

**FIVE NEW SPECIES OF *DACTYLOGYRUS* DIESING,  
1850 (MONOGENEA) FROM *PUNTIOPLITES PROTOZYSRON*  
(BLEEKER) (CYPRINIDAE) OF THAILAND**

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**ABSTRACT.** - Five new species of *Dactylogyrus*, *D. protozysron*, *D. hamatus*, *D. puntioplites*, *D. kamang*, and *D. thailandensis* were collected from *Puntioplites protozysron* (Bleeker) in Thailand.

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**INTRODUCTION**

The genus *Puntioplites* Smith, 1929, was established for barbine fishes having large, strongly ossified, serrated anal spine. Only one species of *Puntioplites*, *P. protozysron*, is found in Thailand. *P. protozysron* or Pla Kamang (in Thai) has been recorded from the extreme north, throughout central Thailand and also from the Mekong basin (Laos and Cambodia) (Smith, 1945). There are no records of monogeneans from fishes belonging to this genus so far.

In the present study, five new species of *Dactylogyrus* were found on the gills of *P. protozysron*. Specimens of two other species were collected and although they are also undescribed they lack good series and hence will not be described herein.

**MATERIALS AND METHODS**

*Puntioplites protozysron* was collected from the Cho Praya River at Chainat Province and from the Ubolratana Reservoir in the Khonkhen Province. The fishes were necropsied in the laboratory after basic fish measurements have been noted. Gills were removed into petri dishes containing clean water and gently scraped to dislodge monogeneans. The monogeneans were collected and prepared for studies as given in Lim and Furtado (1986). The monogeneans were measured according to Gussev (1978) and measurements given in micrometre ( $\mu\text{m}$ ) with the averages first followed by the ranges in parentheses.

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Type specimens are kept in the reference collections at Aquatic Animal Health Research Institute (AAHRI), Bangkok, at the Institute of Advanced Studies (IPT), University of Malaya, Kuala Lumpur and in the Zoological Reference Collection (ZRC), Department of Zoology, National University of Singapore.

## TAXONOMY

### FAMILY DACTYLOGYRIDAE BYCHOWSKY, 1933

#### *Dactylogyrus protozysron*, new species

(Fig. 1)

*Host.* - *Puntioplites protozysron* (Bleeker).

*Localities.* - Cho Praya River, Chainat Province (type locality), Thailand and Ubolratana Reservoir, Khonkhen Province.

*Number of hosts examined.* - 11.

*Number of monogeneans obtained.* - 95.

*Number of specimens measured.* - 20.

*Type specimens.* - Holotype in AAHRI (AAHRI MONO 1991-001), 1 paratype in ZRC, 1 paratype in IPT.

*Description.* - Body length 460 (340-560), width 66(50-100). Anchors: inner length 29 (28-38), outer length 26 (24-30), inner root 10 (8-11), outer root 3 (2-4), main part 23 (22-26) and recurved point 8 (6-12). Two connective bars; saddle-like dorsal bar, length 4 (3-5) width 27 (23-30). W-shape ventral bar with lightly sclerotised projection at middle, length 6(5-7), width 21 (18-25). One pair of needles present. 14 hooks, length 21 (18-25). Copulatory tube simple, tapering 20 (16-23) long, initial part with protruding sclerotised piece; accessory piece comprising several pieces. Vagina funnel-shaped; vaginal tube short.

*Etymology.* - This species is named after the species name of the host species.

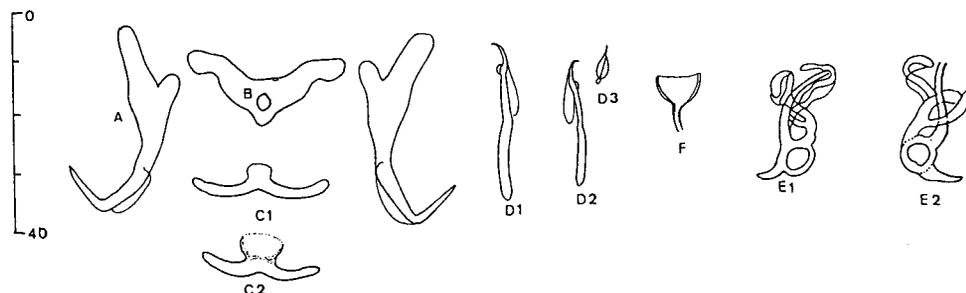


Fig. 1: Sclerotised parts of *Dactylogyrus protozysron*, new species. A = anchor; B = dorsal bar; C1, C2 = ventral bar; D1 & D2 = hooks; D3 = needle; F = vagina; E1, E2 = copulatory organ (Scale in  $\mu\text{m}$ ).

**Remarks.** - This species is very similar to *D. fasciculi* Lim & Furtado, 1986 (from *Puntius bulu*) in the morphology of anchors, hooks and copulatory organ. This species differs from *D. fasciculi* in detailed morphology of the accessory piece, hooks (in the present species the pivot is longer compared to that in *D. fasciculi*) and also in the detailed morphology of the ventral bar which in the present species is not as distinct as that in *D. fasciculi*.

***Dactylogyrus hamatus*, new species**

(Fig. 2)

**Host.** - *Puntioplites protozysron* (Bleeker).

**Localities.** - Cho Praya River, Chainat Province (type locality) and Ubolratana Reservoir, Khonkhen Province.

**Number of hosts examined.** - 11.

**Number of monogeneans obtained.** - 58.

**Number of specimens measured.** - 14.

**Type specimens.** - Holotype in AAHRI (AAHRI MONO 1993-001). Paratype in ZRC, 1 paratype in IPT.

**Description.** - Body length 612 (500-700), width 142 (100-180). Anchors: inner length 20 (18-22), outer length 14 (13-15), inner root 10 (8-11), outer root 2 (1-3) and recurved

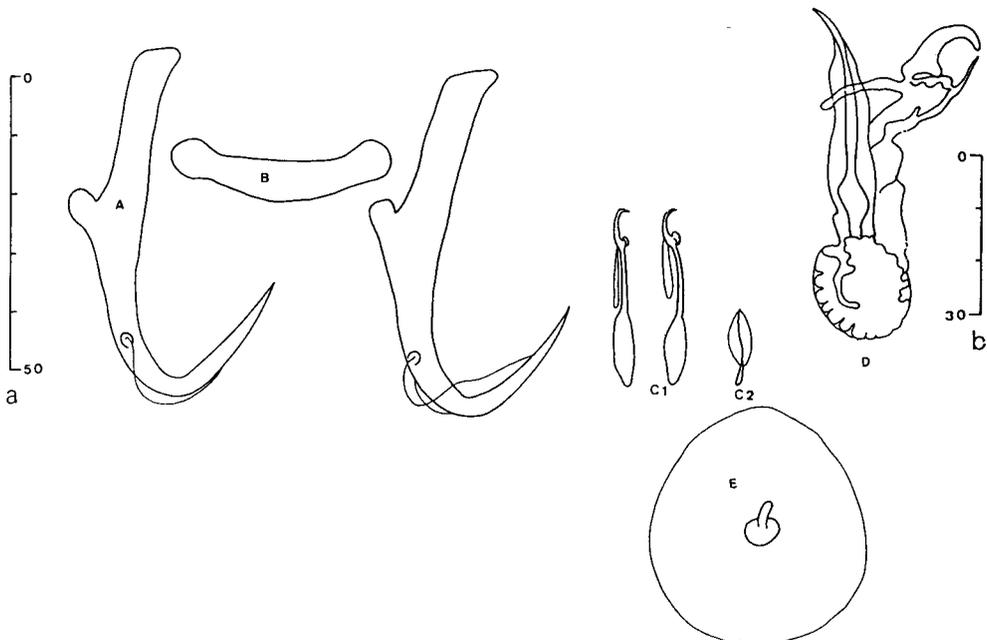


Fig. 2: Sclerotised parts of *Dactylogyrus hamatus*, new species. A = anchors; B = dorsal bar; C1 = hooks; C2 = needle; D = copulatory organ; E = vagina (Scales in  $\mu\text{m}$ , scale b for Fig. D only).

point 8 (7-10). Only one dorsal bar, length 3 (2-4), width 13 (12-14). Pair of needles present. 14 hooks with clearly demarcated handle, length 10 (9-11). Copulatory tube tapering, length 24 (23-25); distal end of accessory piece pincer-like, length 25 (23-26). Vaginal opening round, very short sclerotised vaginal tube.

**Etymology.** - This species is named "hamatus" because of the pincer-like ending of the accessory piece.

**Remarks.** - The present species is very similar to *D. pahangensis* Lim & Furtado, 1986 (from *P. bulu*) in the morphology of the anchors, bar, hooks, copulatory tube and vaginal system except in the detailed morphology of the accessory piece and hook. The present species differs from *D. pahangensis* in having an accessory piece which is distally hooked (or pincer-like). The accessory piece with pincer-like ending is a unique feature of this species.

*Dactylogyrus pantioplites*, new species

(Fig. 3)

**Host.** - *Pantioplites protozysron* (Bleeker).

**Localities.** - Ubolratana Reservoir, Khonkhen Province and Cho Praya River, Chainat Province (type locality), Thailand.

**Number of hosts examined.** - 11.

**Number of monogeneans obtained.** - 115.

**Number of specimens measured.** - 20.

**Type specimens.** - Holotype in AAHRI (AAHRI MONO 1991-003), 1 paratype in ZRC, 1 paratype in IPT.

**Description.** - Body length 508 (460-560), width 78 (70-90). Anchors: inner length 33 (30-33), outer length 30 (28-33), inner root 9 (8-10), outer root 5 (7-8), main part 25 (21-25) and recurved point 8 (6-12). Two connective bars: saddle-shaped dorsal bar, length 54-7), width 25 (22-26); 5-rayed ventral bar, length 24 (22-26), anterior processes 6 (5-8) long,

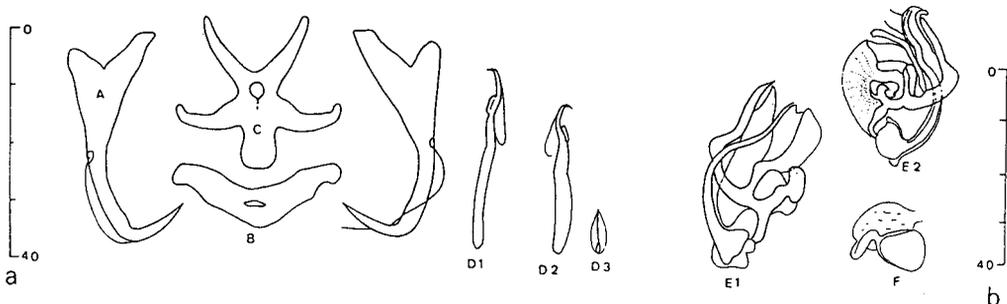


Fig. 3: Sclerotised parts of *Dactylogyrus pantioplites*, new species. A = anchor; B = dorsal bar; C = ventral bar; D1, D2 = hooks; D3 = needle; E1, E2 = copulatory organ; F = vagina (Scales in  $\mu\text{m}$ , scale b for Fig. E2 only).

lateral processes 8 (5-10) long, posterior process 7 (5-9). One pair of needles present. 14 hooks, length 25(20-30), one pair shorter and stouter. Copulatory tube simple tapering; accessory piece consists of C-shaped piece and an elongated grooved piece. Vagina cup-shaped; vaginal tube short.

**Etymology.** - This species is named after the host genus.

**Remarks.** - There are seven species of *Dactylogyrus* from the Oriental region that possess 5-rayed ventral bars; *D. chitravanshii* Gussev, 1976 (from *Labeo fimbriatus*), *D. lohonii* Gussev, 1976 (from *Labeo bata*), *D. vicinus* Gussev, 1976 (from *Labeo calbasu*), *D. mrigali* Gussev, 1976 (from *Cirrhina mrigala*), *D. crucitrabus* Gussev, 1976 (from *Cirrhina reba*), *D. pentabrachiatus* Lim & Furtado, 1986 (from *P. bulu*), *D. pentabrachicleithrium* Lim & Furtado, 1986 (from *P. partipentazona*) and *D. cristatocleithrium* Lim & Furtado, 1986 (from *P. orphoides*). The 5-rayed ventral bar of the present species is similar to that of *D. pentabrachicleithrium*. The present species is different from *D. pentabrachicleithrium* in the morphology of the copulatory organ.

***Dactylogyrus kamang*, new species**  
(Fig. 4)

**Host.** - *Puntioplites protozysron* (Bleeker).

**Localities.** - Ubolratana Reservoir, Khonkhen Province and Cho Praya River, Chainat Province (type locality), Thailand.

**Number of hosts examined.** - 11.

**Number of monogeneans obtained.** - 23.

**Number of species measured.** - 15.

**Type specimens.** - Holotype in AAHRI (AAHRI MONO 1991-004), 1 paratype in ZRC, 1 paratype in IPT.

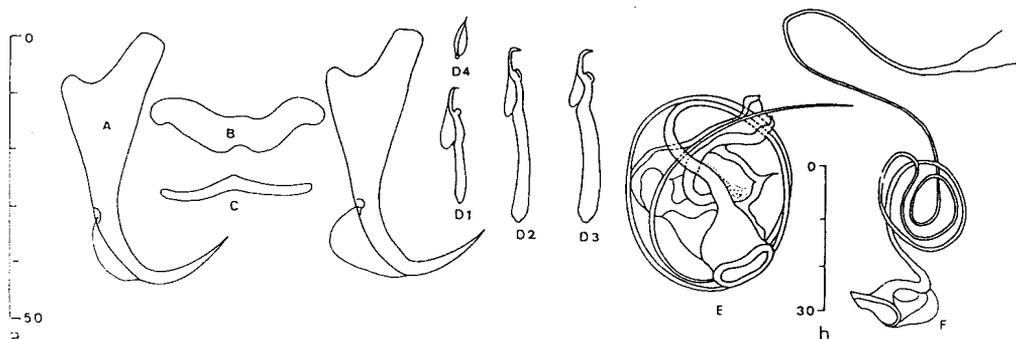


Fig. 4: Sclerotised parts of *Dactylogyrus thailandensis*, new species. A = anchors; B = dorsal bar; C = ventral bar; D1, D2 = hooks; D3 = needle; E = copulatory organ; F = vagina (Scale in  $\mu\text{m}$ ).

**Description.** - Body length 616 (608-624), width 133 (125-140). Anchors: inner length 35 (34-36), outer length 33 (31-35), inner root 11 (10-13), outer root 4 (3-5), main part 30 (29-32) and recurved point 13 (12-15). Two connective bars; saddle-shape dorsal bar, length 5 (4-6), width 23 (22-25); slightly curved, thin ventral bar, length 2 (2-3), width 25 (23-27). One pair of needles present. 14 hooks, 2 pairs shorter, length 22 (19-26); longer hooks 32 (30-34). Copulatory tube coiled, large bell-shape initial part; accessory piece with groove. Vaginal pore dextral, cup-shaped; vaginal tube coiled.

**Etymology.** - This species is named "kamang", after the Thai name, Kamang, for the host species.

**Remarks.** - This species is similar to *D. binotati* Lim & Furtado, 1986 (from *P. binotatus*) in the morphology of the anchors, bars, and coiled vaginal tube. However the hooks and the copulatory organ (especially the accessory piece) of the present species are different from that of *D. binotati*. The coiled copulatory tube of this species is similar to that of *D. lampam* (Lim & Furtado, 1986) (see Lim, 1991). However the present species differs from *D. lampam* in having coiled vaginal tube. Coiled vaginal tube and coiled copulatory tube are found in *D. jullieni* Chinabut & Lim, 1991 (from *Cirrhinus jullieni*); this species is different from *D. jullieni* in the morphology of the anchors and accessory piece, and morphology and number of bars (two in the present species and one in *D. jullieni*). This species is similar to *D. perakensis* Lim & Furtado, 1986 (from *P. orphoides*) in having similar type of haptor armaments and coiled copulatory tube; but they differ in the morphology of the vaginal tube which is coiled in the present species and not coiled in *D. perakensis*.

*Dactylogyrus thailandensis*, new species

(Fig. 5)

**Host.** - *Puntioplites protozysron* (Bleeker).

**Localities.** - Cho Praya River, Chainat Province (type locality) and Ubolratana Reservoir, Khonkhen Province.

**Number of hosts examined.** - 11.

**Number of monogeneans obtained.** - 9.

**Number of specimens measured.** - 9.

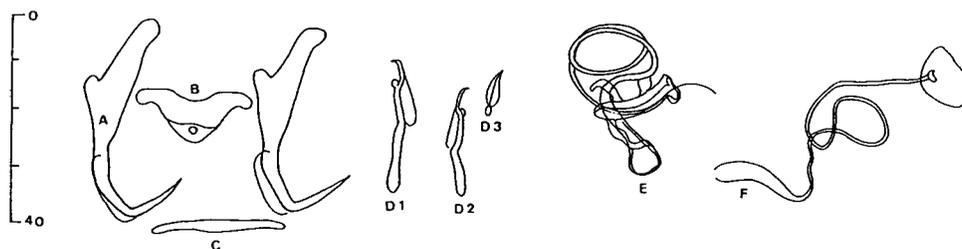


Fig. 5: Sclerotised parts of *Dactylogyrus kamang*, new species. A = anchor; B = dorsal bar; C = ventral bar; D1, D2, D3 = hooks; D4 = needle; E = copulatory organ; F = vagina (Scales in  $\mu\text{m}$ , scale b for Fig. D1, D2, D3, D5, E).

**Type specimens.** - Holotype in AAHRI (AAHRI MONO 1991-005), 1 paratype in ZRC, 1 paratype in IPT.

**Description.** - Body length 595 (585-608), width 102 (98-120). Anchors: inner length 34 (33-36), outer length 28 (27-29), inner root 12 (11-14), outer root 4 (3-5), main part 25 (24-27) and recurved point 11 (10-11). Two connective bars; basin-shape dorsal bar, length 7 (6-8), width 20 (19-22); straight ventral bar, length 2 (-3), width 25 (24-26). 2 needles present. 14 hooks; 3 pairs length 17 (15-19); 4 pairs length 22 (21-25). Copulatory tube coiled; accessory piece with groove. Vaginal tube loosely coiled or straight, length 59 (57-61).

**Etymology.** - This species is named after Thailand.

**Remarks.** - This species is very similar to *D. perakensis* in the morphology of the anchors, hooks, copulatory organs except probably in the morphology of the vaginal tube which is loosely coiled and longer than in *D. perakensis* and in the detailed morphology of the bars especially the ventral bar which is wider than the dorsal bar. The copulatory organ of the present species is also similar to that in *D. lampam*; but the two species differ in the morphology of the ventral bar and the vaginal tube.

## DISCUSSION

The *Dactylogyrus* species from *P. protozysron* are similar to those found on *Puntius* species reported in the South East Asian region (Lim & Furtado, 1986; 1991; Lim, 1991). In fact, the present *Dactylogyrus* species are similar to the *Dactylogyrus* species from *P. bulu*. These suggest some relationships between the two hosts.

Except for *D. hamatus*, new species, the other *Dactylogyrus* species from *P. protozysron* have two connective bars. The ventral bar of *D. puntioplites*, new species is 5-rayed. *D. kamang*, new species and *D. thailandensis* new species possess the *D. lampam*-type of copulatory organ (coiled tube with relatively prominent bell-shaped initial part and accessory piece which is grooved and elongate) (see Chinabut & Lim, 1993).

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