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Five New Species of Dactylogyrus (Monogenea) from Cyprinid Fishes in Thailand

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Abstract

Five new species of *Dactylogyrus* Diesing, 1850, are described from two species of cyprinid fishes collected from the hydro-electric reservoirs in Thailand. They are *Dactylogyrus anchorobustus* from *Hampala macrolepidota* and *D. ratchaprapaensis, D. amphilongus, D. suratthaniensis, D. hominis* from *Osteochilus hasselti.*

Introduction

Three species of Dactylogyrus parasitizing *Hampala macrolepidota* (valencies), *Dactylogyrus hampali, D. macrolepidoti* and *D. quadribrachiatus*, (Lim 1987), have been reported from hostfishes in Malaysia (Lim, 1987). Eight species of *Dactylogyrus* and one species of *Dactylogyroides* parasitizing, *Osteochilus hasselti, (D. cheligenitalis, D. contramatus, D. convolvugenitalis, D. malayanus, D. osteochili, D. torquegenitalis, D. sagittavaginalis, D. spiruli* and *Dactylogyroides malayensis*, have been reported from hostfishes in Malaysia (Lim and Furtado, 1984). All these monogeneans except *D. Contramatus and D. osteochili* are found on *O. hasselti* in Thailand (Juthatip, 1997).

In the present study five new species of monogeneans from *H. macrolepidota*, and *O. hasselti* are described.

Materials and Methods

Samples of *H. macrolepidota*, and *O. hasselti* were collected from four pierce of hydro-electric reservoirs named Srinakarin, Sirikit, Ubolratana and Ratchaprapa reservoir. The right gills were excised from freshly sacrificed host and placed in petri-dishes containing clean water. The monogeneans were gently removed from the gill filaments using a bent needle and placed on clean glass slides and covered with a drop of water and coverglass. The four corners of the coverglass were cemented with clear nail varnish. After half of the water had evaporated ammonium picrate glycerine solution was added to the edge of the coverglass in order to fix and clear the monogeneans (Chinabut and Lim, 1994). The specimens were identified and drawings were prepared with the aid of a phase contrast microscopy and a drawing tube. The internal structures were measured in micrometers (mm), the average (n = 10) being presented followed by the range in paranthesis.

The holotype specimens are housed at the Helminthological Collection at the Aquatic Animal Health Research Institute, Department of Fisheries, Bangkok, Thailand.

***Dactylogyrus anchorobustus*, n.sp.** (Figs. 1 and 2)

Host : *Hampala macrolepidota*

Locality : Srinakarin Reservoir, Kanchanaburi Province; Sirikit Reservoir, Uttaradit Province; Ratchaprapa Reservoir, Suratthani Province, Thailand.

No. of hosts examined : 210
No. of hosts infected : 46
No. of monogeneans obtained : 95

DESCRIPTION

Body 76 (4-80) wide, 416 (410-438) long. Short blunt hamuli : inner length 20 (18-22), outer length 24 (22-26), inner root 8 (6-10), outer root 4(3-5), shaft 17(16-18), point 8 (7-11). Single bone-shaped dorsal bar, size 22 (21-23) x 3 (3-4). Fourteen marginal hooks, total length 14 (13-15). Vestigial ventral hamuli present length 5 (4-6). Vertebral ribs-like male penis consists of coiled copulatory tube and vertebral-like accessory piece. Long coiled vaginal tube with accessory posterior piece situated on the left side of the body posterior to penis.

ETYMOLOGY

This species is named *Dactylogyrus anchorobustus* n.sp. because of the unique morphology of its hamuli that are short and strong.

REMARKS

This species is similar to *Dactylogyrus helicoides* (Lim, 1987) from *Puntius fasciatus* in the shape of its copulatory organ and its vaginal armament is similar to that of *Dactylogyrus osteochili* (Lim and Furtado, 1984) from *O. hasselti* but its hamuli differ from the two mentioned species.

***Dactylogyrus ratchaprapaensis*, n.sp.** (Figs. 3 and 4)

Host : *Osteochilus hasselti*
Locality : Ratchaprapa Reservoir, Suratthani Province, Thailand.
No. of hosts examined : 30
No. of hosts infected : 10
No. of monogeneans obtained : 68

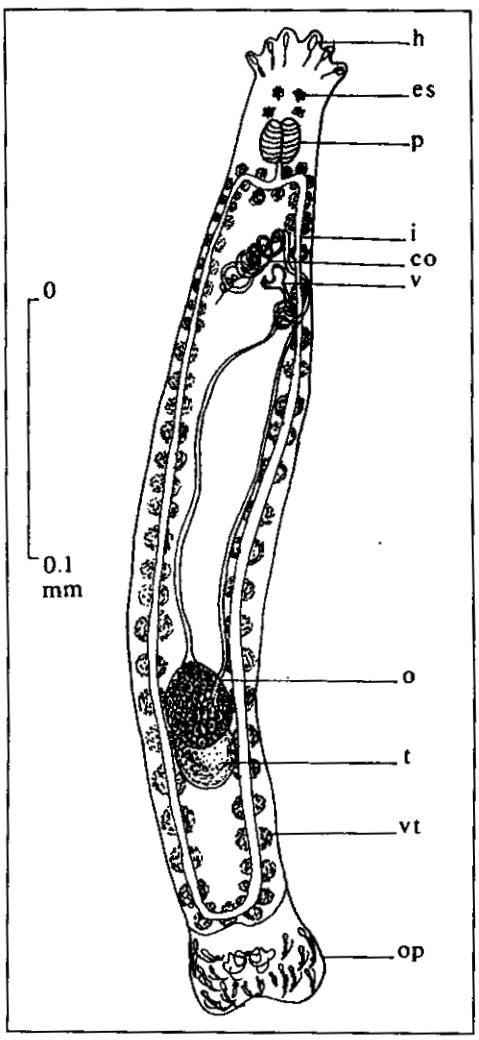

Fig. 1 *Dactylogyrus anchorobustus* n.sp. whole mount (ventral view).

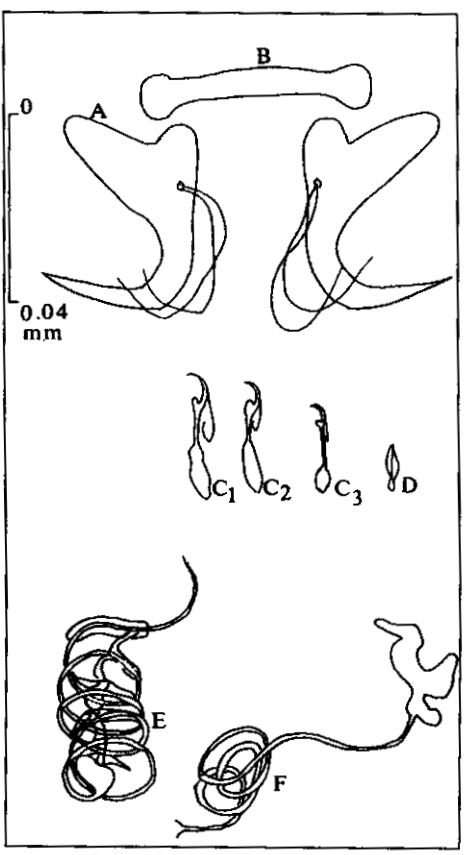

Fig. 2 Hard parts and soft parts of *D. anchorobustus* n.sp. A = hamuli; B = dorsal Bar; $C_1C_2C_3$ = hooklet; D = vestigial ventral hamuli; E = copulatory organ; F = vagina

DESCRIPTION

Body 60 (58-64) wide, 450 (426-470) long. Dorsal hamuli : inner length 20 (18-24), outer length 14 (13-15), inner root 8 (7-10), outer root 1 (1-2), shaft 14 (13-15), and point 14 (13-15). Single bone-shaped dorsal bar 15 (14-17) x 2 (2-3) in size. Fourteen marginal hooks. Vestigial ventral hamuli present size 2 (2-3). Penis consists of copulatory tube with round basal, sclerotized plate-like accessory piece. Simple funnel-shaped vaginal armament and straight vaginal tube are present on the left side the body.

ETYMOLOGY

This species is named after the Ratchaprapa Reservoir where it was found.

REMARKS

The penis is similar to that of *Dactylogyrus bului* (Lim, 1987) from *Puntius bulu* but its vaginal armament is similar to that of

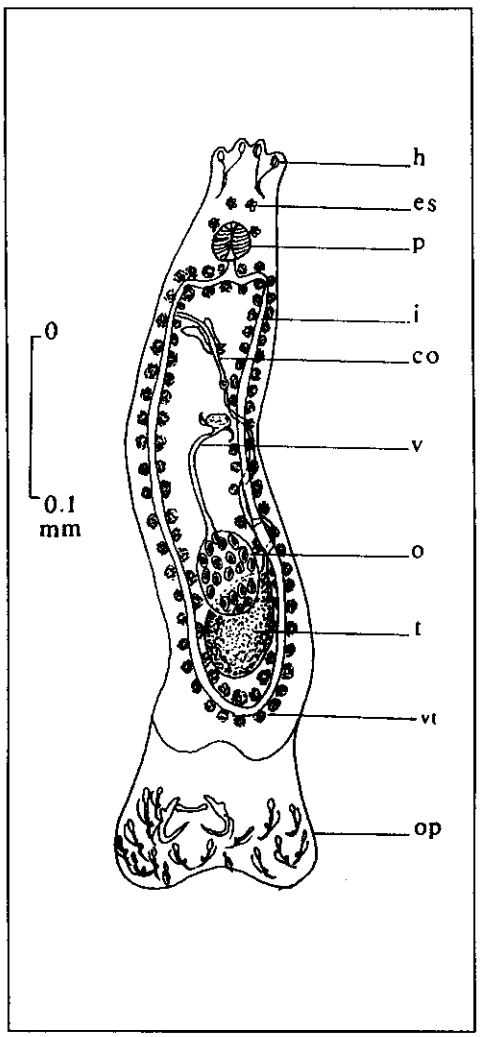

Fig. 3 *Dactylogyrus ratchapraensis* n.sp. whole mount (ventral view).

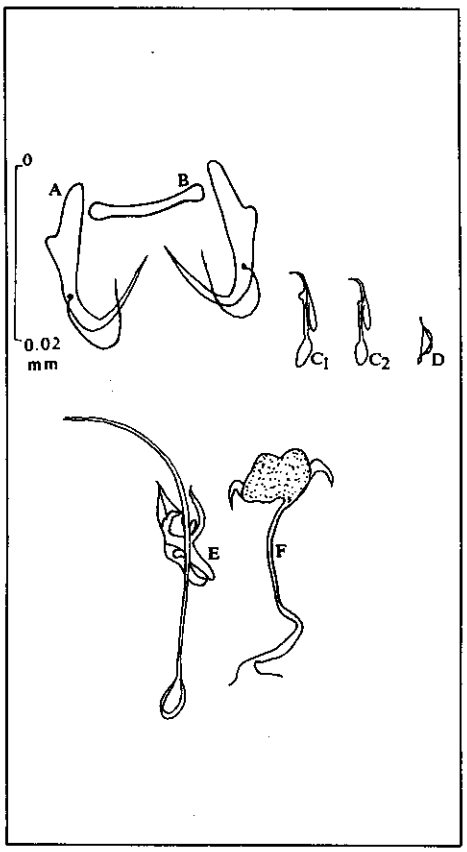

Fig. 4 Hard parts and soft parts A = hamuli; B = dorsal bar; C_1C_2 = hooklet; D = vestigial ventral hamuli; E = penis; F = vagina

Dactylogyrus spiruli from *O. hasselti*. This species has only one dorsal bar but the two mentioned species have two bars. The thin hamuli of this species are similar to those of *Dactylogyrus varicorhinus*. However, the present species differs from the mentioned species in the structure of the penis, vaginal armament and marginal hooks.

***Dactylogyrus amphilongus*, n. sp.** (Figs. 5 and 6)

Host : *Osteochilus hasselti*
Locality : Ratchaprapa Reservoir, Suratthani Province, Thailand
No. of hosts examined : 30
No. of hosts infected : 5
No. of monogeneans obtained : 35

DESCRIPTION

Body 45 (42-28) wide, 540 (510-556) long. Dorsal hamuli : inner

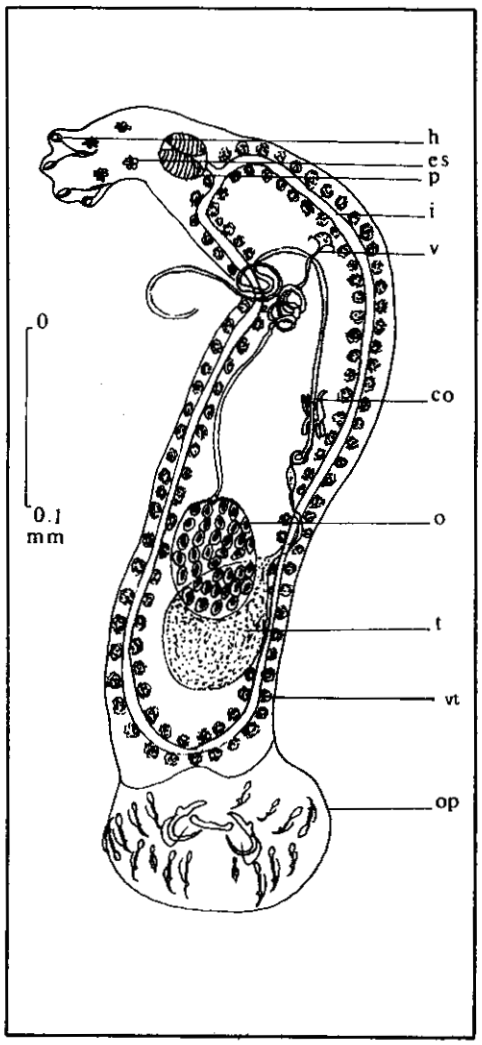

Fig 5. *Dactylogyrus amphilongus* n.sp. whole mount (ventral view).

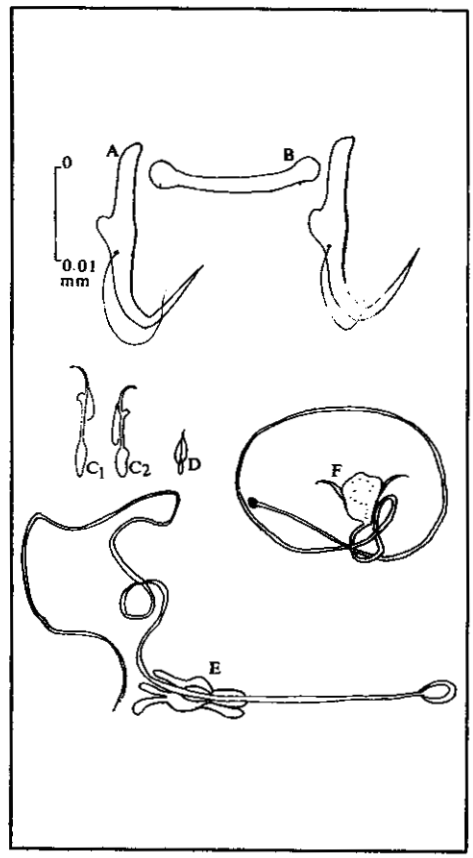

Fig. 6 Hard parts and soft parts of *D. amphilongus* n.sp. A = hamuli; B = dorsal bar; C_1C_2 = hooklet; D = vestigial ventral hamuli; E = penis; F = vagina

length 19 (17-21), outer length 14 (12-16), inner root 8 (7-10), outer root 1 (1-2), shaft 13 (11-15), and point 8 (7-10). Dorsal bar bone-like, size 16 (14-17) x 1 (1-2). Fourteen marginal hooks, 10 (9-12) long. Vestigial ventral hamuli 1 (1-2) in size. Penis consists of a long coiled copulatory tube and test tube holder-like acessory piece. Female reproductive organ composed of funnel-like vaginal armament and long coiled vaginal tube situated on the right side of the body.

ETYMOLOGY

This species is named after the long tubular structure of both penis and vagina.

REMARKS

The structure of the penis and vagina of the present species is similar to those of *D. ratchaprapaensis* n.sp. from *O. hasselti* except the length which is three times than the mentioned species.

***Dactylogyrus suratthaniensis*, n. sp.** (Figs. 7 and 8)

Host : *Osteochilus hasselti*
Locality : Ratchaprapa Reservoir, Suratthani Province, Thailand
No. of hosts examined : 30
No. of hosts infected : 5
No. of monogeneans obtained : 17

DESCRIPTION

Body 93 (90-95) wide and 625 (610-640) long. Dorsal hamuli : inner length 14 (12-16), outer length 10 (10-11), inner root 5 (4-6), outer root 1 (1-2), shaft 9 (8-10) and point 9 (8-11). Two bars; basin-shape dorsal bar, size 13 (11-14) x 2 (1-2), and X-shape ventral bar, size 1 (1-2) x 2 (2-3). Fourteen thin marginal hooks divided into three groups, size 9 (8-10), 12 (10-13) and 17 (16-18). Two vestigial ventral hamuli present, 1 (1-2). Penis consists of tube with accessory piece round basally and three-forked distal tip. Vagina consists of funnel-shaped armament and short tube.

ETYMOLOGY

This species is name after the Suratthani Province, the location of the Ratchaprapa Reservoir.

REMARKS

The penis of the present species belongs to the type found in *Dactylogyrus sagittavaginalis* from *O. hasselti* but its X-shape ventral bar is similar to that of *Dactylogyrus quadribrachiatus* from *Hampala macrolepidota*.

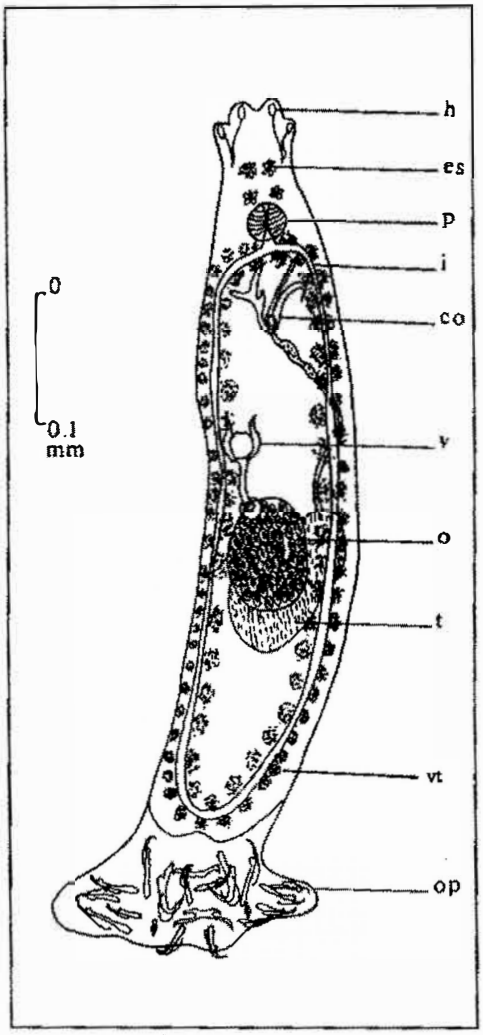

Fig. 7. *Dactylogyrus suratthaniensis* n.sp. whole mount (ventral view).

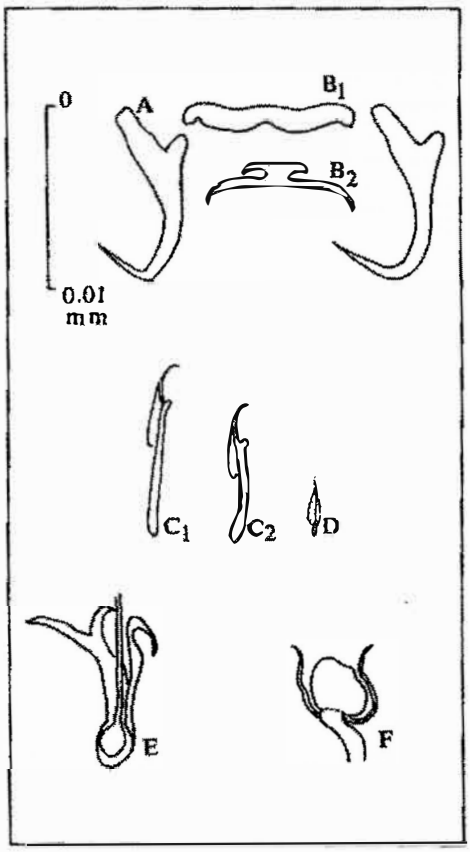

Fig. 8. Hard part and soft parts of *D.suratthaniensis* n.sp. A = hamuli; B_1 = dorsal Bar; B_2 = ventral bar; $C_1C_2C_3$ = hooklet; D = vestigial ventral hamuli; E = penis; F = vagina

***Dactylogyrus hominis*, n. sp.** (Figs. 9 and 10)

Host : *Osteochilus hasselti*

Locality : Srinakarin Reservoir, Kanchanaburi Province, and Sirikit Reservoir, Uttaradit Province, Thailand

No. of hosts examined : 150
No. of hosts infected : 10
No. of monogeneans obtained : 132

DESCRIPTION

Body 48 (44-54) wide and 540 (510-560) long. Hamuli : inner length 27 (24-29), outer length 22 (19-24), inner root 8 (7-10), outer root 2 (1-2), shaft 12 (11-12), and point 3 (3-4). Two bars; basin-shaped dorsal bar, size 13 (11-14) x

3 (2-3), and five-rayed ventral bar, size 2 (1-2) x 18 (16-19). Fourteen cylindrical-shaped handle marginal hooks divided into three groups size 14 (13-15), 16 (16-17), and 20 (19-22). Vestigial ventral hamuli present. Penis consists of curved tube 23 (21-25) long, with accessory piece round basally and tripartite distal tip short with funnel-shaped armament.

ETYMOLOGY

This species is named "hominis" after the shape of its ventral bar which resembles humans.

REMARKS

The hamuli belongs to the type found in *Dactylogyrus cristatocleithrium* but its five-rayed ventral bar is similar to that of *Dactylogyrus pentabrachicleithrium*. The copulatory organ of this species is similar to *D. sagittavaginalis* but its vagina is similar to that of *D. spiruli*.

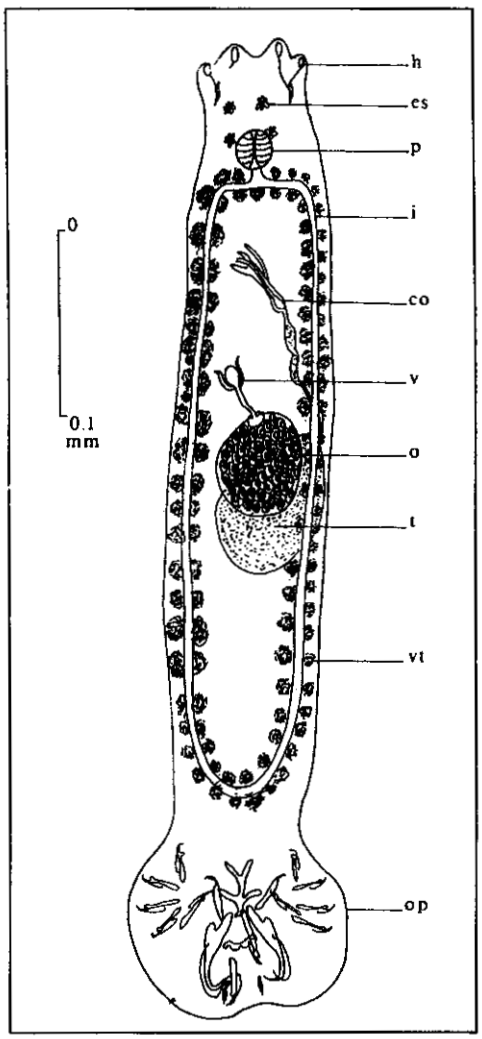

Fig. 9 *Dactylogyrus hominis* n.sp.whole mount (ventral view).

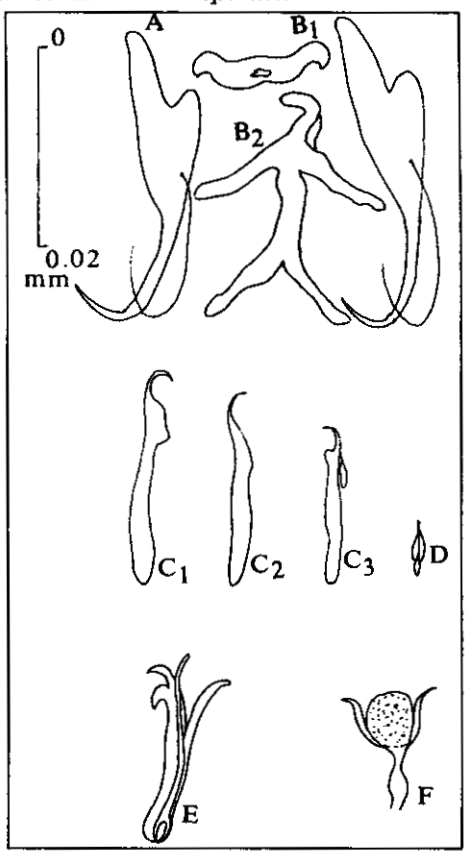

Fig. 10 Hard parts and soft parts of *D.hominis* n.sp. A = anchor; B_1 = dorsal Bar; B_2 = ventral bar; C_1C_2 = hooklet; D = vestigial ventral hamuli; E = penis; F = vagina

Conclusion and Discussion

The five new species of monogeneans parasitized *H. macrolepidota* and *O. hasselti* with low prevalence and incidence of infection. *Dactylogyrus ratchaprapaensis* and *D. suratthaniensis* were found only in the Ratchaprapa Reservoir.

There are differences in the occurrence of species of monogeneans in Malaysia and Thailand. Only three species; *D. macrolepidoti, D. hampali* and *D. quadribrachiatus* are on *H. macrolepidota* in Malaysia (Lim, 1987) but four species; the three mentioned species and another new species, *D. anchorobustus*, occur in Thailand. Nine sp.; *D. cheligenitalis, D. convolvugenitalis, D. malayanus, D. spiruli, D. torquegenitalis, D. sagittavaginalis, D. contramanus, D. osteochili* and *D. malayensis* occur on *O. hasselti* in Malaysia (Lim and Furtado, 1984) but eleven species; the nine mentioned species except *D. contramanus* and *D. osteochili* (Juthatip, 1997) and the four new species, *D. ratchaprapaensis, D. suratthaniensis, D. amphilongus* and *D. hominis* occur on the same host in Thailand.

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