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A List of the Odonata from Thailand Part III. Platystictidae

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Abstract Five species of platystictid damselflies found in the Thai territories were described. Four of them, *Protosticta khaosoidaoensis*, *P. robusta*, *Drepanosticta doisuthepensis* and *D. khaochongensis* are new species. *Protosticta curiosa* FRASER (1934) is redescribed with illustrations. Besides the structure of male caudal appendages, the structure and coloration of prothorax, as well as the coloration of legs of both sexes were found taxonomically reliable.

Introduction

The Family Platystictidae is composed of tropical American Palaemnematinae and tropical Asian Platystictinae. The latter is a small group ranging over Indomalaysian countries but not invading to Taiwan. From Thai limits only a brief record of *Drepanosticta sharpi* (LAIDLAW, 1907) from Nakhon Sithammarat Province (LIEFTINCK, 1965) and the female allotype description of *Protosticta curiosa* FRASER were made.

I have at hand five Thai species referable to two genera, but their individual number is not sufficient enough. In future many more will be added to the Thai fauna as a considerable number of allied species have been known from the neighbouring countries as Laos, Burma and Malaysia.

The majority of the present material were taken by myself in 1965, but for many additional specimens I owe to the following entomologists: Dr. T. W. DONNELLY, Dr. Hiroshi INOUE, Dr. Hiromu KURAHASHI, Mr. K. AKIYAMA, Dr. Paul ARNAUD, Jr. (Californai Academy of Sciences). Sincere thanks are due to these helpful colleagues.

The type material treated in this paper are preserved in my collection for the time being.

Platystictidae—Platystictinae

A particular zygopterous group with the body of extremely slender built, coloured uniformly brownish. Head small with large eyes and pterothorax very small and globular, while the abdomen is extremely slim and long with very long median segments but with very much shortened basal two and terminal three segments. Male caudal appendages and penile organ developed into very complicated structure.

Wings narrow and strongly petiolated, the vein 1A degenerated but the vestigial anal bridge (Ab) often present, obliquely running to the wing margin sometimes making a V-shaped image with anal crossing (Ac). Pterostigma short and square in shape, its anterior side short.

Adults are shade-loving jungle insects in mountain valleys, flying over wet tree trunks or moss-covered rocks. The larvae are believed to breed in the waters of forest-brooks or torrential streams. The body of the larvae is slender with three saccoid gills and peculiar flat labial mask which superficially resembles to that of a gomphid.

From the Thai territory five species belonging to two genera were recognized, three species are belonging to the genus *Protosticta* (SELYS, 1885) and two are to the genus *Drepanosticta* (LAIDLAW, 1917). The latter genus is merely separated from the former by the presence of obliquely running "Ab", a small cross-vein running from the posterior side of q and ending on the posterior wing margin. In the former genus this crossvein (Ab) is absent.

1. *Protosticta curiosa* FRASER

Protosticta curiosa FRASER, 1934, pp. 134–135, 1 fig. (♂ app.), "Lower Burma: East Mergui. A single male (Dr. A. KERR), 31. V. 32."

Protosticta curiosa: ASAHINA, 1981, p. 3, "1 ♀ (Allotype) Fang, N. Thailand, 13. VI. 1965, leg. S. ASAHINA; 1 ♀ Fang, 14. VII. 1966, leg. H. INOUE; 1 ♂ Khao Chong Forest, 25. VI. 1965, leg. S. ASAHINA; 2 ♂ 2 ♀ Erawan Waterfalls, 7. IX. 1975, leg. H. KURAHASHI; 2 ♀ Do., 10. IX. 1975, leg. H. KURAHASHI; 4 ♂ Krachong Forest near Trang, 2. VIII. 1962, leg. ROSS & CAVAGNARO (Cal. Acad. Sci.)."

A rather small-sized species characterized by the extraordinarily elongated male abdomen, more than twice the length of the hindwing. First described from a single male specimen taken at East Mergui, Lower Burma, ca. 250 km southwest Bangkok. The description and figure of superior caudal appendage made by Fraser is rather poor, but the shape of inferior appendage and prothoracic pattern of our specimens appear closest to *curiosa* FRASER.

♂ (ad.): Abd.+app. 39–44 mm, hindwing 18–20.5 mm.

Head small, eyes large; the ground colour of head shining dark brown; labrum ivory white with the anterior margin narrowly black; whole anteclypeus and the base of mandible adjacent to anteclypeus ivory white; antefrons with a pale transverse bar between the bases of antenna; scape and proximal half of pedicel of antenna pale coloured.

Prothorax pale brown with each one pair of dark spots on the anterior, median and posterior lobes, respectively. (Fig. 1). Pterothorax shining black (pale brown in teneral insects) with the dorsal ridge and antealar sinus pale. There is a small pale spot at the lower end of mesepisternum, and another minute pale spot at the top of mesepimeron; metepisternum almost pale coloured with its posterior margin black striped along the metapleural suture. Legs short, pale brown, external side

of femora narrowly dark striped, the bases of each tibial spine are dark spotted.

Wings (Fig. 37) hyaline, pterostigma one cell long, slightly longer than wide; postnodals 14/13. Vein R_{2+3} and MA has a short common stem from the arc (i. e., sectors of arc stalked!). CuP ending at the level of third (in forewing) and fourth (in the hind) postnodals.

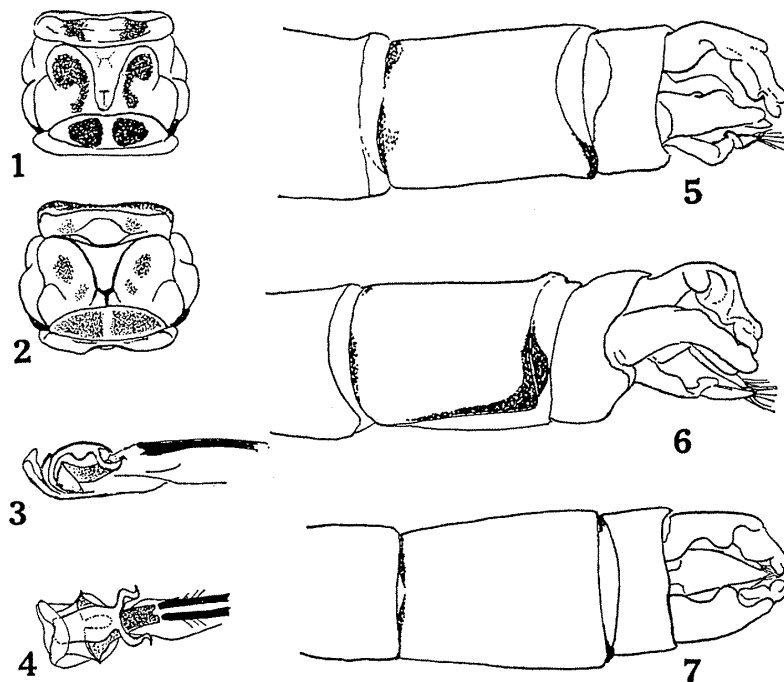
Abdomen extremely elongate, dorsal side of 1 and 2 largely dark, segments 3–7 each with basal pale annule, broadened posteriorwards; 8th segment entirely dark brown, only its proximoventral corner pale; segment 9 entirely ivory white excepting narrow posteroventral corner.

Caudal appendages as Figs. 5–7, entirely dark brownish; superiors curving ventrointernally with complicated tubercles; the inferiors are of strange shape as if made of three segments, the last part pointed and the apex is furnished with a number of bristles. Penile organ as Figs. 3, 4, the penultimate segment with laterally expanded ridge.

♀ (ad.): Abd. + app. 30–35 mm, hindwing 18–21 mm.

Head dark brownish, labrum ivory white, margined brownish anteriorly; whole anteclypeus ivory white, lateral side of postclypeus white spotted; antefrons with an ivory transverse bar between the bases of antenna; scape and anterior half of pedicel pale.

Prothorax palest brown with three pairs of dark spots on the dorsal side, the



Figs. 1–7. *Protosticta curiosa*.—1, ♂ prothorax, dorsal; 2, ♀ the same; 3, 4, distal part of penile organ; 5–7, ♂ caudal appendages.

anteriormost one on the anterior lobe faint, those on posterior lobe largest; the posterior margin of the posterior lobe slightly emarginated at the middle. Pterothorax deep brownish on the front with a diffused pale spot below close to the mesostigmal plate. Metathoracic pleurites pale yellowish, heavily striped with deep brown along the interpleural suture. Legs palest brown, narrowly dark striped on the external side of femora.

Wings (Fig. 38) slightly longer than those of the male insects, pterostigma trapezoidal in outline with the posterior side longest, postnodales 14 ± 1 .

Abdomen deep brownish on dorsal side, the brown interrupted by palest azure band at the base of 3–7 segments. Ninth segment almost entirely vivid white; tenth segment with a pale spot at the base. Caudal appendages and ovipositors all brownish.

Specimens examined: Coll. ASAHINA—1 ♀ (Allotype) Fang, N. Thailand, 13. VI. 1965, leg. S. A.; 1 ♀ Fang, 14–15. VII. 1966, leg. H. INOUE; 2 ♂ 2 ♀ Erawan Waterfalls, 7. IX. 1975, 2 ♀ Do., 10. IX. 1975, leg. H. KURAHASHI; 1 ♂ Khao Chong Forest, 25. VI. 1965, leg. S. A.; 1 ♂ (alc.) Doi Suthep 1300 m, Kasetzar Station, 4. VI. 1981, leg. S. A.; 1 ♂ 1 ♀ Hoey Kew 400 m, Chiangmai, 18–20. VI. 1980, leg. T. W. DONNELLY. Coll. Calif. Acad. Sci.:—4 ♂ Karachong Forest near Trang 100 m, 2. VI. 1962, leg. ROSS & CAVAGNARO.

Distribution. This was the only well-known and named species of platystictid damselfly in Thailand. Apparently fairly widely distributed there, Fang and Chiangmai in the north, Erawan Waterfalls in the west, Khao Chong Forest in the south.

2. *Protosticta khaosoidaoensis* sp. nov.

Considering from the very long abdomen and complicated caudal appendages of the male insect, this species superficially looks almost the same with the preceding species. But details of the caudal appendages and the prothoracic pattern denies the identity. May this be representing an eastern form of the *curiosa*-group?

♂ (ad.): Abd.+app. 37–38 mm, hindwing 19–20 mm. Head and thorax shining black striped with azure blue.

Head almost similarly coloured to that of the preceding species, with ivory white labrum and anteclypeus as well as a part of mandibular base, though the labrum is much more broadly dark margined anteriorly.

Prothorax entirely whitish, very palely smoked with brown; there is only one black spot at the centre of posterior lobe (Fig. 8), somewhat pentagonal in outline. Pterothorax shining black with two pale stripes, one on the mesepimeron and is rather bluish, the other on the metepimeron. Seen from the front the dorsal carina is clearly lined azure bluish but the antealar sinus is darkened. Legs pale brownish, with fine black line on the outside of femora which are black spotted at the end.

Wings hyaline (Fig. 39), pterostigma longer than wide, postnodals 13/13; vein R_{2+3} and MA have a common stem in both wings. CuP ending at the level of the

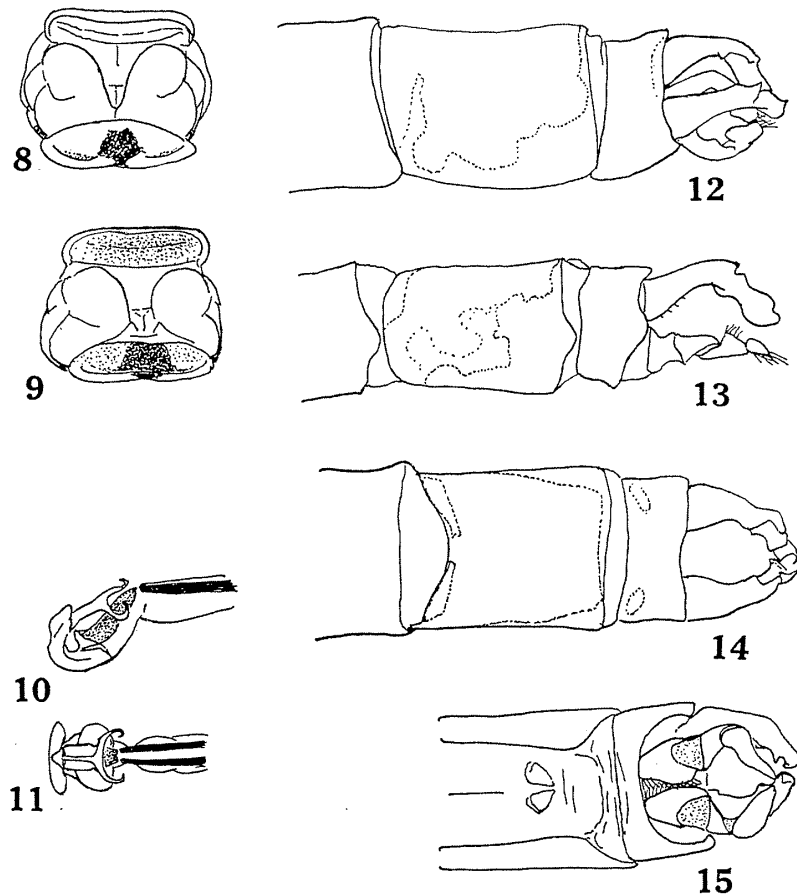
third antenodals.

Abdomen long, but never exceeding twice the length of the wing, striped as that of the preceding species, the bluish ninth segment has darkened posterolateral area (Figs. 12, 13). Caudal appendages as Figs. 12–15. The superiors much more thorny on the distal half; the structure of the inferiors looks like that of the preceding species; it looks as if it is made of three segments. Penile organ also resembles to that of the preceding species.

♀ (ad.): Abd. + app. 28–30 mm, hindwing 19–20 mm.

Head structure as that of the male insect. Prothorax whitish and very palely browned with a dark pentagonal spot on the posterior lobe as in the male insect (Fig. 9), posterior lobe simple. Pterothorax coloured quite same as that of the male with distinct pale dorsal carina.

Abdomen striped as in the male insect, the pale basal rings are more evident in 4–7 segments, eighth segment with a proximoventral triangular pale spot; 9–10 segments entirely dark brownish.



Figs. 8–15. *Protosticta khaosoidaoensis*.—8, ♂ prothorax, dorsal; 9, ♀ the same; 10, 11, distal part of penile organ; 12, 13, ♂ caudal appendages; 14, the same, dorsal, inferior appendages omitted; 15, the same, ventral, apical bristles of inferior appendages omitted.

Specimens examined: Coll. ASAHINA—2 ♂ 1 ♀ (1 ♂ Holotype; 1 ♂ 1 ♀ (alcoholic) Paratypes), Khao Soi Dao Nua Nature Reserve, Chantaburi Province, 9. VI. 1981, leg. S. ASAHINA; 2 ♀ (1 ♀ Allotype, 1 ♀ Paratype), Nam Tok Trok Nong, Chantaburi Province, 10. VI. 1981, leg. S. ASAHINA.

Distribution. Found only from Khao Soi Dao Mountains and its range in Chantaburi Province, East Thailand.

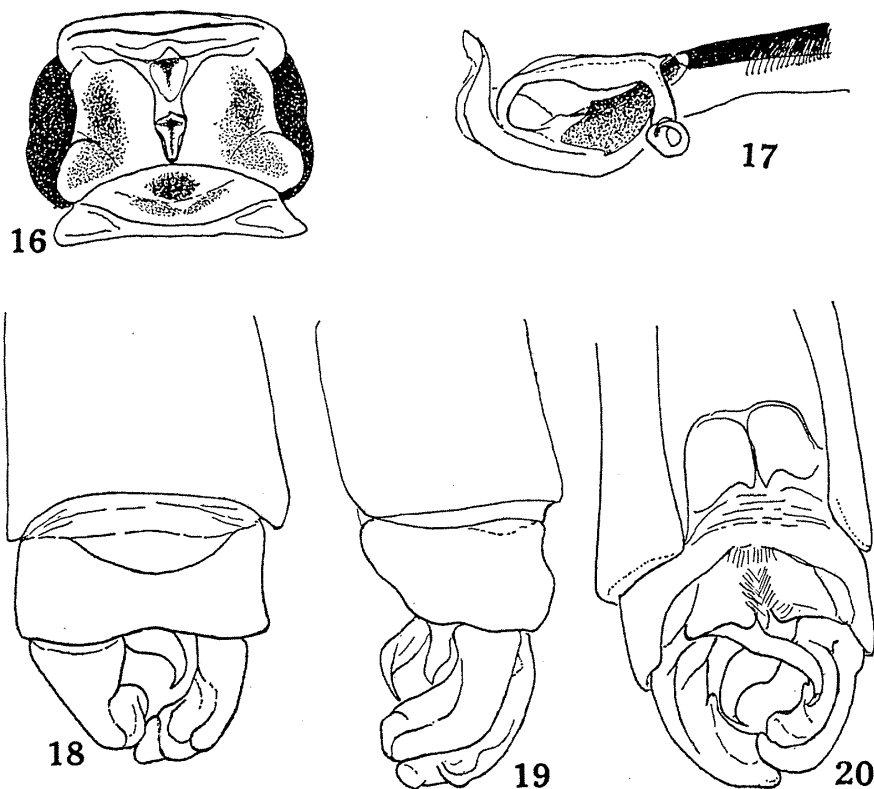
3. *Protosticta robusta* sp. nov.

A large-sized robust species with reddish brown tint on the head and thorax. Male caudal appenages short and uniformly yellowish.

♂ (ad.): Abd.+app. 49.5 mm, hindwing 29.5 mm.

Head dark brown, not lustrous; labrum, anteclypeus and external side of mandible ivory white; pedicel of antenna also. The greater part of frons and occiput behind the level of lateral ocelli pale reddish brown, leaving the dark clouds in the median- and postocciput.

Prothorax pale yellowish brown on the dorsum with darker markings on the median and posterior lobes; pleural sclerites deep blackish brown which colour



Figs. 16–20. *Protosticta robusta*.—16, ♀ prothorax, dorsal; 17, distal part of penile organ; 18–20, ♂ caudal appendages, dorsal (18), lateral (19), and ventral (20) view.

connecting with pterothoracic dark stripe in the mesepimeron. Pterothorax reddish brown on the front with dark tint on the dorsal carina and acrotergal region. Metepisternum largely ivory yellow, and behind that present a dark stripe covering metapleural suture. Hindermost part of metepimeron dull yellow. Legs dark yellowish with fine dark stripe on the external side of femora, tibial spines dark brownish.

Wings (Fig. 40) hyaline, pterostigma with its anterior side shortest; postnodals 16/14. The fused part of R_{2+3} and MA very short.

Abdomen pale brown, deep coloured at each segment end, segment 2 with a short median longitudinal pale stripe, lower marginal part of the segment yellowish; yellowish ring present at the proximal end of 3–7 segments, respectively. Segments 8–10 entirely dark brownish without any marking.

Caudal appendages (Figs. 18–20) short and wholly yellowish; superiors curving inwardly with irregular swellings on the distal half, but never spiny. Inferiors weak and just bending inwardly, curved and pointed. Penile organ (Fig. 17) of usual simple type, no internal fold, the terminal filament curled strongly.

♀ (ad.): Abd.+app. 40–41 mm, hindwing 28–30 mm.

Head structure and coloration are the same as those of the male insect. Prothorax (Fig. 16) also, but there are paired lateral visors on the posterior lobe. Pterothorax coloured and striped as that of the male. Abdomen coloured as that of the male, but the middorsal stripe on segment 2 is absent. The apices of ovipositor processes exceed the end of abdomen. Female cerci are short and conical, pale yellowish.

Specimens examined: Coll. ASAHINA—1 ♂ (Holotype), Doi Suthep, 27. V. 1978, leg. K. AKIYAMA; 2 ♀ (1 ♀ Allotype, 1 ♀ Paratype), Doi Suthep, Temple 1000 m, 12. V. 1965, leg. S. ASAHINA; 1 ♀ (Paratype), Erawan Waterfalls, 7. IX. 1975, leg. H. KURAHASHI.

Distribution. Known from northern and western Thailand.

4. *Drepanosticta doisuthepensis* sp. nov.

Large-sized form, but not so stout as the preceding species.

♂ (ad.): Abd.+app. 43–47.5 mm, hindwing 25.5–29 mm.

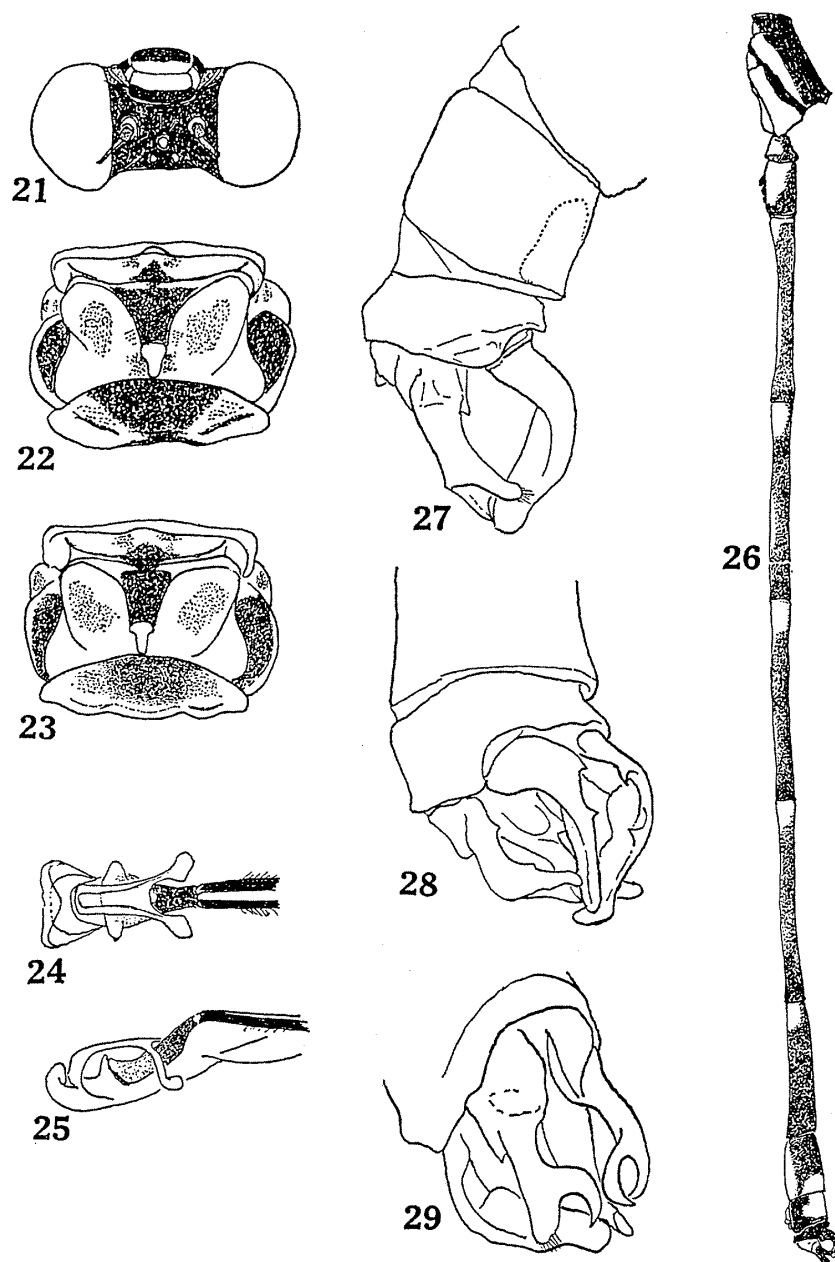
Head shining black, basal half of labrum, whole anteclypeus, base of mandible above bluish white. Scape and pedicel of antenna pale brownish.

Prothorax with dark spots as illustrated in Fig. 22, pleural sclerites deep black. Pterothorax wholly shining black anteriorly as far as the interpleural suture; there is a dark stripe from the top of metepisternum down to the metainfraepisternum covering the metapleural suture (Fig. 26). Legs well dark striped on the external side of femora; tibiae and tarsi palely darkened with long spines.

Wings hyaline, pterostigma almost square; postnodals 15/15. CuP ending at the level of third postnodals. The Ab vein running obliquely but not touching the

Ac vein at the wing margin. (Fig. 41).

Abdomen (Fig. 26) coloured as usual, 8th segment with its terminal 1/3 bluish, the lower marginal portion of the same tergite whitish; dorsal side of 9th segment broadly bluish tinted. Caudal appendages of complicate structure; superiors curv-



Figs. 21-29. *Drepanosticta doisuthepensis*.—21, head ♂, dorsofrontal; 22, ♂ prothorax, dorsal; 23, ♀ the same; 24, 25, distal part of penile organ; 26: ♂ pterothorax and abdomen, lateral; 27-29: ♂ caudal appendages, lateral (27), posterolateral (28), and oblique ventral (29) view.

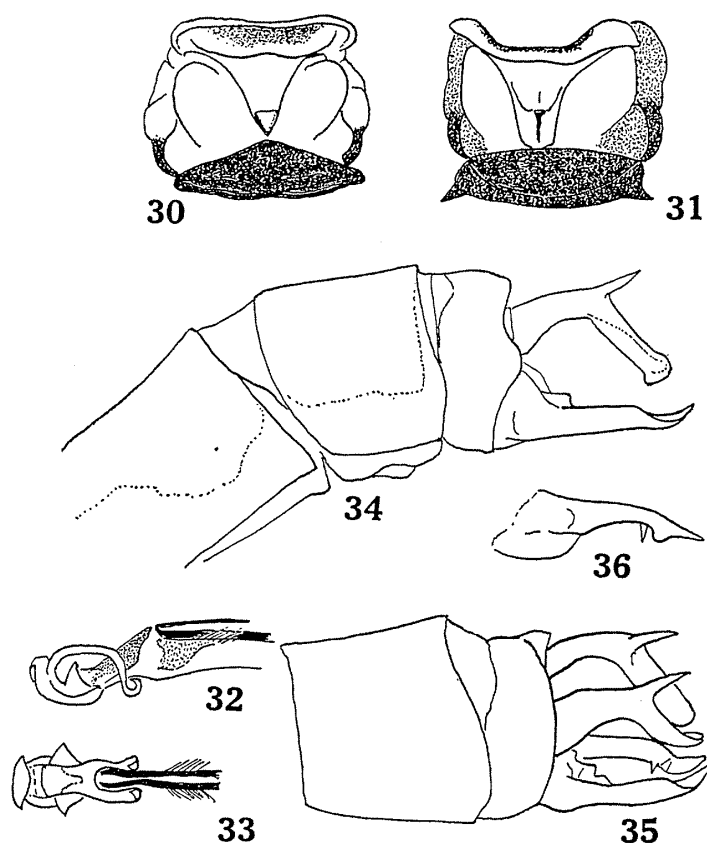
ing below with two short spines on the dorsal side, inferiors ending in a upcurved fork, inner branch pointed, outer branch roundly ending with a tuft of bristles (Figs. 27–29). Penile organ as Figs. 24–25.

♀ (ad.): Abd.+app. 37–40 mm, hindwing 27.5–29 mm.

Head, prothorax and legs are almost the same as those of the male. Prothorax similarly maculated as that of the male (Fig. 23), but the posterior lobe of tergite is slightly depressed at the median portion with undulated posterior margin.

Proximal seven segments of abdomen coloured as those of male, 8th segment with ventrolateral side pale coloured, terminal two segments and cerci deep brownish.

Specimens examined: Coll. ASAHINA—5 ♂ 3 ♀ (1 ♂ Holotype, 3 ♂ Paratypes, 1 ♀ Allotype, 1 ♀ Paratype), 2 ♂ 1 ♀ (alcoholic, Paratypes), Doi Suthep 1000 m, 8. VI. 1965, leg. S. ASAHINA; 3 ♂ 3 ♀ (all Paratypes), Doi Suthep 1300 m, Kasetzart Forest Station, 18. VI. 1965, leg. S. ASAHINA; 1 ♂ (Paratype), Doi Suthep 1300 m, Kasetzart Station, 4. VI. 1981, leg. S. ASAHINA; 1 ♂ (alc.), Khao Chong Forest, 25. VI. 1965, leg. S. ASAHINA.



Figs. 30–36. *Drepanosticta khaochongensis*.—30, ♂ prothorax, dorsal; 31, ♀ the same; 32, 33, distal part of penile organ; 34, 35, ♂ caudal appendages, lateral (34), oblique lateral (35) view; 36, ♂ left inferior appendage, ventral.

Distribution. Northern Thailand, common in the Doi Suthep area in June, also taken from southern Thailand (Khao Chong Forest).

5. *Drepanosticta khaochongensis* sp. nov.

Superficially resembles to the preceding species, but perhaps this is a member of the *quadrata*-group developed in the Malay Peninsula.

♂ (ad.): Abd.+app. (40)–43–47 mm, hindwing (22)–24–25 mm. A very slender insect with long and slim abdomen.

Head deep brown, shining; basal half of labrum, anteclypeus and the base of mandible ivory white.

Prothorax (Fig. 30) almost pale coloured with slightly darkened anterior lobe and entirely black posterior lobe; the pleural sclerites also darkened. Pterothorax coloured as usual, metepisternum divided into anterior whitish stripe and posterior dark area; metepimeron almost pale coloured. Legs pale yellowish with narrowly striped femora and brownish tibial spines. A remarkable feature in this species is that all the femoral ends are provided with dark ring.

Wings hyaline (Fig. 42) pterostigma square with short anterior border; the fusion at the base of R_{2+3} and MA is of considerable length; postnodals 14/13.

Abdomen extremely long and slim with usual coloration from the first to the seventh, eighth segment azure blue in the distal 2/3, 9th entirely bluish excepting lower margin. Tenth segment entirely dark. Caudal appendages as Figs. 34–35. If seen from the side, the superior looks like a horse's head with pointed long ear; inferiors extending straightly backwards with pointed apex and subapical swelling on the inner side as well as short but sharp spine. Penile organ as Figs. 32–33.

♀ (ad.): Abd.+app. 35–36 mm, hindwing 24 mm.

Head and pterothorax coloured as the male insect. Prothorax (Fig. 31) coloured slightly darker than that of the male. The posterior lobe entirely black, but its lateral angles developed into sharp spines.

Wings as those of the male, some individuals showed V-shaped Ac and Ab. Legs with an end ring on all femora.

Abdomen almost entirely brownish including the cerci: the eighth segment indicating a nuance of pale blue in these somewhat decomposed specimens.

Specimens examined: Coll. Calif. Acad. Sci.—6 ♂ 5 ♀ (1 ♂ Holotype, 1 ♀ Allotype, 5 ♂ 4 ♀ Paratypes), "Krachong Forest" (=Khao Chong Forest Reserve) near Trang, 12. VII. 1962, leg. ROSS & CAVAGNARO.

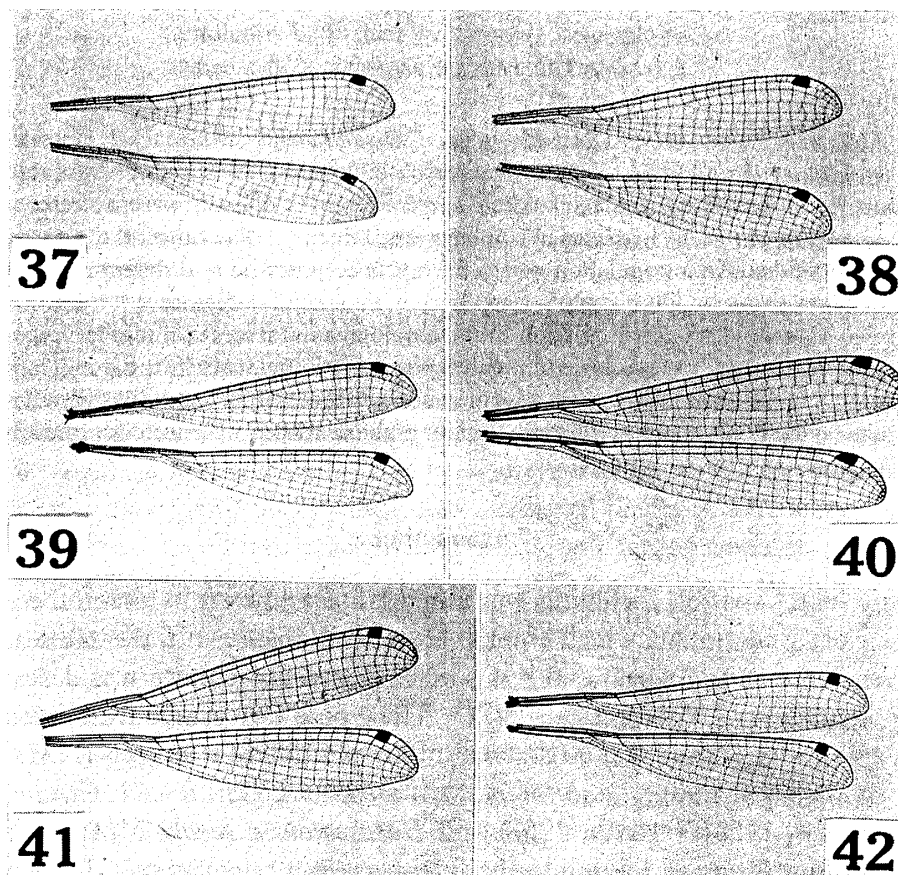
Distribution. Southern Thailand (Khao Chong Forest near Trang)

Remarks. This species looks like *D. fontinalis* LIEFTINCK (1937) but does not coincide with it in the features of prothorax, abdominal blue markings and caudal appendages. Also differs from *D. quadrata* (Selys) from Singapore and *D. sharpi* (LAIDLAW) from Kelantan in these structures.

6. *Drepanosticta sharpi* (LAIDLAW)

Drepanosticta sharpi: LIEFTINCK, 1965, p. 184 "♂ (juv. imperfect), Thailand, Nakhon Sithammarat Prov., Banna, 5-10, V. 1956, T. C. Maa, in the Bishop Museum."

This species is one of the *quadrata*-group, but does not seem to be identical with our *D. khaochongensis*. No specimen was available for us.



Figs. 37-42. Wing venation. (37~39: \times cs. 2; 40~42: \times ca. 1.5)—37, *Protosticta curiosa*, ♂ Khao Chong Forest; 38, do., ♀; 39, *Protosticta kaosoidaoensis*, ♂ Khao Soi Dao Nua; 40, *Protosticta robusta*, ♂ Doi Suthep; 41, *Drepanosticta doisuthepensis*, ♂ Doi Suthep; 42, *Drepanosticta khaochongensis*, ♂ Khao Chong Forest.

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