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Description of a New Species of the Genus Oligoaeschna Selys (Anisoptera: Aeshnidae) from Northern Thailand【Research report】

泰國北部產棍腹晏蜓屬(蜻蛉目：晏蜓科)一新種描述【研究報告】

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Abstract

Oligoaeschna pramoti sp. nov., the second representative of the genus recorded from Thailand, is described, figured, and compared with a paratype male of O. niisatoi Karube, its close ally.

摘要

本文描述採自泰國北部的棍腹晏蜓屬一新種Oligoaeschna pranoti，文內附詳細的性狀圖及雄蟲陰莖細部構造的電顯照片，並與採自越南北部的近似種Oligaoeschna niisatoi Karube 作比較。

Key words: Odonata, Oligoaeschna, new species, Thailand.

關鍵詞: 蜻蛉目、棍腹晏蜓屬、新種、泰國

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Description of a New Species of the Genus *Oligoaeschna* Selys (Anisoptera: Aeshnidae) from Northern Thailand

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ABSTRACT

Oligoaeschna pramoti sp. nov., the second representative of the genus recorded from Thailand, is described, figured, and compared with a paratype male of *O. niisatoi* Karube, its close ally.

Key words: Odonata, *Oligoaeschna*, new species, Thailand.

Introduction

Bro. Amnuay Pinratana and Dr. M. Hämäläinen sent me two male specimens of an unknown species of the *pryeri*-group *Oligoaeschna* for study, which had been collected on Doi Inthanon mountain in northern Thailand. The author tentatively identified them as *O. niisatoi* Karube, a species recently described from northern Vietnam, although it is much larger in size and has proportionally longer male cerci. Later, at my request Mr. H. Karube kindly sent a paratype of *O. niisatoi* for comparison. This eventually revealed that the Thai male specimens of *O. niisatoi* belong to an undescribed new species, which is morphologically very similar to that species. Based on the similar type of penile structure, these species are undoubtedly closely related. The new species is named and described here, with a discussion of its habitat and relationship with other members of the *pryeri*-group *Oligoaeschna*.

Terminology of venation, abdominal maculation and penile structure used here follows Riek and Kukalová-Peck (1984), Walker (1912), and Yeh and Chen (2000).

Description

Oligoaeschna pramoti sp. nov. (Figs. 1- 5, 7, 9)

Diagnosis: A small, pale-faced *Oligoaeschna*, which belongs to the *pryeri*-group by its heliochromatic body pattern, and is closely related to *O. niisatoi*, by having similarly arranged body markings and penile structure. Differing from *O. niisatoi* mainly by relatively shorter male cerci with shorter apical expansion, the shorter and stouter yellow spots lateral to frontal T-mark, and the better developed ML spots on abdominal S4-S6.

Male (holotype): Head: Mouth parts deep brown, middle lobe of labium paler; base of mandibles with pair of yellow spots.

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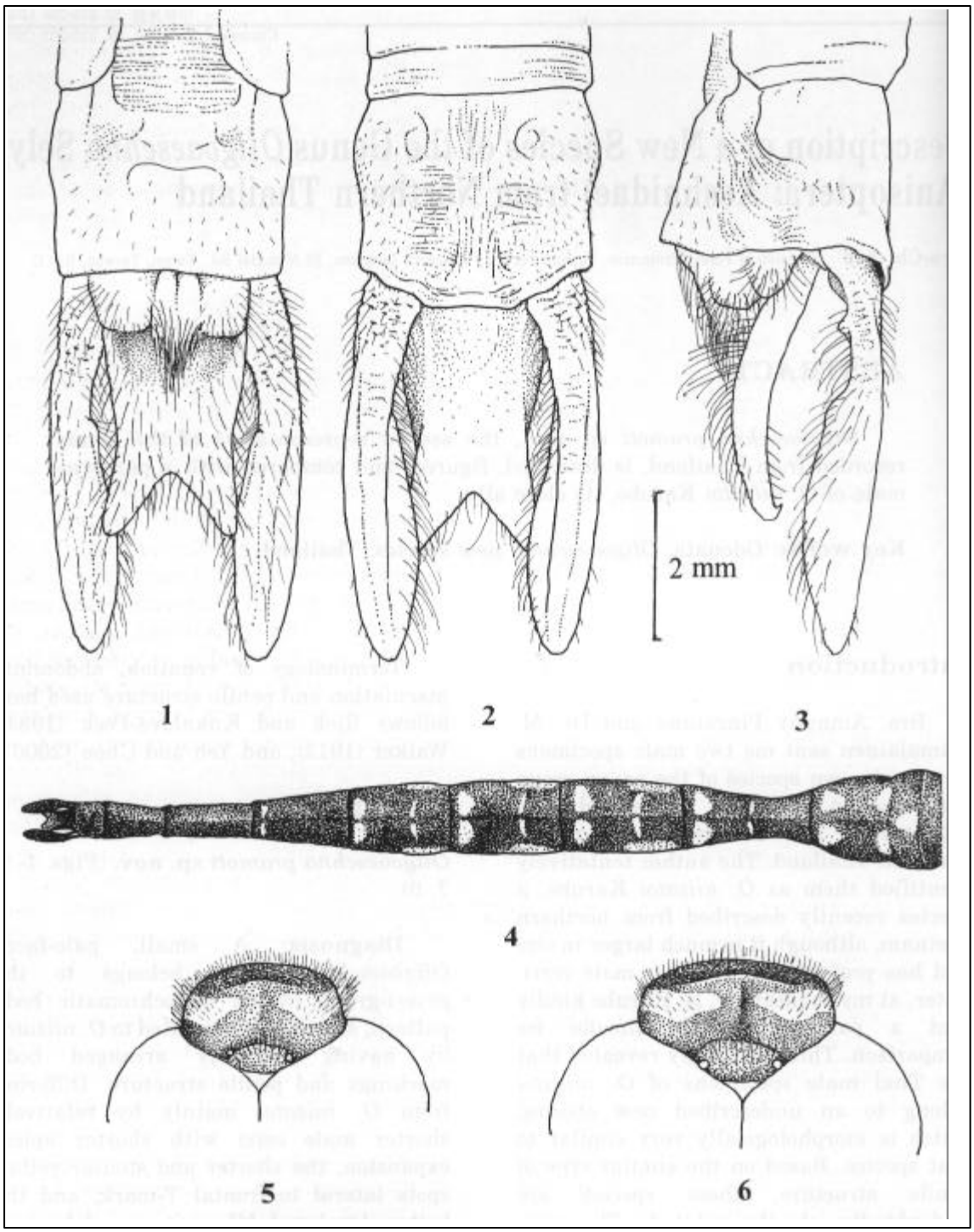


Figs. 1-6. 1-5. *O. pramoti* sp. n. male; 6. *O. niisatoi*, male: (1-3) male cerci, ventral, dorsal, and lateral views, respectively, (4) abdomen, dorsal; (5, 6) frontal T-mark.

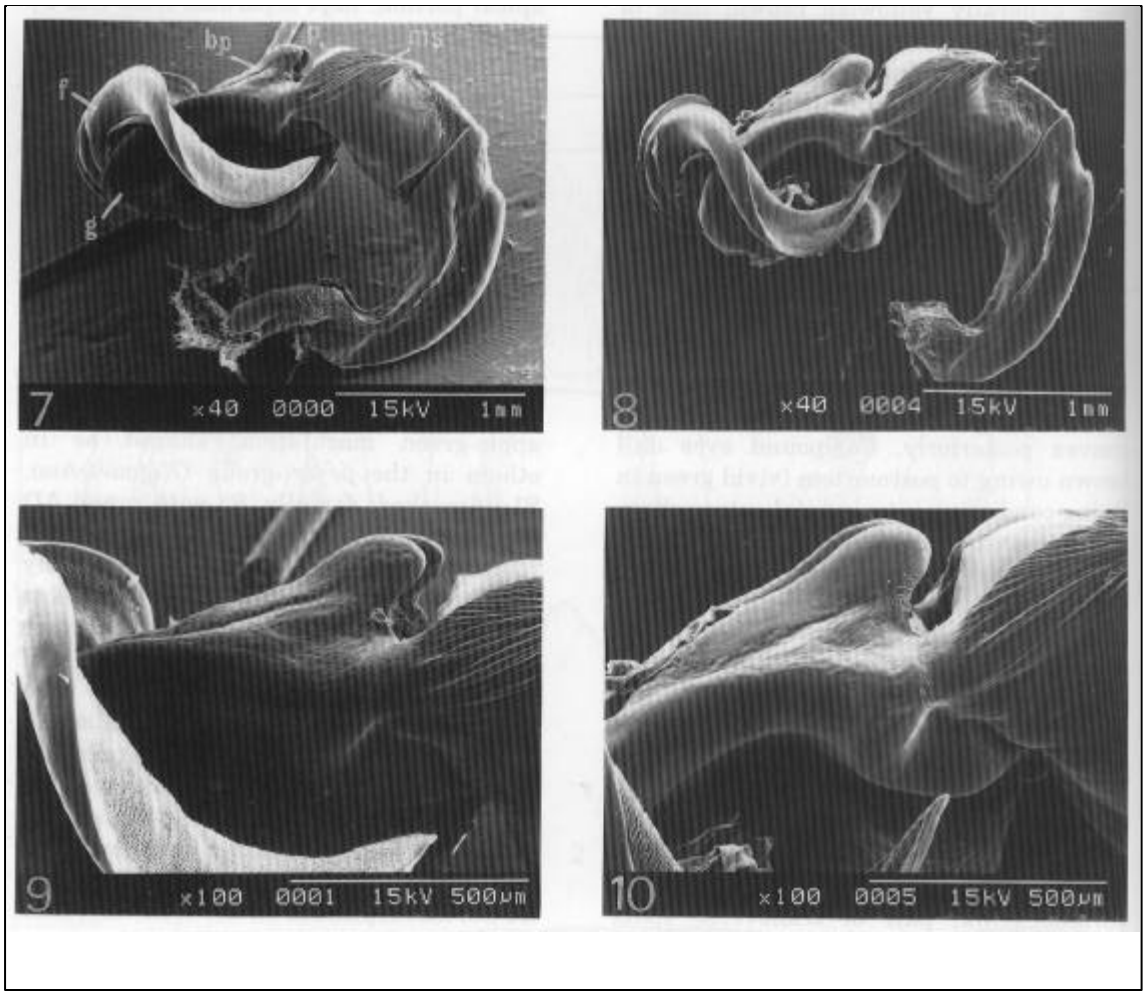
Face generally yellowish brown, base of labrum with pair of large transverse yellow spots. Antefrons yellow on lower 1/4, black and wrinkled on upper 3/4, upper margin straight and weakly ridged. Postfrons very weakly concave medially, yellow, with broad T-mark (Fig. 5), and basal 1/3 black; yellow spots lateral to T-mark shorter and stouter than in *O. niisatoi* (cf. Fig. 6 for this character in *O. niisatoi*). Vertex, antenna, and occiput black; vertex tumid, a little broader than 1/3 width of frons; antenna 6 segmented, very long; occiput tiny, ridged, and slightly convex posteriorly. Compound eyes dull brown owing to postmortem (vivid green in living condition); inter-orbital suture short, as long as basal width of occiput and a little longer than 1/2 width of vertex. Black hairs densely present on postfrons, vertex, and occiput.

Pterothorax: Dark reddish brown, with yellow or apple- green markings, densely covered with long, pale brown hairs on dorsal side and less so on lateral sides. Dorsal stripe broad and straight, directed outward and downward toward outer ends of collar carina, both ends bluntly tapering, lower end touching collar carina; pair of transverse spots present above, and well separated from dorsal stripes. Mesepimeron with broad stripe, metepisternum with upper triangular spot and lower tiny stripe situated above metathoracic spiracle; metepimeron yellow on posterior 2/3. Mesinfraepisternum yellow, metin-fraepisternum yellow on posterior 1/3

Legs: Black, coxae yellowish-brown.

Wings: Hyaline, slightly tinged with pale brown at tornal area; veins black. Pterostigma dark brown, braced in all wings and covering 1.5-2.5 cells. Venation same as in others in the *pryeri*-group *Oligoaeschna*. IR1 originating at or a little distal to pterostigmal brace; RP2 separated from IR2 by 2 rows of cells at apical 1/3; RP3-4 separated from MA by single row of cells, but retaining 3-7 double cells at apical portion. Rspl separated from IR2 by single row of cells, Mspl separated from MA by 2 rows of cells. Nodal index 8: 18: 18: 8 in forewings, 9: 12: 11: 11 in hindwings; 1 cubito-anal crossvein in all wings. Discoidal triangle 3 celled and about equally wide in both fore- and hindwing. Hypertriangle entire in hindwings but crossed once in forewings. Subtriangle entire. Anal loop compact and 4 or 5 celled; anal triangle elongate and 3 celled. Tornus roundly angulate; membranula well developed, whitish brown.

Abdomen: Black with yellow or apple-green maculation, shaped as in others in the *pryeri*-group *Oligoaeschna*. S1 unmarked; dorsally, S2 with round AD spot, pair of sub-triangular MD spots and roundly triangular PD spots. Paired tiny MD spots present on S3-S5; PD spots present on S3-S7, roundly triangular or semicircular, reduced in size on S6 and inconspicuous on S7. Laterally, S2 with large AML spot covering auricle and small yellow spot at postero-lower margin, PL spot reduced, tiny and inconspicuous; base of S3 with triangular AL spot; ML spot ill defined by postmortem, but well developed and clearly visible from dorsal view on S4-S6, inconspicuous on S7. Ventrally, base of S4-S7 with paired sub-rectangular spots. Auricles small and sub-circular in outline, protruding backward and armed with numerous black denticles at posterior margin. Middorsal carina more well developed on S4-S6, much reduced on S7. Shape of male cerci similar to those of *O. pryeri* Martin, in lateral view, with similar basal tooth and ventral emargination, but inferior in size and apical expansion a little more slender (Figs. 2, 3). Epiproct oblong in shape and a little expanded ventrally at basal 1/2; in lateral view, smoothly curved upward and terminating in a recurved apical spine. Apex of epiproct deeply notched with 2 forks moderately diverging outward (Fig. 1); depth of apical notch about 1/3 length of epiproct and a little shorter than half the distance between



Figs. 7-10. Penile structure of *O. pramoti* sp. n. (7, 9) and *O. niisatoi* (8, 10): (7, 8) penis, upside down and right lateral views; (9, 10) ventrobasal bony plates of glans; g, glans; f, flagella; ms, micro-sculptures of penile S3; p, ventroapical protuberance of penile S3; bp, ventrobasal bony plates of glans.

outer margin of 2 forks (1.1: 2.4 in mm). Length ratio of S10: epiproct: cerci being 1.0: 1.1: 1.9 (2.9: 3.2: 5.3 in mm).

Penile structures (Figs. 7, 9): Flagella moderately curved and strongly twisted, laterally extending obliquely across glans and armed with basally directed micro-spines at ventral side as in others in the *pryeri*-group *Oligoaeschna*. S3 penile segment with obsolete ventroapical protuberance and striate microsculptures. Ventrobasal bony plates of glans cone-shaped in lateral view, with basal part a little more extended and less tumid than in species of the "KPT group" (cf. Yeh and Chen, 2000, including *O. kunigamiensis* Ishida, *O. pryeri* and *O. tsaopiensis* Yeh & Chen).

Paratype (male): General appearance same as in holotype, with variations noted as follows: Abdominal markings more well-developed (Fig. 4), S2 with well developed and transverse PD spot; MD spot present on S6; ML spot more clearly defined on S4-S6. IR1 originating at level proximal or distal to pterostigmal brace;

RP3-4 separated from MA by single row of cells in forewings, but retaining 4 double cells at apical portion in hindwings. Mspl separated from MA by a single row of cells, but retaining 2 double cells in middle. Nodal index 8: 17: 17: 7 in forewings, 9: 12: 11: 9 in hindwings; discoidal triangle 3 celled in forewings and 2 celled in hindwings; hypertriangle uncrossed but crossed twice in right forewing; anal loop 5 celled in all wings.

Measurements (mm): Holotype ♂: abd. + cerci 42, hindwing 37, pterostigma 2.1; paratypes ♂: abd. + cerci 42, hindwing 36, pterostigma 2.1.

Materials examined: Holotype ♂, NORTHERN THAILAND, CHIANG MAI, Doi Inthanon, area above Siribhum waterfalls 1400-1450 m, 18-V-1999, Somnuk Panpichit; Paratype♂: same data as holotype. Holotype deposited at the Coll. Pinratana, St. Gabriel's College, Bangkok; the paratype deposited at the Insect Collection of Taiwan Forestry Research Institute, Taipei, Taiwan.

Etymology: This species is dedicated to Mr. Pramote Saiwichien (Nakhon Ratchasima, Thailand), who has long participated in Bro. Amnuay Pinratana's entomological activities and supported and facilitated them in many ways. Mr. Pramote was also present on Doi Inthanon when the new species was found.

Discussion

Until now, only one *Oligoaeschna* species had been reported from Thailand, viz. *O. minuta* Asahina, the smallest one in the *pryeri*-group of *Oligoaeschna* (Asahina, 1986). Besides its dwarf size, this species is easily separated from *O. pramoti* by the distinct shape of the male anal appendages; the cercus is knife-shaped without a basal tooth and ventral emargination, and the epiproct is remarkably elongate and deeply notched. The shape of the male cerci of *O. pramoti* is similar to that of *O. pryeri*, an East Asian species. *O. pramoti* differs, however, from the latter in the shape of the male epiproct which is ventrally expanded at the base with a narrower apical notch, in the less-developed body markings, and especially in the structure of the male penis (for the details of this organ in *O. pryeri,* see Yeh and Chen, 2000, fig. 19-d).

The new species is similar to *O. niisatoi* in general appearance and especially in penile structure (Figs 7-10), which according to Yeh and Chen (2000) is an important clue for sub-grouping the species of the *pryeri*-group *Oligoaeschna*. Except for the differences mentioned in the diagnosis, *O. niisatoi* is further separated from the new species by its larger size, the larger and transversely more elongate MD spots on abdominal S2, and the more extensive and distinct brown tinge at the tornal area of the hindwings. The two species differ from each other only slightly in their penile structure; the flagella of *O. niisatoi* are a little more strongly twisted and the ventrobasal bony plates of the glans are more robust than in *O. pramoti*. The penile structures of both *O. pramoti* and *O. niisatoi* are intermediate between those of *O. lieni* Yeh & Chen and the "KPT group"; the oblique extension of the flagella over the glans and the striate microsculptures of penile S3 are shared with the former, and the strong twist of the flagella and the cone-shaped ventrobasal bony plates of the glans are shared with the latter. Within the *pryeri*-group of *Oligoaeschna*, the two species together may form a discrete group. *O. khasiana* Lieftinck, recorded from Assam, has similarly shaped male appendages as in *O. niisatoi*, and according to Karube (1998) it is possibly related to *O. niisatoi* and may also belong to this group.

Habitat: According to the data provided by Dr. M. Hämäläinen, *O. pramoti* males were found around a small artificial garden pool (some 5 x 7 m in size), which is situated in a small clearing (with some simple wooden huts), on a forested slope above Siribhum waterfalls, at an

elevation of ca. 1450 m. The pool is some 20-30 m away from a small mountain stream, from which water is directed to the pool during the dry season. However, the pool seems to have some water all the year.

The habitat of *O. pramoti* is somewhat unusual when compared with the known habitats of Taiwanese (Yeh and Chen, 2000), Vietnamese (Karube, 1998), and Japanese species (Taketo, 1958). Larvae of the *pryeri*-group of *Oligoaeschna* are frequently found in marginal water-containing microhabitats in swampy lands (Taketo, 1959), sphagnum bogs (Yeh and Chen, 2000), and sometimes in small weedy puddles (Karube, 1998 and Yeh, unpubl. obs.). The larvae usually hide themselves among and/or below the vegetative litter and detritus accumulated at the bottom of such kinds of water bodies. It is predicted that the larvae of *O. pramoti* could be found in small water-containing depressions around or near brooks at the very upper reaches of forest streams, like those reported by Sato (1988) for *O. kunigamiensis* on the Ryukyu Islands.

Acknowledgements

I am grateful to Bro. Amnuay Pinratana (St. Gabriel's College, Bangkok) for providing the valuable specimens for study. Thanks are also due to Dr. Matti Hämäläinen (University of Helsinki, Finland) for permission to keep the paratype specimen in our collection, for providing data on the habitat, and for critical reading of an early manuscript draft, and to Mr. Haruki Karube (Kanagawa Prefectural Museum of Natural History, Japan) for sending the paratype of *O. niisatoi* for comparison and for comments on the larval habitats of that species. I also thank Mr. Y. M. Chen and Ms. C. R. Huang for supplementing the excellent drawings and taking the SEM pictures, respectively.

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泰國北部產棍腹晏蜓屬(蜻蛉目：晏蜓科)一新種描述

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摘　要

本文描述採自泰國北部的棍腹晏蜓屬一新種 *Oligoaeschna pranoti*，文內附詳細的性狀圖及雄蟲陰莖細部構造的電顯照片，並與採自越南北部的近似種 *Oligaoeschna niisatoi* Karube 作比較。

關鍵詞：蜻蛉目、棍腹晏蜓屬、新種、泰國。