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Polyopisthocotyleids from the Australian fishes, the subfamily
Polylabrinae and Microcotylinae**

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The subfamilies Polylabrinae and Microcotylinae.

by

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Monogeneans from the southern Pacific Ocean.
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The Subfamilies Polylabrinae and Microcotylinae.

(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. Hargis⁴

ABSTRACT: This sixth of a series on monogenetic trematodes from the Southern Pacific Ocean discusses five species of Monogenea from Australian waters. Polylabris carnivoronensis 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.

A new combination is given for Polylabris sillaginae (Woolcock, 1936) n. comb. and new locality records are given for P. sillaginae (Woolcock, 1936) n. comb., Gonoplasius carangis Sandars, 1944, and Kahawaia truttae (Dillon and Hargis, 1965) Lebedev, 1969. A new host record is established for Gonoplasius carangis Sandars, 1944.

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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 Microcotylidae 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.

Homoeotypes: USNM Helm. Coll. No. 71950 (5 specimens).

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.

Holotype: USNM Helm. Coll. No. 71951.

Paratypes: USNM Helm. Coll. No. 71952 (4 specimens).

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. sillaginae. It differs from P. sillaginae 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.

Holotype: USNM Helm. Coll. No. 71953.

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 vitellog ducts 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. sillaginae and P. carnarvonensis n. sp. Polylabris sigani n. sp. is distinguished from P. sillaginae 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).

Other species: G. longirostri (Robinson, 1961) Price, 1962 (=Microcotyle 1. Robinson, 1961) from the gills of Longirostrum platessa (Cuv. and Va.), Cook Strait, New Zealand (Robinson, 1961), Caranx lutescens, Pacific Ocean basin (Lebedev, 1968), and Caranx adscensionis (Mamaev, personal communication).

Gonoplasius carangis Sandars, 1944

(PLATE VI, Figs. 39-42)

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

Habitat: Gills.

Locality: Ulladulla, New South Wales (new locality record); 8 miles S of Ulladulla (25 fms.; mud).

Number examined: 20 juveniles; 7 adults.

Homeotypes: USNM Helm. Coll. No. 71955 (5 specimens).

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 vitellog ducts 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

Type species: K. truttae (Dillon and Hargis, 1965) Lebedev, 1969 (= Gonoplasius t. Dillon and Hargis, 1965) from the gills of Arripis trutta Bloch and Schneider, 23 miles ENE of Timaru, New Zealand (Dillon and Hargis, 1965b). On the gills of Arripis trutta from the Tasman Sea and Great Australian Bight (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

- Dillon, W. A. and W. J. Hargis, Jr., 1965a. Monogenetic Trematodes from the Southern Pacific Ocean. I. Monopisthocotylea from New Zealand fishes. *Biol Antarctic Seas II, Ant Res Ser* 5:229-249.
- _____. 1965b. Monogenetic Trematodes from the Southern Pacific Ocean. II. Polyopisthocotyleids from New Zealand fishes; the families Discocotylidae, Microcotylidae, Axinidae, and Gastrocotylidae. *Biol Antarctic Seas II, Ant Res Ser* 5:251-280.
- Euzet, L. and A. Cauwet. 1967. Polylabris diplodi n. g., n. sp. (Monogenea, Microcotylidae) parasite de teleosteens du genre Diplodus (Sparidae). *Bull Mus Natn Hist Natur, Paris* 39(1):213-220.
- Lawler, A. R. and W. J. Hargis, Jr. 1968. Monogenetic trematodes from the southern Pacific Ocean. V. Monopisthocotyleids from Australian fishes, the subfamily Trochopodinae. *Proc Biol Soc Wash* 81:367-402.
- Lebedev, B. I. 1968. Monogenea from commercial fishes of the Pacific Ocean basin. Family Heteraxinidae Price, 1962, p. 38-45. In Helminths of the Pacific Ocean. Izd "Nauka", Akad Nauk USSR.
- _____. 1969. Substantiation of the new genus Kahawaia gen. n., for Gonoplasius truttae Dillon et Hargis, 1965 (Microcotylidae: Monogenoidea). *Parazitologiya* 3(1):69-73.
- _____. 1976. The new monogenean Grandicotyle bychowskyi gen. et sp. nov. and the substantiation of a subfamily Polylabrinae subfam. nov. (Oligonchoinea: Microcotylidae). In Studies on the Monogeneans. Proc (new series) *Inst Biol and Pedol, Far-East Sci Centre, Acad Sci USSR* 34(137):75-82.

- Price, E. W. 1962. North American monogenetic trematodes. XI. The family Heteraxinidae. *J Parasitol* 48(3):402-418.
- Robinson, E. S. 1961. Some monogenetic trematodes from marine fishes of the Pacific. *Trans Am Microscop Soc* 80(3):235-266.
- Sandars, D. F. 1944. A contribution to the knowledge of the Microcotylidae of Western Australia. *Trans Roy Soc S Australia* 68(1):67-81.
- Sproston, N. G. 1946. A synopsis of the monogenetic trematodes. *Trans Zool Soc London* 24(4):185-600.
- Woolcock, V. 1936. Monogenetic trematodes from some Australian fishes. *Parasitology* 28(1):79-81.

EXPLANATION OF PLATE V

Polylabris sillaginae (Woolcock, 1936) n. comb.

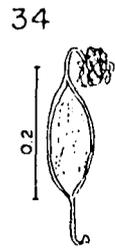
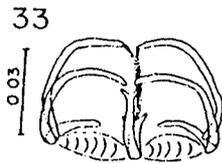
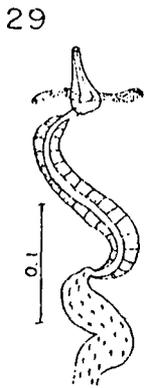
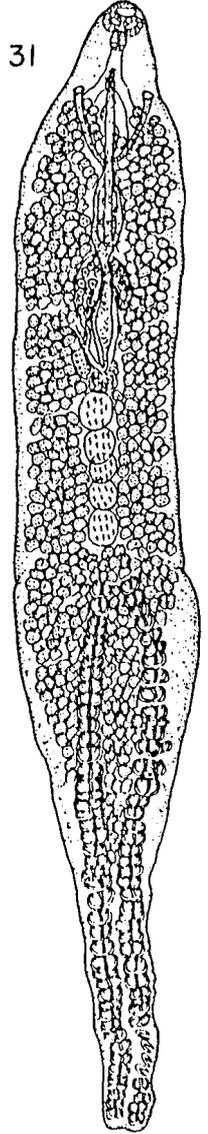
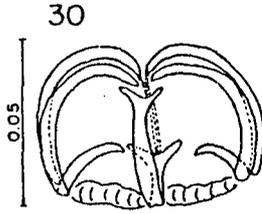
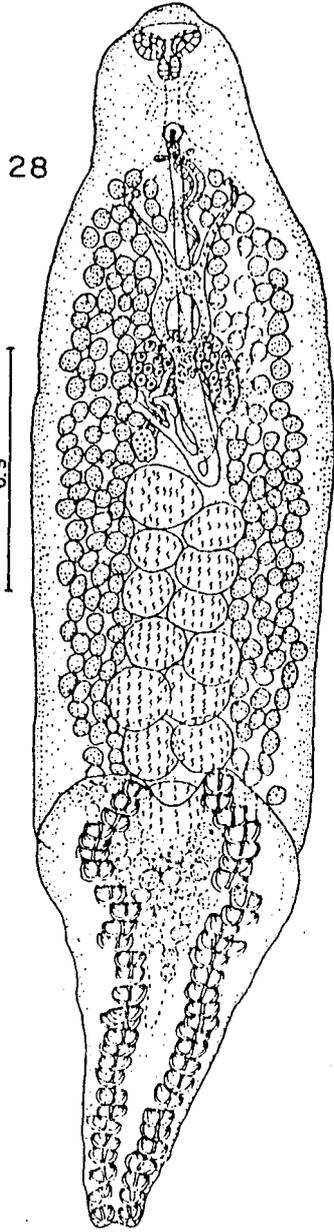
Figures:

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

Polylabris carnarvonensis 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.

