

DIGENETIC TREMATODES OF MARINE FISHES FROM  
APALACHEE BAY, GULF OF MEXICO

FUAD M. NAHHAS\*

and

ROBERT B. SHORT,

*Department of Biological Sciences,  
Florida State University,  
Tallahassee, Florida*

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I. ABSTRACT

Forty-eight species of Digenea are reported from 43 species of fishes from Apalachee Bay, Florida. Three new species are described: *Genitocotyle cablei* (Opcoelidae), *Lepocreadium brevoortiae* (Lepocreadiidae) and *Pseudacanthostomum floridensis* (Cryptogonimidae). Fourteen new locality records bring to 109 the species of Digenea known from Tampa Bay and the north-

ern Gulf: 27 species from the Texas coast, 50 from Louisiana, 16 from Mississippi, 31 from Tampa and Boca Ciega Bays, and 48 from Apalachee Bay.

II. ACKNOWLEDGMENTS

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\* Present address: Department of Biological Sciences, University of the Pacific, Stockton, California.

EDITORIAL COMMITTEE FOR THIS PAPER:

RAYMOND M. CABLE, Professor of Zoology, Department of Biological Sciences, Purdue University, Lafayette, Indiana

HAROLD W. MANTER, Professor of Zoology, Department of Zoology and Physiology, University of Nebraska, Lincoln, Nebraska

FRANKLIN SOGANDARES-BERNAL, Associate Professor of Zoology, Department of Zoology, Tulane University, New Orleans, Louisiana

Molecular Biophysics of the Florida State University during residence of the first author as a postdoctoral fellow in the Department of Biological Sciences.

### III. INTRODUCTION AND METHODS

Work on the adult digenetic trematodes of marine fishes of the Gulf of Mexico has been summarized or reviewed by Manter (1954) and Sparks (1960). To date 190 species are known from Tortugas compared with 87 from other parts of the Gulf: Tampa and Boca Ciega Bays (31), Mississippi (16), Louisiana (50), and Texas (27). In contrast, only four species have been reported from Apalachee Bay in the northeastern part of the Gulf. Short (1953, 1954) reported two new species of aporocotylids, Kruse (1959) redescribed *Opecoeloides fimbriatus* (Linton, 1934) Sogandares-Bernal and Hutton, 1959, and Riggan and Sparks (1962) described a new bucephalid. The present paper adds 44 species to the Apalachee Bay; some are reported for the first time from the Gulf of Mexico. Not included are six species of monorchids and zoogonids which will be reported elsewhere. The present survey was conducted mainly over a 10-week period during the summers of 1963 and 1964, and consists of the examination of more than 300 individuals representing 63 species of fishes, taken from Alligator Harbor, Mud Cove, Dog Island Reef, off St. Marks light house, and off St. George Island in the Apalachee Bay. The fishes were obtained by several methods including traps, nets, line, and the use of rotenone. Hosts were examined shortly after their death; in a few instances their viscera were kept in 0.7% saline for less than six hours in jars placed on ice. The worms were washed in saline, studied alive whenever time permitted, and fixed in Alcohol-Formalin-Acetic acid (A.F.A.) under light cover slip pressure. An attempt was made to relax some of the trematodes in chloretone before fixation, but the results were not satisfactory, particularly in the case of the hemiurids. The specimens were stained with either Semichon's carmine, Harris' haematoxylin, or Ehrlich's acid haematoxylin, dehydrated in a graded series of ethyl alcohol, cleared in terpineol, and mounted in damar. Figures were drawn with the aid of a microprojector or a camera lucida, except for Figure 5 which was traced from a photograph. Measurements are in

millimeters except where indicated otherwise. All host names are those used in American Fisheries Society Special Publication No. 2, 1960, "A list of Common and Scientific Names of Fishes from the United States and Canada." Holotypes of new species as well as specimens of some known ones are deposited in the U. S. National Museum Helminthological Collection. An asterisk indicates a new host record; two asterisks, a new locality record for the northern Gulf.

### IV. DESCRIPTION AND DISCUSSION OF SPECIES

#### FAMILY APOROCOTYLIDAE Odhner, 1912

*Cardicola laruei* Short, 1953

Hosts: *Cynoscion arenarius*; *C. nebulosus*  
Site: heart

Localities: Alligator Harbor; St. George Island

*Selachohemecus olsoni* Short, 1954

Host: *Scoliodon terrae-novae*  
Site: heart

Locality: Alligator Harbor

This species was not found in the present study but is listed to give a more complete record of adult trematodes of the area.

#### FAMILY BUCEPHALIDAE Poche, 1907

*Bucephalus varicus* Manter, 1940

Hosts: *Caranx crysos*; *C. hippos*  
Site: ceca

Localities: Alligator Harbor; Dog Island Reef

*Bucephaloides arcuatus* (Linton, 1900)  
Hopkins, 1954\*\*

Synonyms: *Gasterostomum arcuatum* Linton, 1900; *Gasterostomum* sp. Linton, 1900; *Bucephalopsis arcuatus* (Linton) Eckman, 1932

Hosts: \**Pomatomus saltatrix*; *Scomberomorus maculatus*

Site: intestine

Locality: Dog Island Reef

Deposited specimen: U.S.N.M. No. 60080  
*Bucephaloides bennetti* Hopkins & Sparks, 1958

Host: *Paralichthys albigutta*

Site: intestine

Locality: Alligator Harbor

*Bucephaloides caecorum* Hopkins, 1956

Host: *Bairdiella chrysur*

Sites: ceca and intestine

Locality: Alligator Harbor

*Bucephaloides megacirrus* Riggin & Sparks,  
1962

Host: *Sciaenops ocellata*

Site: intestine

Locality: Alligator Harbor

*Rhipidocotyle baculum* (Linton, 1905)  
Eckman, 1932\*\*

Synonyms: *Gasterostomum baculum* Linton, 1905; *Gasterostomum* sp. Linton, 1900; *Nannoenterum baculum* (Linton, 1905)

Host: *Scomberomorus maculatus*

Site: intestine

Locality: Dog Island Reef

*Rhipidocotyle transversale* Chandler, 1935

Synonym: *Prosorbynchus grascilescens* (Rud.) of Linton, 1940

Hosts: *Strongylura marina*: \**S. notata*

Site: intestine

Locality: Alligator Harbor

*Prosorbynchus atlanticum* Manter, 1940\*\*

Synonym: *Gasterostomum* sp. Linton, 1910

Host: *Mycteroperca bonaci*

Site: intestine

Locality: Alligator Harbor

A single specimen was found; eggs measured 32-35 by 21-23 microns.

#### FAMILY FELLODISTOMATIDAE Nicoll, 1913

*Tergestia pectinata* (Linton, 1905)  
Manter, 1940

Synonyms: *Distomum pectinatum* Linton, 1905; *Theledra pectinata* (Linton) Linton, 1910

Hosts: *Bairdiella chrysur*; *Caranx crysos*; *C. hippos*

Site: intestine

Localities: Alligator Harbor; Dog Island Reef

*Stringotrema corpulentum* (Linton, 1905)  
Manter, 1931

Synonym: *Distomum corpulentum* Linton, 1905

Host: *Lagodon rhomboides*

Site: intestine

Locality: Alligator Harbor

#### FAMILY HAPLOSPLANCHNIDAE Poche, 1925

*Schikhobalotrema acutum* (Linton, 1910)  
Skrjabin and Guschanskaja, 1955\*\*

Synonyms: *Deradena acuta* Linton, 1910; *Haplosplanchnus acutus* (Linton) Manter, 1937

Host: *Strongylura marina*

Site: intestine

Locality: Alligator Harbor

Deposited specimen: U.S.N.M. No. 60081

*Schikhobalotrema* sp.

Host: *Mugil cephalus*

Site: intestine

Locality: Alligator Harbor

The four specimens found are not favorable for study. They probably represent a new species of haplosplanchnid.

#### FAMILY GORGODERIDAE Looss, 1901

*Nagmia floridensis* Markell, 1953

Host: *Dasyatis sabina*

Site: body cavity

Locality: Alligator Harbor

A great deal of confusion exists regarding generic features in the Anaporrhutinae, and the validity of the genus *Nagmia* has been questioned by Johnston (1934) and others. *Nagmia floridensis* was described from a single specimen, and the vitellaria were reported as partly medial and partly ventral to the ceca. Our material shows variation in their position, with the majority of the worms having vitellaria partly extracecal and partly overlapping the ceca ventrally. Two immature specimens show clearly the excretory vesicle as Y-shaped; in adults, the unbranched stem is seen but its arms are concealed.

#### FAMILY OPECOELIDAE Ozaki, 1925

*Opecoeloides fimbriatus* (Linton, 1934)

Sogandares-Bernal and Hutton, 1959

Synonym: *Cymbephallus fimbriatus* Linton, 1934

Hosts: *Bairdiella chrysur*; *Menticirrhus americanus*; \**M. focaliger*; *M. littoralis*; *Micropogon undulatus*; *Sciaenops ocellata*

Site: intestine

Localities: Alligator Harbor; Mud Cove; Sr. George Island

The original description by Linton is inadequate and the species has been redescribed

by Sogandares-Bernal and Hutton (1959b), and by Kruse (1959) from Linton's type specimen and additional ones collected from Apalachee Bay. The single specimen from *Micropogon undulatus* has a smaller sucker ratio (1:1.17) and fewer acetabular papillae (exact number cannot be determined). On the basis of these features, it should perhaps be referred to *O. polynemi* Von Wicklen, 1946. Sogandares-Bernal and Hutton (1959c) questioned the validity of *O. polynemi*; in sucker ratio (1:1.25) it comes close to the lower limit found in some of our specimens from the other hosts (range 1:1.3-1.8). The papillae on the acetabulum may be retracted and thus may be indiscernible; Kruse (1959) reported "four lobes each having from five to nine papillae" and Sogandares-Bernal and Hutton (1959b, Fig. 13) show 6, 6, 6, and 8 papillae per lobe. No such variation, however, is reported by Von Wicklen in her 10 specimens of *O. polynemi*.

*Genitocotyle cablei* n.sp.

Figure 1

*Host:* *Ancylopssetta quadrocellata*

*Site:* intestine

*Locality:* Dog Island Reef

*Holotype:* U.S.N.M. No. 60082

Description and measurements based on two specimens. Body elongated, 2.70-2.93 long, 0.567-0.600 wide. Oral sucker 0.165-0.185 in diameter; ventral sucker in anterior third of body, pedunculate, 0.268-0.294 in diameter, with three or four small papillae on anterior and posterior margins; sucker ratio 1:1.54-1.62. Accessory "sucker" pit-like and without a limiting membrane, surrounded by a few cells, about half-way between pharynx and ventral sucker. Prepharynx short; pharynx large, 0.155 in diameter; esophagus slender, 0.294-0.360 long; cecal bifurcation at level of anterior margin of ventral sucker; ceca ending blindly near posterior end of body. Testes two, smooth, tandem, close together, 0.232-0.309 in diameter. Cirrus sac absent; seminal vesicle tubular, reaching posteriorly halfway between ventral sucker and ovary; ejaculatory duct very long and slender, extending from posterior end of acetabulum to level of posterior margin of pharynx. Ovary entire, pretesticular, 0.155-0.180 in diameter; seminal receptacle absent; uterus preovarian; eggs 56-64 by 31-36 microns. Genital pore

ventral, slightly sinistral, near level of posterior margin of pharynx. Vitelline follicles extending from level of posterior margin of ventral sucker to posterior end of body, confluent in posttesticular space. Excretory vesicle tubular, extending to ovary.

This species is referred to the genus *Genitocotyle* Park, 1937, on the basis of an accessory sucker (preacetabular pit) and blind ceca, conditions determined on live material as well as on frontal sections of one of the two specimens. Unlike other members in the genus, this species has acetabular papillae. We do not feel, however, that a new genus is justified on that basis.

*Genitocotyle cablei* differs from the other three species in the genus in having acetabular papillae. It further differs from *G. acirra* Park, 1937, in the position of the genital pore, in lacking a limiting membrane around the accessory sucker, and in having smaller eggs; from *G. atlantica* Manter, 1947, chiefly in extent of vitellaria and shape of the gonads; and from *G. heterostichi* Montgomery, 1957, in extent of vitellaria, position of the genital pore and seminal vesicle, and in lacking a limiting membrane around the accessory sucker. Neither the whole mount nor the frontal sections in our limited material show a true seminal receptacle. Such a structure is also reported as absent in *G. heterostichi* but present in the other two species. This structure is of generic value, at least in some opoecoides.

The species is named in honor of Professor R. M. Cable of Purdue University, Lafayette, Indiana, in recognition of his contributions to the knowledge of the Trematoda.

FAMILY LEPOCREADIIDAE Nicoll,  
1934

*Lepocreadium brevoortiae* n.sp.

Figure 2

*Host:* *Brevoortia patronus*

*Site:* intestine

*Localities:* Alligator Harbor; Mud Cove

*Holotype:* U.S.N.M. No. 60083

Description and measurements based on 20 specimens. Body elongated, tapering anteriorly, rounded posteriorly, 0.850-1.140 long, 0.260-0.390 wide. Cuticle spinose; eye spot pigments diffuse. Oral sucker subterminal, 0.078-0.108 in diameter; ventral sucker in mid-third of body, sometimes equa-

torial, 0.072-0.090 in diameter; sucker ratio 1:0.85-1.00. Prepharynx absent or very short; pharynx massive, sometimes larger than oral sucker, 0.080-0.096 in diameter; esophagus about half to one and a half length of pharynx; cecal bifurcation about midway between suckers; ceca extending to level of posterior vitelline follicles. Testes two, entire, tandem, contiguous, 0.072-0.150 in diameter. Cirrus sac long, about 1/4 body length, sometimes reaching ovarian zone, containing subspherical internal seminal vesicle, large pars prostatica, and long muscular spiny cirrus; spines of cirrus minute, sometimes partially lost; external seminal vesicle saccate, often overlapping ovary dorsally. Ovary triangular in shape, contiguous with anterior testis, 0.060-0.096 in diameter; seminal receptacle postovarian; uterus preovarian. Eggs 60-66 by 31-41 microns. Vitelline follicles extending from level of intestinal bifurcation to near posterior end of body, confluent in posttesticular space. Genital atrium small; genital pore preacetabular, sinistral. Excretory vesicle tubular, anterior extent not determined; excretory pore terminal.

The combination of a massive pharynx any spiny cirrus distinguish *Lepocreadium brevoortiae* from all the other 21 species in the genus. The massive pharynx is a constant feature not due to excessive flattening and was seen in the live material obtained from 13 fish from two localities. A large pharynx is described for *L. incisum* Hanson, 1955 and *L. clavatum* (Ozaki, 1932); Yamaguti, 1938 but both species lack a spiny cirrus, the cirrus sac does not extend posterior to the ventral sucker, and the ovary and testes are lobed. *L. pyriforme* (Linton, 1900) Linton, 1940 has a spiny cirrus. Sogandares-Bernal & Hutton (1960) discussed this species and concluded that there are several species involved in Linton's descriptions. Nahhas & Cable (1964) accepted as this species only individuals that are similar to Figure 47 (Linton, 1940) or Figure 9 (Sogandares-Bernal & Hutton, 1960). On this basis, *L. brevoortiae* would differ from *L. pyriforme* by having a larger pharynx, shorter prepharynx, and more anterior extent of the vitellaria.

*Lepocreadium floridanus* Sogandares-Bernal and Hutton, 1959

*Host:* *Lagodon rhomboides*

*Site:* intestine

*Locality:* Alligator Harbor

Three specimens are in close agreement with the description of Sogandares-Bernal and Hutton (1959a) except for a somewhat oval body shape rather than an elongated one. In one specimen, the testes were slightly oblique. Egg size was not given in the original description of the species. In our material the range is 54-72 by 26-38 microns.

Another group of more elongated worms with vitellaria extending only to the acetabulum, was found in the same host species. They were first thought to be *Lepocreadium pyriforme* (Linton, 1900) as limited in the discussion of the previous species. However, the cirrus lacks spines and for the time being the trematodes are considered as younger forms of *Lepocreadium floridanus*.

*Opechona gracilis* (Linton, 1910)

Manter, 1947\*\*

Figure 3

*Synonym:* *Prodistomum gracile* Linton, 1910; nec *Opechona gracilis* (Manter, 1931) Ward & Fillingham, 1934

*Host:* \**Peprilus alepidotus*

*Site:* intestine

*Locality:* Mud Cove

*Deposited specimen:* U.S.N.M. No. 60084

The present material is referred to this species on the basis of shape of the ovary, extent of vitellaria and excretory vesicle, sucker ratio and other measurements. Our specimens differ, however, in egg size and in having a definite prepharynx varying in length from about one half to one and a half the length of the pharynx. The eggs in our material are collapsed and measure 72-82 by 30-37 as compared with 61-64 by 37-47 microns (Manter, 1947).

*Apocreadium mexicanum* Manter, 1937\*\*

*Host:* *Monacanthus hispidus*

*Site:* intestine

*Locality:* Alligator Harbor

This species was first described by Manter from the Pacific Coast. Siddiqi and Cable (1960) reported it from Puerto Rico but noted "slight differences in sucker ratio, width of eggs, and length of posttesticular

space." Nahhas and Cable (1964) found this species in *Monacanthus hispidus* in Jamaica and noted that their specimens were "more like those of Siddiqi and Cable (1960) . . ." and that "the posttesticular space usually is less than half as long as the body but sometimes the two regions are about equal in length." Eggs of the Florida material measure 70-84 by 30-48 microns compared with 63-71 by 42-45 microns for the Jamaican material. Manter (1937) gave an egg size range of 61-67 by 31-34 microns.

*Homalometron pallidum* Stafford, 1904

Host: *Leiostomus xanthurus*

Site: intestine

Locality: Alligator Harbor

*Multitestis inconstans* (Linton, 1905)

Manter, 1931\*\*

Synonym: *Distoma inconstans* Linton, 1905

Host: *Chaetodipterus faber*

Site: intestine

Locality: Alligator Harbor

Deposited specimen: U.S.N.M. No. 60085

*Diploproctodaem plicatum* (Linton, 1928)

Sogandares-Bernal & Hutton, 1958

Synonyms: *Distomum* sp. of Linton, 1898 and 1905; *Psilostomum plicatum* Linton, 1928; *Bianium concavum* Stunkard, 1930; *B. adplicatum* Manter, 1940; *B. plicatum* (Linton) Stunkard, 1931

Host: *Chilomycterus schoepfi*

Site: intestine

Locality: Alligator Harbor

*Dermadena lactophrysi* Manter, 1946\*\*

Synonym: *Distomum lamelliforme* Linton, 1907 in part

Host: *Lactophrys quadricornis*

Site: intestine

Locality: Alligator Harbor

Deposited specimen: U.S.N.M. No. 60086

#### FAMILY CRYPTOGONIMIDAE Ciurea, 1933

*Siphodera vinalwardsii* (Linton, 1899)

Linton, 1910

Synonym: *Monostomum vinalwardsii* Linton, 1899

Host: *Opsanus beta*

Site: intestine

Locality: Alligator Harbor

*Metadena adglobosa* Manter, 1947\*\*

Host: *\*Paralichthys albigutta*

Site: ceca

Locality: Alligator Harbor

Two specimens, one mature but damaged, and one immature, were recovered along with a number of individuals of *Bucephaloides bennetti*. The egg size and that of the oral sucker relative to body width are characteristic of this species. This species has hitherto been known only from snappers of the genus *Litjanus*.

*Pseudoacanthostomum floridensis* n.sp.

Figure 4

Synonym: *Pseudoacanthostomum panamensis* of Corkum, 1959, nec Caballero et al., 1953

Host: *Galeichthys felis*

Site: intestine

Locality: Alligator Harbor

Holotype: U.S.N.M. No. 60087

Description and measurements based on two specimens, one sectioned frontally. Body elongated, 2.63-3.00 long, 0.489-0.750 wide. Cuticle with spines extending to level of posterior testis; eye spot pigments present. Oral sucker like an inverted bell, 0.180-0.294 long, 0.309-0.330 in greatest width; mouth surrounded by single row of 28 perioral spines measuring 42-60 by 18-24 microns; ventral sucker in anterior third of body, 0.118-0.155 long, 0.155-0.170 wide; sucker ratio 1:0.54. Prepharynx contracted in holotype, longer than pharynx in paratype; pharynx 0.129-0.206 in diameter; esophagus very short; ceca extending to posterior end of body, and joining excretory vesicle by two narrow ducts a short distance anterior to excretory pore. Testes two, ovoid or rhomboid, tandem, well separated, 0.283-0.309 long, 0.180-0.283 wide; seminal vesicle tubular, sinuous, extending posteriorly to about halfway between ventral sucker and ovary; prostate cells free in parenchyma. Ovary trilobed, about midway between ventral sucker and anterior testis, 0.232-0.260 long, 0.298-0.309 wide; seminal receptacle spherical, prev ovarian; uterine coils extending to near posterior tips of ceca. Genital pore median, immediately preacetabular; gonotyl as large as ventral sucker, the two sometimes overlapping. Eggs 20-25 by 11-14 microns. Vitelline follicles small, sometimes granular, extending from anterior testis laterally and

dorsally some distance anterior to ventral sucker but not reaching intestinal bifurcation. Excretory vesicle Y-shaped, wide arms extending from near posterior testis to mid-level of pharynx; pore terminal.

This is the second species in the genus *Pseudocanthostomum*. *P. floridensis* differs from *P. panamensis* Caballero, Bravo H. and Grocott, 1953 from *Galeichthys seemani* from the Pacific Coast in the number of perioral spines (28 compared with 26), greater extent of the vitellaria, and the presence of a uroproct. This last feature was suspected in the live material and confirmed by frontal sectioning of the paratype.

Corkum (1959) reported a single specimen with 28 perioral spines as *P. panamensis* from *Galeichthys felis*. We have borrowed this specimen and found it to agree with our material also in the distribution of the vitellaria. The connections of the ceca with the stem of the vesicle could not be determined as they were concealed by the uterine coils. Figure 5 is a tracing of a photomicrograph of Corkum's material.

#### FAMILY ACANTHOCOLPIDAE Lühe, 1909

*Stephanostomum ditrematis* (Yamaguti, 1939) Manter, 1947

*Synonyms:* *Echinostephanus ditrematis* Yamaguti, 1939; *Stephanostomum longisomum* Manter, 1940; *Stephanostomum filiforme* Linton, 1940

*Host:* *Caranx hippos*

*Site:* intestine

*Locality:* Alligator Harbor

*Stephanostomum interruptum* Sparks & Thatcher, 1958

*Hosts:* *Bairdiella chrysurus*; *Cynoscion arenarius*; *C. nebulosus*

*Site:* intestine

*Locality:* Alligator Harbor

*Stephanostomum megacephalum* Manter, 1940

*Host:* *Caranx hippos*

*Site:* intestine

*Locality:* Alligator Harbor

*Stephanostomum sentum* (Linton, 1910) Manter, 1947\*\*

*Synonym:* *Stephanochasmus sentus* Linton, 1910

*Host:* \**Menticirrus americanus*

*Site:* intestine

*Locality:* Alligator Harbor

*Stephanostomum metacercaria*

*Host:* *Monacanthus hispidus*

*Site:* wall of the heart

*Locality:* Alligator Harbor

A single specimen, with 34 perioral spines and an oral sucker smaller than the ventral sucker, was found encysted on the wall of the heart.

*Pleorchis americanus* Lühe, 1906

*Synonyms:* *Distomum polyorchis* Linton, 1901 nec Stossich, 1888; *Distoma molle* (Leidy, 1856) Stiles & Hassall, 1894; *Pleorchis mollis* (Leidy, 1856) Stiles, 1896; *Pleorchis lintoni* Yamaguti, 1938; *Polyorchis molle* (Leidy, 1856) Mont., 1896

*Hosts:* *Cynoscion arenarius*; *C. nebulosus*

*Site:* intestine

*Localities:* Alligator Harbor; Dog Island Reef; St. Marks

#### FAMILY HEMIURIDAE Lühe, 1901

*Aponurus laguncula* Looss, 1907

*Hosts:* \**Centropristis melanus*; \**Lagocephalus laevigatus*; \**Paralichthys albigutta*

*Site:* stomach

*Localities:* Alligator Harbor; Dog Island Reef; St. George Island

Fourteen worms collected from three fishes are 0.541-1.275 long, 0.138-0.335 wide. We first thought that three worms from *Lagocephalus laevigatus* represented a different species because they were larger (1.200-1.275 by 0.319-0.335) than those from the other two hosts (0.541-0.849 by 0.138-0.180) and their eggs were slightly thicker-shelled, narrower at one end, and measure 30-32 by 17-18 compared with 26-31 by 14-17 microns. Egg measurements overlap, and proportions of organs are the same, however. In body size and egg shape, the three larger trematodes are similar to *A. trachinoti* Manter, 1940 but this species has smaller eggs (25 by 10 microns).

*Aponurus elongatus* Siddiqi & Cable, 1960\*\*

*Host:* *Chaetodipterus faber*

*Site:* stomach

*Localities:* Alligator Harbor; Dog Island Reef

*Deposited specimen:* U.S.N.M. No. 60088

Three specimens found in this study agree closely with the description of Siddiqi & Cable (1960) but differ in having slightly

larger eggs (28-35 by 16-18 compared with 26-29 by 13-16 microns). Siddiqi and Cable did not distinguish their species from others in the genus. It is most similar to *A. laguncula* but differs in sucker ratio (1:2.5 compared to 1:1.7-2.1) and in having a more elongate body, more anterior ventral sucker, a greater postovarian space, and vitellaria that are longer than wide. *A. elongatus* is known only from *Chaetodipterus faber* and has been reported from Puerto Rico, Jamaica, and now from Apalachee Bay.

*Lecithaster confusus* Odhner, 1905\*\*

Synonym: *Distomum bothryophoron* Olson of Linton, 1899

Hosts: \**Brevoortia patronus*; \**Lagodon rhomboides*

Site: intestine

Locality: Alligator Harbor

*Parabemius merus* (Linton, 1910)  
Woolcock, 1935

Synonyms: *Hemius merus* Linton, 1910; *Parabemius parabemius* Vas & Pereira, 1930; *P. platiclithyi* Lloyd, 1938; *P. atherinae* Yamaguti, 1938; *P. barengulae* Yamaguti, 1938

Hosts: *Brevoortia patronus*; *Cynoscion nebulosus*; \**Lagodon rhomboides*

Site: stomach

Locality: Alligator Harbor

*Sterrburus monticelli* (Linton, 1898)  
Linton, 1910

Synonym: *Distomum monticelli* Linton, 1898

Host: *Pomatomus saltatrix*

Site: stomach

Locality: Dog Island Reef

*Sterrburus musculus* Looss, 1907

Synonyms: *Sterrburus laeve* (Linton) of Manter, 1931; *Sterrburus floridensis* Manter, 1934 in part

Hosts: \**Ancylosetta quadrocellata*; \**Anguilla rostrata*; \**Bairdiella chrysur*; \**Centropristis melanus*; \**Diplectrum formosum*; \**Leiostomus xanthurus*; *Menticirrhus americanus*; \**Micropogon undulatus*; \**Ogcocephalus radiatus*; \**Ophidion welsbi*; \**Opsanus beta*; \**Orthopristis chrysopterus*; \**Paralichthys albigutta*; \**Syacium papillosum*; *Synodus foetens*; \**Urophycis floridanus*

Site: stomach

Localities: Alligator Harbor; Dog Island Reef; St. George Island

*Lecithochirium parvum* Manter, 1947

Synonym: *Sterrburus floridanus* Manter, 1934 in part

Hosts: \**Leiostomus xanthurus*; \**Micropogon undulatus*; \**Paralichthys albigutta*

Site: stomach

Locality: Alligator Harbor

*Lecithochirium microstomum* Chandler, 1935

Synonym: *Lecithochirium sinaloense* Bravo-Hollis, 1956

Hosts: \**Anguilla rostrata*; *Trichiurus lepturus*

Site: stomach

Localities: Alligator Harbor; Mud Cove

*Lecithochirium texanum* (Chandler, 1941)  
Manter, 1947

Synonym: *Sterrburus texanus* Chandler, 1941

Host: \**Selene vomer*

Site: stomach

Locality: Alligator Harbor

*Lecithochirium mecosaccum* Manter, 1947\*\*  
Figure 6

Hosts: \**Sciaenops ocellata*; *Synodus foetens*

Site: stomach

Locality: Alligator Harbor

The main distinguishing features of *Lecithochirium mecosaccum* are the broad vitelline lobes, the large sinus sac and ejaculatory vesicle, and a long muscular hermaphroditic duct. The preacetabular pit, described as indistinct and nonglandular, was not observed in specimens from *Synodus foetens* but was evident in some of the specimens from *Sciaenops ocellata*. The genital pore is a slit-like opening usually just posterior to the pharynx but may be more posterior due to contraction of the muscular hermaphroditic duct.

*Lecithocladium excisum* (Rudolphi, 1819)  
Lühe, 1901\*\*

Synonyms: *Lecithocladium excisiforme* Cohn, 1903; *L. gulosum* (Linton, 1899) Looss, 1907; *L. cristatum* (Rudolphi, 1819) Looss, 1907; *L. crenatum* (Molin, 1859) Looss, 1907

Hosts: \**Peprilus alepidotus*; *Poronotus triacanthus*

Site: stomach



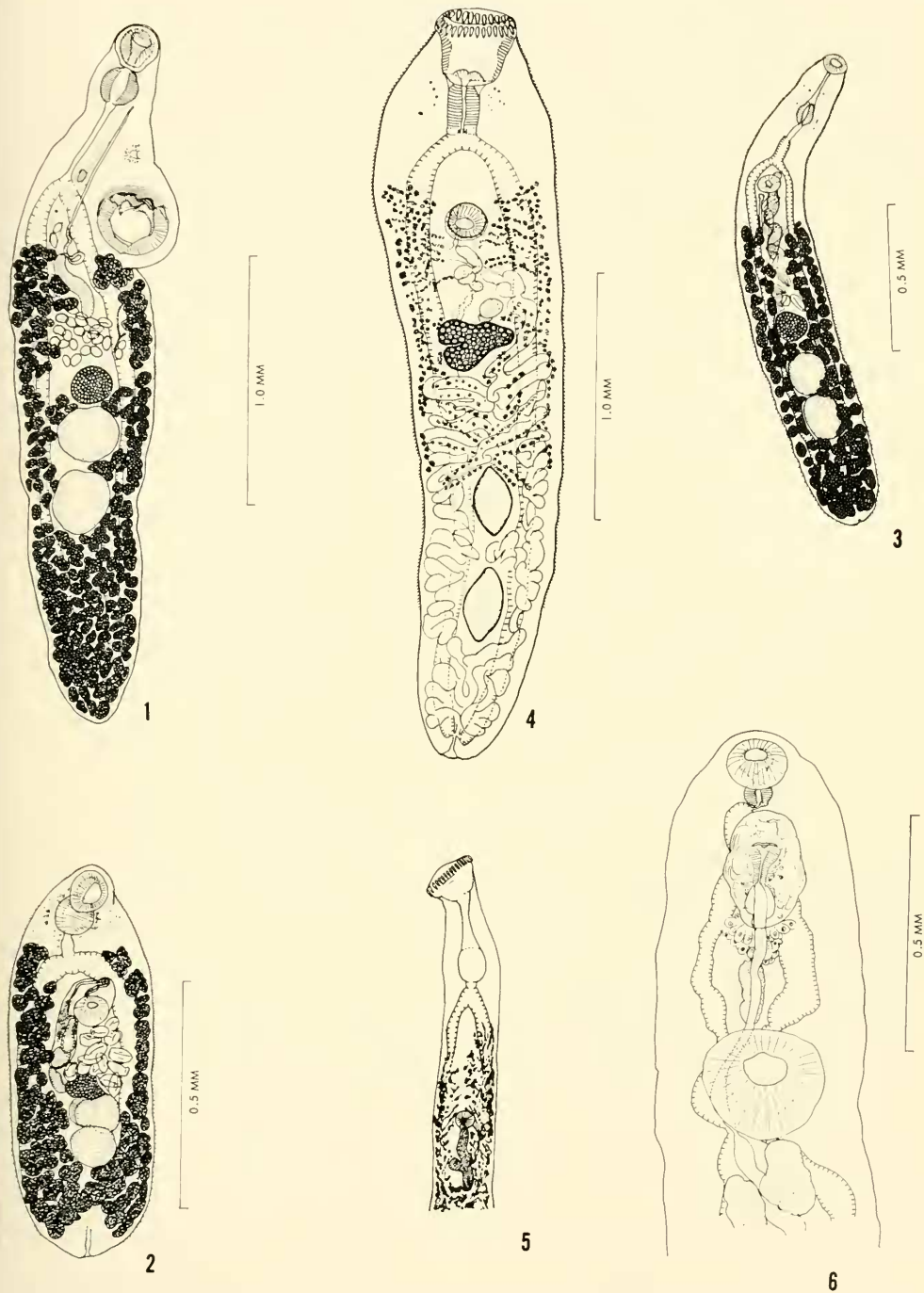


Figure 1. *Genitocotyle cablei*, holotype, ventral view. Figure 2. *Lepocreadium brevoortiae*, holotype, ventral view. Figure 3. *Opechona gracilis*, ventral view. Figure 4. *Pseudocanthostomum floridensis*, holotype, ventral view. Figure 5. Same, tracing of Corkum's specimen showing mainly forebody. Figure 6. *Lecithochirium mecosaccum*, ventral view, from *Synodus foetens*.

*Localities:* Alligator Harbor; St. George Island

*Deposited specimen:* U.S.N.M. No. 60089

*Stomachicola* sp.

*Host:* *Diplectrum formosum*

*Site:* attached to ovary

*Locality:* St. George Island

*Tubulovesicula* sp.

*Hosts:* *Cynoscion arenarius*; *C. nebulosus*

*Site:* beneath ovarian membrane and in body wall muscles

*Locality:* Alligator Harbor

The worms were found on several occasions by the second author. Some contained eggs although the majority were immature. No description of the species will be given at the present since the majority of the worms are not in condition favorable for description.

#### FAMILY SCLERODISTOMIDAE Dollfus, 1932

*Sclerodistomum sphaeroidis* Manter, 1947

*Host:* *Chilomycterus schoepfi*

*Site:* stomach

*Locality:* Alligator Harbor

#### V. SUMMARY

Forty-eight species of Digenea are reported from 43 species of fishes from Apalachee Bay, Florida. Three new species are described: *Genitocotyle cablei*, (Opecoelidae); *Lepocreadium brevoortiae*, (Lepocreadiidae) and *Pseudoacanthostomum floridensis*, (Cryptogonimidae). Fourteen new locality records bring to 109 the species of Digenea known from Tampa Bay and the northern Gulf: 27 species from the Texas coast, 50 from Louisiana, 16 from Mississippi, 31 from Tampa and Boca Ciega Bays, and 48 from Apalachee Bay..

#### VI. ALPHABETICAL HOST-PARASITE LIST

Following each host species is the number, in parentheses, of individuals examined.

- Ancylosetta quadrocellata* Gill ocellated flounder (1)  
*Genitocotyle cablei*  
*Sterrburus musculus*
- Anguilla rostrata* (LeSueur), American eel (2)  
*Lecitobochirium microstomum*  
*Sterrburus musculus*
- Bairdiella chrysura* (Lacépède), silver perch (18)  
*Bucephaloides caecorum*  
*Tergestia pectinata*  
*Opecoeloides fimbriatus*
- Stephanostomum interruptum*  
*Sterrburus musculus*
- Brevoortia patronus* Goode, largescale menhaden (24)  
*Lepocreadium brevoortiae*  
*Lecitobaster confusus*  
*Parabemius merus*
- Caranx crysos* (Mitchill), blue runner (5)  
*Bucephalus varicus*  
*Tergestia pectinata*
- Caranx hippos* (Linnaeus), Crevalle jack (3)  
*Bucephalus varicus*  
*Tergestia pectinata*  
*Stephanostomum ditrematis*  
*Stephanostomum megacephalum*
- Centropristis melanus* Ginsburg, Southern sea bass (10)  
*Aponurus laguncula*  
*Sterrburus musculus*
- Chactodipterus faber* (Broussonet), Atlantic spadefish (9)  
*Multitestis inconstans*  
*Aponurus elongatus*
- Chilomycterus schoepfi* (Walbaum), striped burrfish (3)  
*Diploproctodaem plicatum*  
*Sclerodistomum sphaeroidis*
- Cynoscion arenarius* Ginsburg, sand sea trout (5)  
*Cardicola laruei*  
*Pleorchis americanus*  
*Stephanostomum interruptum*  
*Tubulovesicula* sp.
- Cynoscion nebulosus* (Cuvier), spotted sea trout (21)  
*Cardicola laruei*  
*Pleorchis americanus*  
*Stephanostomum interruptum*  
*Parabemius merus*  
*Tubulovesicula* sp.
- Dasyatis sabina* (LeSueur), Atlantic stingray (1)  
*Nagnia floridensis*
- Diplectrum formosum* (Linnaeus), sand perch (3)  
*Sterrburus musculus*  
*Stomachicola* sp.
- Galeichthys felis* (Linnaeus), sea catfish (16)  
*Pseudoacanthostomum floridensis*
- Lactophrys quadricornis* (Linnaeus), cowfish (2)  
*Dermadena lactophrysi*
- Lagocephalus laevigatus* (Linnaeus), smooth puffer (1)  
*Aponurus laguncula*
- Lagodon rhomboides* (Linnaeus), pinfish (29)  
*Steringotrema corpulentum*  
*Lepocreadium floridans*  
*Lecitobaster confusus*  
*Parabemius merus*
- Leiostomus xanthurus* Lacépède, spot (8)  
*Homalometron pallidum*  
*Lecitobochirium parvum*  
*Sterrburus musculus*
- Menticirrhus americanus* (Linnaeus), southern kingfish (1)  
*Opecoeloides fimbriatus*  
*Stephanostomum sentum*  
*Sterrburus musculus*
- Menticirrhus focaliger* Ginsburg, minkfish (1)  
*Opecoeloides fimbriatus*
- Menticirrhus littoralis* (Holbrook), Gulf kingfish (1)  
*Opecoeloides fimbriatus*

*Micropogon undulatus* (Linnaeus), Atlantic croaker (12)  
*Opecoeloides fimbriatus*  
*Lecithobocirium parvum*  
*Sterrburus musculus*

*Monacanthus hispidus* (Linnaeus), planehead filefish (9)  
*Apocreadium mexicanum*  
*Stephanostomum metacercaria*

*Mugil cephalus* Linnaeus, striped mullet (4)  
*Schikkbobalotrema* sp.

*Mycteroperca bonaci* (Poey), black grouper (1)  
*Prosorhynchus atlanticus*

*Ogcocephalus radiatus* (Mitchill), polka-dot batfish (2)  
*Sterrburus musculus*

*Ophidion uelshi* (Nichols and Breder), crested cusk-eel (5)  
*Sterrburus musculus*

*Opsanus beta* (Goode and Bean), Gulf toadfish (8)  
*Siphodera vinalwardsii*  
*Sterrburus musculus*

*Orthopristis chrysopterus* (Linnaeus), pigfish (12)  
*Sterrburus musculus*

*Paralichthys albigutta* Jordan and Gilbert, Gulf flounder (9)  
*Bucephaloides bennetti*  
*Metadena adgloriosa*  
*Aponurus laguncula*  
*Lecithobocirium parvum*  
*Sterrburus musculus*

*Pephrilus alepilotus* (Linnaeus), Southern harvestfish (3)  
*Opechona gracilis*  
*Lecithocladium excisum*

*Pomatomus saltatrix* (Linnaeus), bluefish (3)  
*Bucephaloides arcuatus*  
*Sterrburus monticelli*

*Poronotus triacanthus* (Peck), butterfish (1)  
*Lecithocladium excisum*

*Sciaenops ocellata* (Linnaeus), red drum (2)  
*Bucephaloides mexacirrus*  
*Opecoeloides fimbriatus*  
*Lecithobocirium mecosaccum*

*Scoliodon terrae-novae* (Richardson) Atlantic sharpnose shark (1)  
*Selachobemecus olsoni*

*Scomberomorus maculatus* (Mitchill), Spanish mackerel (1)  
*Bucephaloides arcuatus*  
*Rhipidocotyle baculum*

*Selene vomer* (Linnaeus), lookdown (1)  
*Lecithobocirium texanum*

*Strongylura marina* (Walbaum), Atlantic needlefish (3)  
*Rhipidocotyle transversale*  
*Schikkbobalotrema acutum*

*Strongylura notata* (Poey), redfin needlefish (2)  
*Rhipidocotyle transversale*

*Syacium papillosum* (Linnaeus), dusky flounder (1)  
*Sterrburus musculus*

*Synodus foetens* (Linnaeus), inshore lizardfish (2)  
*Lecithobocirium mecosaccum*  
*Sterrburus musculus*

*Trichurus lepturus* Linnaeus, Atlantic cutlassfish (1)  
*Lecithobocirium microstomum*

*Urophycis floridanus* (Bean and Dresel), Southern hake (2)  
*Sterrburus musculus*

## VII. LIST OF FISHES NEGATIVE FOR TREMATODES

The numbers in parentheses following common names of fishes represent numbers of individuals examined.

*Anchoa hepsetus* (Linnaeus), striped anchovy (2)  
*Archosargus probatocephalus* (Walbaum), sheepshead (1)  
*Bagre marinus* (Mitchill), gafftopsail catfish (1)  
*Cyprinodon variegatus* Lacépède, sheepshead minnow (1)  
*Dorosoma cepedianum* (LeSueur), gizzard shad (2)  
*Echencis naucrates* Linnaeus, sharksucker (1)  
*Elops saurus* Linnaeus, ladyfish (2)  
*Etroplus crossotus* Jordan and Gilbert, fringed flounder (1)  
*Eucinostomus argentatus* Baird and Girard, spotfin mojarra (8)  
*Eucinostomus galu* (Quoy and Gaimard), silver jenny (1)  
*Fundulus similis* (Baird and Girard), longnose killifish (9)  
*Haemulon sciurus* (Shaw), blue striped grunt (1)  
*Larimus fasciatus* Holbrook, banded drum (1)  
*Lutjanus griseus* (Linnaeus), gray snapper (1)  
*Menidia beryllina* (Cope), tidewater silverside (3)  
*Mugil curema* Valenciennes, white mullet (2)  
*Paralichthys lethostigma* Jordan and Gilbert, Southern flounder (1)  
*Porichthys porosissimus* (Cuvier), Atlantic midshipman (3)  
*Prionotus tribulus* Cuvier, bighead searobin (1)  
*Trinectes maculatus* (Bloch and Schneider), hogchoker (4)

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