)	8 miles offshore from John's Pass, Gulf of Mexico
<i>Stephanostomum promicropsi</i> Manter, 1947	<i>Epinephelus itajara</i> (Lichenstein)	Tampa Bay
<i>Stephanostomum</i> sp. (metacercaria)	<i>Mugil cephalus</i> Linn.	St. Lucie River
<i>Stephanostomum</i> sp. (metacercaria)	<i>Acanthostracion tricornis</i> (Linn.)	Bayboro Harbor, Tampa Bay
<i>Stephanostomum</i> sp. (metacercaria)	<i>Microgobius gulosus</i> (Girard)	Mullet Key, Boca Ciega Bay
<i>Tormopsolus filiformis</i> Sogandares & Hutton, 1959	<i>Rachycentron canadus</i> (Linn.)	8 miles offshore from John's Pass, Gulf of Mexico
	Bivesiculidae	
<i>Bivesicula tarponis</i> Sogandares & Hutton, 1959	<i>Megalops atlanticus</i> (Cuv. and Val.)	1 mile off St. Petersburg Beach, Gulf of Mexico
	Brauninidae	
<i>Braunina cordiformis</i> Wolfe, 1903	<i>Tursiops truncatus</i> (Montague) Bucephalidae	St. Petersburg Beach
	Bucephalidae	
<i>Bucephaloides bennetti</i> Hopkins and Sparks, 1958	<i>Paralichthys albigutta</i> (Jordan and Gilbert)	Tarpon Key, Boca Ceiga Bay
<i>Bucephaloides caecorum</i> Hopkins, 1956	<i>Bairdiella chrysura</i> (Lacepede)	Tarpon Key, Boca Ciega Bay
<i>Bucephalus varicus</i> Manter, 1940	<i>Caranx hippos</i> (Linn.)	Bayboro Harbor, Tampa Bay
<i>Prosorhynchus</i> sp. (metacercaria)	<i>Chilomycterus schoepfi</i> (Walbaum)	Cabbage Key, Boca Ciega Bay
<i>Rhipidocotyle transversale</i> Chandler	<i>Strongylura timucu</i> (Walbaum) (sp. inq.)	Bayboro Harbor, Tampa Bay
	Clinostomatidae	
<i>Clinostomum attenuatum</i> Cort, 1913	<i>Phalacrocorax auritus floridanus</i> (Audubon)	Bayboro Harbor, Tampa Bay

TABLE I—*Continued*

PARASITE	HOST(S)	LOCALITY
<i>Clinostomum</i> sp. (metacercaria)	<i>Mollienisia latipinna</i> (Le Sueur)	Cross Bayou at Park Blvd., Pinellas County
	Cryptogonimidae	
<i>Siphodera vinalwardsi</i> (Linton, 1901) Linton, 1910	<i>Opsanus beta</i> (Goode and Bean)	Mullet Key, Boca Ciega Bay
	Cyathocotylidae	
<i>Mesostephanus appendiculatoides</i> (Price, 1934) Lutz, 1935	<i>Pelecanus occidentalis carolinensis</i> (Gmelin)	Boca Ciega Bay and Gasparilla Sound Charlotte Harbor
	<i>Mugil cephalus</i> Linn. (intermed. host)	numerous Florida localities
	<i>M. curema</i> Cuv. and Val. (intermed. host)	numerous Florida localities
	<i>M. trichodon</i> Poey (intermed. host)	numerous Florida localities
<i>Mesostephanus</i> sp.	<i>Fregata magnificens rothschildi</i> Mathews	Jug Creek Shoal, Charlotte Harbor
	<i>Phalacrocorax auritus floridanus</i> (Audubon)	Bayboro Harbor, Tampa Bay
	Diplostomatidae	
<i>Hysteromorpha triloba</i> (Rudolphi, 1819) Lutz, 1931	<i>Phalacrocorax auritus floridanus</i> (Audubon)	Bayboro Harbor, Tampa Bay
	Echinostomatidae	
<i>Stephanophrora denticulata</i> (Rudolphi, 1802)	<i>Larus argentatus smithsonianus</i> Coues.	2 miles east of St. Petersburg, Tampa Bay
	Fellodistomatidae	
<i>Steringotrema corpulentum</i> (Linton, 1905) Manter, 1931	<i>Lagodon rhomboides</i> (Linn.)	Bayboro Harbor, Tampa Bay
<i>Tergestia pectinata</i> (Linton, 1905) Manter, 1940	<i>Bairdiella chrysura</i> (Lacepede)	Tarpon Key, Boca Ciega Bay
	<i>Caranx crysos</i> (Mitchill)	Bayboro Harbor, Tampa Bay
	<i>Oligoplites saurus</i> (Bloch & Schneider)	Bayboro Harbor, Tampa Bay
	Haploporidae	
<i>Megasolena archosargi</i> Sogandares & Hutton, 1959	<i>Archosargus probatocephalus</i> (Walbaum)	Bayboro Harbor, Tampa Bay
	Hemiuridae	
<i>Dinurus tornatus</i> (Rudolphi, 1899) Looss, 1907	<i>Coryphaena equiselis</i> Linn. (sp. inq.)	15 miles west of Pass-a-Grille, Gulf of Mexico
<i>Dinurus longisinus</i> Looss	<i>Coryphaena equiselis</i> Linn. (sp. inq.)	15 miles west of Pass-a-Grille, Gulf of Mexico
<i>Lecithochirium microstomum</i> Chandler, 1935	<i>Coryphaena equiselis</i> Linn.	15 miles west of Pass-a-Grille, Gulf of Mexico
<i>Parahemiurus merus</i> (Linton, 1910) Woolcock, 1935	<i>Harengula pensacolae</i> Goode and Bean	Bayboro Harbor, Tampa Bay
	<i>Urophycis floridanus</i> Dean and Dresel	Bird Key, Boca Ciega Bay
<i>Sclerodistomum sphaeroides</i> Manter, 1947	<i>Chilomycterus schoepfi</i> (Walbaum)	Cabbage Key and Bird Key, Boca Ciega Bay
	Heterophyidae	
<i>Ascotyle</i> sp.	<i>Casmerodius albus egretta</i> (Gmelin)	Tarpon Key, Boca Ciega Bay
	<i>Nycticorax nycticorax hoactli</i> (Gmelin)	Tarpon Key, Boca Ciega Bay
	<i>Hydranassa tricolor ruficollis</i> (Gosse)	Tarpon Key, Boca Ciega Bay
<i>Cryptocotyle lingua</i> (Creplin, 1825) Fischöeder, 1903	<i>Larus argentatus smithsonianus</i> Coues.	2 miles east of St. Petersburg, Tampa Bay
<i>Galactosomum cochleariforme</i> (Rudolphi, 1819)	<i>Fregata magnificens rothschildi</i> Mathews	Gasparilla Sound, Charlotte Harbor
<i>Galactosomum</i> sp.	<i>Larus atricilla</i> Linn.	2 miles east of St. Petersburg, Tampa Bay
	<i>Pelecanus occidentalis</i> <i>carolinensis</i> (Gmelin)	Gasparilla Sound, Charlotte Harbor

TABLE I—*Continued*

PARASITE	HOST(S)	LOCALITY
<i>Parascocotyle diminuta</i> (Stunkard and Haviland, 1924) Hutton & Sogandares, 1958	<i>Phalacrocorax auritus floridanus</i> (Audubon)	Bayboro Harbor, Tampa Bay
	<i>Hydranassa tricolor ruficollis</i> (Gosse)	Tarpon Key, Boca Ciega Bay
<i>Phagicola longa</i> (Ransom, 1920) Price, 1932	<i>Pelecanus occidentalis carolinensis</i> Gmelin	Gasparilla Sound, Charlotte Harbor
	<i>Casmerodius albus egretta</i> (Gmelin)	Boca Ciega Bay
	<i>Mugil cephalus</i> Linn. (intermed. host)	numerous Florida localities
	<i>M. curema</i> Cuv. and Val.	numerous Florida localities
<i>Stictodora</i> sp.	<i>M. trichodon</i> Poey	numerous Florida localities
	Lepocreadiidae	
<i>Diploproctodaeum plicatum</i> (Linton, 1928) Sogandares & Hutton, 1959	<i>Chilomycterus schoepfi</i> (Walbaum)	Boca Ciega Bay
	<i>Lagocephalus laevigatus</i> (Linn.)	Tampa Bay
<i>Diploproctodaeum vitellosum</i> Sogandares & Hutton, 1959	<i>Lagocephalus laevigatus</i> (Linn.)	Pinellas Point, Tampa Bay
<i>Lepocreadium floridanus</i> Sogandares & Hutton, 1959	<i>Lagodon rhomboides</i> (Linn.)	Bayboro Harbor, Tampa Bay
<i>Lepocreadium opsanus</i> Sogandares & Hutton, <i>in press</i>	<i>Opsanus beta</i> Goode and Bean	Mullet Key, Boca Ciega Bay
<i>Multitestis rotundus</i> Sparks, 1954	<i>Archosargus probatocephalus</i> (Walbaum)	Bayboro Harbor, Tampa Bay
	Microphallidae	
<i>Microphallus</i> sp. (metacercaria)	<i>Penaeus duorarum</i> Burkenroad	numerous Florida localities
	Monorchiidae	
<i>Diplomonorchis leiostomi</i> Hopkirs, 1941	<i>Bairdiella chrysura</i> (Lacepede)	Cabbage Key, Boca Ciega Bay
<i>Lasiotocus minutum</i> (Manter, 1931) Sogandares & Hutton, 1959	<i>Lagodon rhomboides</i> (Linn.)	Bayboro Harbor, Tampa Bay
	<i>Fundulus similis</i> Baird and Girard	Tampa Bay
	Opecoelidae	
<i>Opecoeloides fimbriatus</i> (Linton, 1934) Sogandares & Hutton, 1959 (metacercaria)	<i>Penaeus duorarum</i> Burkenroad (intermed. host)	Gandy flats, Tampa Bay
	<i>Bairdiella chrysura</i> (Lacepede)	Tarpon Key, Boca Ciega Bay
<i>Pseudopecoelus manteri</i> Sogandares & Hutton, 1959	<i>Bairdiella chrysura</i> (Lacepede)	Tarpon Key, Boca Ciega Bay
	Opisthorchidae	
<i>Pachytrema sanguineum</i> (Linton, 1928) Purvis, 1937	<i>Larus atricilla</i> Linn.	Old Tampa Bay and Bayboro Harbor, Tampa Bay
<i>Pachytrema</i> sp.	<i>Thalasseus maximus</i> (Boddaert)	Bunce's Pass, Boca Ciega Bay
	Paramphistomidae	
<i>Chiorchis fabaceus</i> (Diesing, 1838) Fiscoeder, 1901	<i>Trichechus manatus latirostris</i> Harlan	Punta Gorda, Charlotte Harbor
	Stomylotrematidae	
<i>Stomylotrema</i> sp.	<i>Eudocimus albus</i> (Linn.)	Boca Grande, Charlotte Harbor
	Troglorematidae	
<i>Renicola</i> sp.	<i>Larus atricilla</i> Linn.	Bayboro Harbor, Tampa Bay
	<i>Thalasseus maximus</i> (Boddaert)	Bayboro Harbor, Tampa Bay
	Zoogonidae	
<i>Diptherostomum americanum</i> Manter, 1947	<i>Gobiosoma robustum</i> Ginsburg	Mullet Key, Boca Ciega Bay
	<i>Lagodon rhomboides</i> (Linn.)	Bayboro Harbor, Tampa Bay
	<i>Opsanus beta</i> (Goode and Bean)	Snell Isle, Tampa Bay

SELECTED REFERENCES

Cestodes

- CHANDLER, A. C. 1935. A new tetrahyarchid larva from Galveston Bay. Jour. Parasit., 21(3): 214-215.
1954. Cestoda. Pages 351-353 in "Gulf of Mexico, its origin, water, and marine life." Fishery Bulletin 89, U. S. Fish and Wildlife Service, 604 pages.
- DOLLFUS, R. PH. 1942. Etudes critiques sur les Tetrahyarches du Museum de Paris. Archiv. Museum Hist. Nat. (Paris, 19: 1-466.
- WARDLE, R. A. and MCLEOD, J. A. 1952. The zoology of tapeworms. The University of Minnesota Press, Minneapolis, 780 pages.

Trematodes

- CABELLERO, Y. C., E. C., BRAVO-HOLLIS, M. and GROCOTT, R. G. 1952. Helminths de la Republica de Panama. III. Tres trematodos de peces marinos con descripcion de una nueva especie. Ann. Inst. Biol. Mex., 23: 167-180.
1953. Helminths de la Republica de Panama. VII. Descripcion de algunos trematodos de peces marinos. Ann. Inst. Biol. Mex., 24: 97-136.
- DUBOIS, G. 1938. Monographie des Strigeida (Trematoda). Mem. Soc. Neuchatel. Sci. Nat., 6: 1-535.
- HOPKINS, S. H. 1954. The American species of trematode confused with *Bucephalus* (*Bucephalopsis*) *haimeanus*. Parasitology, 44: 353-370.
- HOPKINS, S. H. and SPARKS, A. K. 1958. A new species of *Bucephaloides* (Trematoda: Bucephalidae) from a marine fish of Grand Isle, Louisiana. Jour. Parasit., 44(4): 409-411.
- HUTTON, R. F. and SOGANDARES-BERNAL, F. 1960. Studies on the helminth parasites from the coast of Florida. II. Digenetic trematodes from shore birds of the west coast of Florida. 1. Bull. Mar. Sci. Gulf & Carib., ((In press).
- 1960a. Preliminary notes on the life-history of *Mesostephanus appendiculatoides* (Price, 1934) Lutz, 1935. Bull. Mar. Sci. Gulf & Carib., (In press).
- HUTTON, R. F., SOGANDARES-BERNAL, F. and ELDRED, B. 1959. Another species of *Microphallus* Ward, 1901, from the pink shrimp, *Penaeus duorarum* Burkenroad. Jour. Parasit., 45(5): 490.
- HUTTON, R. F., SOGANDARES-BERNAL, F., ELDRED, B., INGLE, R. M. and WOODBURN, K. D. 1959. Investigations on the parasites and diseases of saltwater shrimps (Penaeidae) of sports and commercial importance to Florida. Florida St. Bd. Conserv. Mar. Lab., Tech. Ser. No. 26, 38 pages.
- LINTON, E. 1910. Helminth fauna of the Dry Tortugas. 2. Trematodes. Pap. Tortugas Lab., 4: 11-98.
1940. Trematodes from fishes mainly from Woods Hole Region, Massachusetts. Proc. U. S. Nat. Mus., 88: 1-72.
- MANTER, H. W. 1931. Some digenetic trematodes of marine fishes of Beaufort, North Carolina. Jour. Parasit., 23(3): 396-411.
1934. Some digenetic trematodes from deep-water fish of Tortugas, Florida. Pap. Tortugas Lab., 27: 257-345.
- 1947. Digenetic trematodes of marine fishes of Tortugas, Florida. Amer. Mid. Nat., 38(2): 257-416.
- PRICE, E. W. 1934. New trematode parasites of birds. Smithson. Misc. Coll., 91(6): 1-6.
- RANSOM, B. H. 1920. Synopsis of the trematode family Heterophyidae with descriptions of a new genus and five new species. Proc. U. S. Nat. Mus., 57(2322): 527-573.

- SOGANDARES-BERNAL, F. and HUTTON, R. F. 1959. Studies on helminth parasites from the coast of Florida. III. Digenetic trematodes of marine fishes from Tampa and Boca Ciega Bays. 2. Jour. Parasit., 45(3): 337-346.
1959. Studies on helminth parasites of the coast of Florida. I. Digenetic trematodes of marine fishes from Tampa and Boca Ciega Bays with descriptions of two new species. 1. Bull. Mar. Sci. Gulf & Carib., 9(1): 53-68.
1959. Studies on helminth parasites from the coast of Florida. IV. Digenetic trematodes of marine fishes of Tampa, Boca Ciega Bays, and the Gulf of Mexico. 3. Quart. Jour. Fla. Acad. Sci., 21(3): 257-273.
1959. *Bivesicula tarponis*, a new trematode in the tarpon *Megalops atlanticus* (Cuv. & Val.) from the west coast of Florida. Jour. Parasit., 45(1): 114-118.
- SPARKS, A. K. 1954. A new species of *Multitestis* (Trematoda: Alloecreadiidae) from the sheepshead (*Archosargus probatocephalus*) in the Gulf of Mexico. Trans. Amer. Microsc. Soc., 73: 36-38.
1958. Some digenetic trematodes of fishes of Grande Isle, Louisiana. Proc. Louisiana Acad. Sci., 20: 71-82.
- STUNKARD, H. W. and HAVILAND, C. B. 1924. Trematodes from the rat. Amer. Mus. Novit., No. 126: 1-10.
- YAMAGUTI, S. 1958. Systema Helminthum. Vol. I. The Digenetic Trematodes of Vertebrates. Parts I and II. Interscience Publishers, Inc., New York. 1-979 and 980-1575 pages.

Hosts

- American Fisheries Society 1960. A list of common and scientific names of fishes from the United States and Canada. Spec. Publ. No. 2 (Ed. 2), pp. 1-102.
- BIGELOW, H. B. and SCHROEDER, W. C. 1948. Fishes of the Western North Atlantic. Part I. Lancelets, Cyclostomes, Sharks. Mem. Sears Found. Mar. Res., No. 1, Yale Univ. 576 pages.
- BREder, C. M., JR. 1948. Field Book of Marine Fishes of the Atlantic Coast. G. P. Putnam's Sons, New York 16, N. Y. 332 pages.
- BRIGGS, J. C. 1958. A list of Florida fishes and their distribution. Bull. Fla. State Mus. (Biol. Sci.). 318 pp.
- BURKENROAD, M. D. 1939. Further observations on Penaeidae of the northern Gulf of Mexico. Bull. Bingham Oceanogr. Coll., 6: 1-62.
- Check-list of North American Birds. 1957. American Ornithologists' Union, 691 pp.
- Fishery Bulletin 89. 1954. Gulf of Mexico, its origin, waters, and marine life. Fishery Bulletin of the Fish and Wildlife Service, 55: 1-604.
- JORDAN, D. S. 1885. List of fishes from Egmont Key, Florida, in the museum of Yale College, with description of two new species. Proc. Acad. Nat. Sci. Philadelphia, 42: 42-46.
- KILBY, J. D. 1955. The fishes of two Gulf coastal marsh areas of Florida. Tulane Stud. Zool., 2(8): 175-247.
- LONGLEY, W. H. and HILDEBRAND, S. F. 1941. Systematic catalogue of fishes of Tortugas, Florida. Pap. Tortugas Lab., 34: 1-331.
- PETERSON, R. T. 1956. A Field Guide to the Birds. Houghton Mifflin Company, Boston. 290 pages.
- RIVAS, L. R. 1950. A revision of the American clupeid fishes of the genus *Harengula*, with description of four new subspecies. Proc. U. S. Nat. Mus., 100(3263): 275-309.
- SPRINGER, V. G. 1960. An ecological study of the fishes of the Tampa Bay area. Fla. St. Bd. Conserv. Mar. Lab., Professional Pap. Ser. No. 1. 104 pp.