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Monogeneans from the southern Pacific Ocean.
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(Special Note: Plate and figure enumeration is different from that in Russian version. Text, plate and figure numbers in this English version match.)

by

William A. Dillon², William J. Hargis, Jr.,³ and Antonio E. Harris⁴

ABSTRACT: This sixth of a series on monogenetic trematodes from the Southern Pacific Ocean discusses five species of Monogenea from Australian waters. Polylabris carnivonensis n. sp., from the gills of Leiognathus fasciatus, and Polylabris sigani no. sp., from the gills of Siganus ormin, are described. Polylabris sillaginae (Woolcock, 1936) n. comb and Gonoplasius carangis Sandars, 1944 are redescribed. In order that comparisons can be made between Australian and New Zealand populations, Kahawaia truttae (Dillon and Hargis, 1965) Lebedev, 1969 is briefly described.


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INTRODUCTION

This is the sixth paper of a series on monogenetic trematodes of fishes from the southern Pacific Ocean. The scope, organization, and purpose are the same as for the first installment (Dillon and Hargis, 1965a). Specific information on the Australian collection can be found in Part V of this series (Lawler and Hargis, 1968).

MATERIALS AND METHODS

Methods used in the preservation and the preparation of the monogenetic flukes for identification and study are essentially the same as those given by Dillon and Hargis (1965a). In indicating the measurements the mean is given, followed by the range (minimum and maximum) in parentheses. The number of measurements used in the calculations appears in parentheses before these data. All measurements are given in microns.

Camera lucida and microprojector drawings were used to facilitate identification and in preparation of the plates.

RESULTS AND DISCUSSION

Order Monogenea Carus, 1863

Suborder Polyopisthocotylea Odhner, 1912

Superfamily Microcotyloidea Unnithan, 1957

Family Microcotyldidae Taschenberg, 1879

Subfamily Polylabrinae Lebedev, 1976, diag. emend.
Discussion: The subfamily Polylabrinae, described by Lebedev (1976) is emended to accommodate worms with two vaginal pores.

**Genus Polylabris Euzet and Cauwet, 1967, diag. emend.**

Discussion: The genus Polylabris, described by Euzet and Cauwet (1967), is emended to accommodate bivaginated worms.

**Polylabris sillaginae** (Woolcock, 1936) n. comb.

*(PLATE V, Figs. 28-30)*

Host: *Sillaginoides punctatus*, Spotted Whiting; family Sillaginidae.

Habitat: Gills.

Localities: (1) Adelaide, South Australia (new locality record); 25 miles E of Adelaide, near Androssan (1-2 fms.; sand-weed), (2) Port Kenney, South Australia (new locality record); 9 miles NW of Port Kenney (1-2 fms.; Sand-rock), and (3) Albany, Western Australia (new locality record), Princess Royal Harbor (1 fm.; weed-sand).

Number examined: 273.


Description: Body elongate, fusiform (20) 2,410 (2,100-3,060) long by 520 (410-810) wide. Buccal suckers septate, (20) 43 (35-54) long by (20) 57 (52-63) wide, with sclerotized, tooth-like papillae on rims. Posthaptor (20) 990 (810-1,380) long bearing 22-34 pairs of clamps in two nearly equal ventrolateral rows. Clamps (Fig. 30) similar in shape, dissimilar in size; anteriormost clamps (13) 49 (33-59) long by (13) 34 (27-42) wide; middle clamps (20) 68 (59-74)
long by (20) 47 (40-55) wide; posteriormost clamps (18) 45 (40-51)
long by (18) 35 (30-40) wide.

Pharynx (20) 38 (36-42) long by (20) 36 (32-42) wide. Gut
bifurcating at or immediately behind genital pore; posterior ends of
crura fusing just inside limits of posthaptor and continuing for a
short distance as a blind caecum.

Testes postovarian, 12-18 in number; vas deferens extending in
midline to cirrus. Cirrus complex consisting of two parts; a muscular,
thick-walled, S-shaped ejaculatory duct and a sclerotized funnel-shaped
cirrus; cirrus (20) 50 (42-54) long. Tubular structures (apparently
prostatic reservoirs) opening into base of cirrus.

Ovary folded. Seminal receptacle located posterior to mature end
of ovary. Paired ventrolateral vaginal pores present; vaginal ducts
extending posteromedially, fusing in midline to form a single tube
which immediately bifurcates and becomes continuous with vitelline
ducts, forming the vitellovaginal reservoir. Vitellaria coextensive
with intestinal crura.

Discussion: Woolcock (1936) originally described this species from
the gills of the same host, Sillaginoides punctatus, collected from
Port Phillip Bay, Victoria, Australia. The above redescription is given
because the original figures and description of the adult morphology
are incomplete.

Polylabris carnarvonensis n. sp.

(PLATE V, Figs. 31-34)
Host: *Leiognathus fasciatus* (Lacepede); family Leiognathidae.

Habitat: Gills.

Localities: (1) Carnarvon, Western Australia; 0.5 miles W of Cape Peron in Shark Bay (4 fms.; sand), and (2) Carnarvon, Western Australia; 6 miles NE of Cape Peron in Shark Bay (8-9 fms.; sand-shell).

Number studied: 19.


Description: Body elongate, fusiform, (15) 2,045 (1,776-2,346) long by (15) 316 (276-357) wide. Buccal suckers septate, (15) 41 (38-44) long by (15) 37 (32-40) wide, with sclerotized, tooth-like papillae on rims. Posthaptor (14) 1,122 (902-1,435) long, armed with 41-47 pairs of clamps in two nearly equal ventrolateral rows. Clamps (Fig. 33) similar in shape, dissimilar in size; anteriormost clamps (13) 38 (30-46) long by (13) 23 (21-30) wide; middle clamps (15) 57 (52-63) long by (15) 39 (35-45) wide; posteriormost clamps (13) 37 (33-42) long by (13) 27 (23-32) wide.

Pharynx (15) 35 (32-38) long by (15) 32 (29-37) wide. Gut bifurcating at level of cirrus; posterior ends of crura fusing just inside limits of posthaptor and continuing for a short distance as a blind caecum.

Testes postovarian, 5-6 in number; vas deferens extending in
midline to cirrus. Cirrus sclerotized, funnel-shaped, located (15) 155 (120-184) from anterior end of body; cirrus (15) 33 (29-36) long.

Ovary folded. Paired ventrolateral vaginal pores present, located (15) 194 (144-233) from anterior end of body; vaginal ducts extending posteromedially, fusing in midline to form a single tube which immediately bifurcates and becomes continuous with vitelline ducts, forming the vitellovaginal reservoir. Vitellaria coextensive with crura. Eggs with filaments at both ends (measurements impossible because eggs were distorted).

Discussion: Polylabris carnarvonensis n. sp. appears to be most closely related to P. sillaginiae. It differs from P. sillaginiae as follows: (1) buccal suckers 32-40 wide rather than 52-63, (2) cirrus 29-36 long rather than 42-54 long, (3) 5-6 testes rather than 12-18 testes, (4) 41-47 pairs of clamps rather than 22-34 pairs, and (5) host.

**Polylabris sigani** n. sp.

(PLATE VI, Figs. 35-38)

Host: *Siganus ormin* (Block and Schneider); family Siganidae.

Habitat: Gills.

Locality: Carnarvon, Western Australia; 6 miles NE of Cape Peron in Shark Bay (8-9 fms.; sand-shell).

Number studied: 1.

Description: Body elongate, fusiform, (1) 3,150 long by (1) 620 wide. Buccal suckers, (1) 54 long by (1) 61 wide. Posthaptor not sharply delineated from body proper, (1) 800 long, armed with 30 pairs of clamps. Clamps (Fig. 37) similar in shape, dissimilar in size; middle clamp (largest clamp) (1) 54 long by (1) 35 wide.

Pharynx (1) 46 long by (1) 46 wide. Gut bifurcating at level of genital pore; crura extending into posthaptor, confluent posteriorly.

Testes postovarian, 5 in number. Cirrus complex consisting of two parts; a muscular, thick-walled, S-shaped ejaculatory duct and a sclerotized funnel-shaped cirrus; cirrus (1) 42 long. Tubular structures (apparently prostatic reservoirs) opening into base of cirrus.

Ovary folded. Seminal receptacle located posterior to mature end of ovary. Paired ventrolateral vaginal pores present. Vitellaria coextensive with crura; transverse vitelloducts fusing medially to form equatorial Y-shaped vitelline reservoir. Egg fusiform with filaments at both ends; egg (1) 190 long by (1) 67 wide.

Discussion: Polylabris sigani is closely related to P. sillaginæ and P. carnarvonensis n. sp. Polylabris sigani n. sp. is distinguished from P. sillaginæ as follows: (1) 5 testes rather than 12-18, and (2) hosts. This species is distinguished from P. carnarvonensis n. sp. as follows: (1) buccal suckers 54 long by 61 wide rather than 38-44 long by 32-40 wide, (2) cirrus 42 long rather than 29-36, (3) 30 pairs of clamps rather than 41-47 pairs, (4) pharynx slightly larger, and (5) host.
Genus *Gonoplasius* Sandars, 1944

Diagnosis: Microcotylidae. Microcotylinae. Posthaptor variable in shape, subsymmetrical. Genital atrium consisting of two anterior and two posterior muscular pads, each pad bearing spines of various shapes and sizes; wall of genital atrium may bear spines. Cirrus usually armed with a circle of spines. Dorsal cuticularized vaginal pits present. Other characters as for subfamily.

Type species: *Gonoplasius carangis* Sandars, 1944 [=*Microcotyle c.* (Sandars, 1944) Robinson, 1961, not MacCallum, 1913; *Microcotyle c.* (Sandars, 1944) Tripathi, 1956, not MacCallum, 1913] from the gills of *Caranx georgianus*, North Beach, Rockingham, Western Australia (Sandars, 1944).


*Gonoplasius carangis* Sandars, 1944

(PLATE VI, Figs. 39-42)

Host: *Usacaranx nobilis* (Macleay), Trevally (new host record); family Carangidae.

Habitat: Gills.

Locality: Ulludulla, New South Wales (new locality record); 8 miles S of Ulladulla (25 fms.; mud).
Number examined: 20 juveniles; 7 adults.


Description: Body elongate, (5) 3,901 (3,238-4,379) long by (5) 493 (368-679) wide; anterior end truncate to bluntly rounded; body widened posteriorly, merging inconspicuously with cotylophore. Buccal suckers septate, (6) 48 (42-52) long by (6) 69 (64-78) wide, with small tooth-like papillae on rims. Posthaptor a subsymmetrical cotylophore with laterally directed end (the direction in which the end points, right or left, varies individually, but the internal organs appear to maintain a constant orientation regardless of the variation); posthaptor armed with clamps in two unequal rows; longer clamp row, usually sinistral, (5) 972 (764-1,159) long, armed with 36-38 clamps; shorter clamp row (5) 407 (313-505) long, armed with 13-15 clamps. Clamps (Fig. 41) similar in structure, dissimilar in size; middle clamps of long row (5) 80 (72-91) long by (5) 54 (50-57) wide; middle clamps of short row (5) 68 (65-72) long by (5) 44 (42-46) wide.

Pharynx (5) 57 (53-60) long by (5) 48 (45-53) wide; esophagus moderately long with a few short diverticula. Gut bifurcating immediately behind genital atrium; crura not confluent posteriorly, with left crus extending farther than right.

Testes postovarian, 38-42 in number, located between crura and extending posteriorly to anterior part of posthaptor; vas deferens extending anteriorly in midline to cirrus. Genital atrium located (5) 412 (368-460) from anterior end, complicated (see Fig. 40); anterior
part with two lateral, opposing muscular pads, each armed with 20 or more intermediate and large sized spines; posterior part of atrium with two lateral opposing muscular pads, armed with 10-12 intermediate and large sized spines; posterior part of atrium also containing two clusters of small spines (4-6 in each cluster) toward middle. Genital atrium (anteriormost part) (5) 251 (221-268) long by (5) 178 (163-204) wide. Cirrus bulbous, armed with 10-12 spines, (3) 25 long, arranged in a circle.

Ovary tubular, irregularly coiled in midline; oviduct expanded, appearing to serve as a seminal receptacle. Vaginal pore middorsal, with spine-like sclerotizations, (5) 948 (920-984) from anterior end of body. Single vaginal duct extending posteriorly for a short distance prior to bifurcating (presumably, these ducts extend posteriorly and fuse with the vitelline reservoir). Two areas, consisting of 4-5 sclerotized pits each, located on dorsal surface, posterolateral to vaginal pore; body proper occasionally swollen at level of these pits. Vitellaria beginning near level of vaginal pits and proceeding posteriorly, coextensive with crura; transverse vitelloducts fusing medially to form Y-shaped vitelline reservoir. Eggs fusiform with filaments at both ends, (3) 237 (230-242) long by (3) 104 (103-106) wide. Lateral, opposing excretory vesicles at level of genital atrium. Glandular zones present behind pharynx.

Discussion: Examination and comparison of this population from *Usacaranx nobilis* with the description and figures of *Gonoplasius carangis* from *Caranx georgianus* revealed that the two populations
are probably conspecific. The above redescription is given because
the original description and figures of the adult morphology are
incomplete.

According to Sandars (1944), the genus Gonoplasius has a very
conspicuous dorsomedial excretory vesicle posterior to the genital atrium
rather than paired vesicles which open at the level of the genital atrium,
as in the genus Microcotyle. Sproston (1946) believed that the
structure, described by Sandars as the excretory vesicle, is actually
the vagina. She stated,

"--this is almost certainly the vagina, for it is
characteristic of Monogenea that the excretory ducts
open separately on each side of the esophagus in
small ampullae."

Robinson (1961) agreed with Sproston, since the vagina in Gonoplasius
longirostri (Robinson, 1961) Price, 1962 is located in the same relative
position as the excretory vesicle shown in Sandars' figure. Price
(1962), after examining the type specimens of G. longirostri, agreed
with Robinson (1961). The study of G. carangis, the type species,
reveals that the structure described by Sandars (1944) as the excretory
vesicle is definitely the vagina, thus supporting the suspicion of
Sproston (1946) and the conclusions of Robinson (1961) and Price (1962).
The presence of paired excretory vesicles in our population of G.
carangis, one on each side at the level of the genital atrium, further
support this conclusion.
Kahawaia Lebedev, 1969


*Kahawaia truttae* (Dillon and Hargis, 1965) Lebedev, 1969

Host: *Arripis trutta* Bloch and Schneider, Australian Salmon; family *Arripidae*.

Habitat: Gills.

Locality: Port Kenney, South Australia (new locality record)

Number examined: 3

Description: Body very contracted (length and width of body not measured). Buccal suckers, (2) 65.5 (63-68) long by (2) 77 (74-80) wide with small, thin septa; rim of buccal suckers with small, sclerotized, tooth-like papillae. Posthaptor armed with 36-42 clamps on right side and 34-40 on left side. Anterior clamps (2) 58.5 (57-60) long by (2) 44 (42-46) wide; middle clamps (2) 61.5 (55-68) long by (2) 44.5 (41-48) wide; posterior clamps (2) 45.5 (42-49) long by (2) 36.5 (35-38) wide. Pharynx (2) 54.5 (51-58) long by (2) 52 (46-58) wide. Genital spines approximately (2) 75 (72-78) long. Eggs (2) 216.5 (210-223) long by 71.5 (65-78) wide. Other features as described by Dillon and Hargis (1965b).
Discussion: The major differences between the Australian and New Zealand populations are as follows: (1) buccal suckers 63-68 long by 74-80 wide rather than 58-65 long by 61-65 wide and (2) posthaptor with 36-42 clamps on the right side and 34-40 clamps on the left side rather than 56-67 clamps on the right side and 51-52 on the left. The measurements given by Dillon and Hargis (1965b) for the middle and posterior clamps should be reversed, i.e. middle clamps (2) 75 (71-79) long by (2) 59 (56-62) wide; posterior clamps (2) 46 (45-47) long by (2) 37 (35-39) wide.

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REFERENCES


EXPLANATION OF PLATE V

_Polylabris sillaginæ_ (Woolcock, 1936) n. comb.

Figures:

28. Whole mount, ventral view.
29. Cirrus complex.
30. Clamp, ventral view.

_Polylabris carnaryonensis_ n. sp.

Figures:

31. Whole mount, ventral view.
32. Cirrus.
33. Clamp, ventral view.
34. Egg.
EXPLANATION OF PLATE VI

Polylabris sigani n. sp.

Figures:
35. Whole mount, ventral view.
36. Cirrus complex.
37. Clamp, ventral view.
38. Egg.

Gonoplasius carangis Sandars, 1944

Figures:
39. Whole mount, ventral view.
40. Genital corona.
41. Clamp, ventral view.
42. Egg.