

**NOTES ON CHINESE *MACROMIA* AND *IDIONYX*,
WITH DESCRIPTIONS OF *M. KIAUTAI* SP.N.,
M. MACULA SP.N. AND *I. YUNNANENSIS* SP.N.
(ANISOPTERA: CORDULIIDAE)**

W.-b. ZHOU¹, Z.-d. WANG², X.-f. SHUAI² and S.-d. LIU²

¹ Department of Entomology, Zhejiang Museum of Natural History,
Gu-shan, Hang Zhou – 310012, People's Republic of China

² Hanshou Institute of Nandi, Hunan – 415900, People's Republic of China

Received February 14, 1994 / Revised and Accepted March 21, 1994

Ten spp. are dealt with, of which *M. kiautai* sp.n. (holotype ♂, allotype ♀: Kunming, alt. 2000 m, Yunnan prov., 1-V-1983), *M. macula* sp.n. (holotype ♂: Baishanzu, alt. 850 m, Zhejiang prov., 20-VIII-1993; allotype ♀: same locality, alt. 500 m, 1-V-1990), and *I. yunnanensis* sp.n. (holotype ♂, allotype ♀: Wandingzhen, Yunnan prov., 26-V-1983) are described and illustrated. All types are deposited at Zhejiang Museum of Natural History, Hang Zhou, P.R. China.

INTRODUCTION

The genus *Macromia* is represented in China by 11 hitherto known species, viz. *M. berlandi* Lieftinck, 1941, *M. chui* Asahina, 1968, *M. clio* Ris, 1916, *M. hamifera* Lieftinck, 1955, *M. flavocolorata* Fraser, 1922, *M. icterica* Lieftinck, 1929, *M. katae* Wilson, 1993, *M. malleifera* Lieftinck, 1955, *M. m. moorei* Selys, 1874, *M. urania* Ris, 1916, and *M. yunnanensis* Zhou, 1993. WILSON, (1993) considered *Macromia cantonensis* Tinkham, 1936 a synonym of *Macromidia rapida* Martin, 1907, but he was unable to examine the types of the former. At present, our collection consists of 23 *Macromia* specimens, referable to at least 8 species. Two distinct, recently discovered new species, *M. kiautai* sp.n. and *M. macula* sp.n., are described herein, increasing the number of the known species in China to 13.

Four species of *Idionyx* were so far known from China, i.e. *I. carinata* Fraser, 1936, *I. claudia* Ris, 1912, *I. lieftincki* Zhou, 1984, and *I. victor* Hämäläinen, 1991. A new species, *I. yunnanensis* sp.n., was recently collected in Yunnan prov.

MACROMIA BERLANDI LIEFTINCK, 1941

Material. — 2 ♂, Sanjiang [25°08'N 109°05'E], Guengxi prov., 1-VIII-1983; W.-b. Zhou leg.

MACROMIA FLAVOCOLORATA FRASER, 1922

Material. — 1 ♂, Ruili [24°N 98°E], Yunnan prov., 1-V-1983, W.-b. Zhou leg.

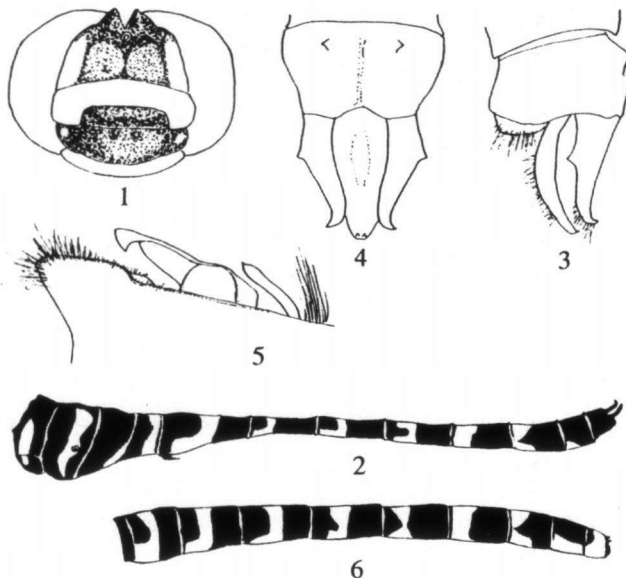
MACROMIA KIAUTAI SPEC. NOV.

Figures 1-6

Material. — **Holotype** ♂, **allotype** ♀: Kunming [25°05'N 102°08'E], alt. 2000 m. Yunnan prov., 1-V-1983, W.-b. Zhou leg.; deposited in Zhejiang Museum of Natural History.

Etymology. — The new species is dedicated to Professor Dr B. Kiautai, Bilthoven, The Netherlands.

MALE. — **Head.** — Frons illustrated in Figure 1. Labium yellowish brown, labrum black. Mandibles and anteclypeus blackish brown, postclypeus yellow. Frons dark brown, with a more or less marked metallic blue reflection on front,



Figs 1-6. *Macromia kiautai* sp.n., male (Figs 1-5): (1) head, frontal view; — (2) pterothorax and abdomen, lateral view; — (3) anal appendages, lateral view; — (4) ditto, dorsal view; — (5) accessory genitalia, lateral view; — female (Fig. 6) abdomen, lateral view.

definitely metallic blue on dorsum, lateral yellow on each side. Vertex metallic, blackish green, occiput shining black.

Pterothorax. — Black, with metallic blue or green reflection, marked with a yellow antehumeral stripe which is pointed upward and extending two-thirds up the dorsum; upper portion of mesinfraepisternite also yellow; the antear triangles yellow entirely. Thoracic side with a sharply defined oblique yellow stripe across the spiracle and a narrow stripe on the posterior border of the metepimeron.

Legs. — Black, save for the keels, which are pale yellowish; keel on fore leg tibia $\frac{1}{2}$ of the tibial length, on hind leg keel extends from base of tibia to its distal end, middle tibia without a keel.

Wings. — Hyaline, slightly tinted with pale yellow, especially at base. Pterostigma short, covering 1-2 cells, black; nodal index: 9,14:13,9/11,10:10,11; anal loop with 9 cells. Discoidal field of fore wing widening from 2 to 15 cells, and that of the hind wing from 2 to 13 cells; fore wing supratriangle 3,3; hind wing 2,2; Cux fore wing 4,3; hind wing 3,3.

Abdomen. — Black. Segment 2 with yellow ring and uninterrupted either above or at level of auricles; in segments 3-6 the dorsal rings are broadly confluent with ventral lateral spots to/from broad L-shaped markings when viewed from the side; segment 7 with yellow basal ring occupying one-third the length of segment; segment 8 with a large triangular basal dorsal spot on a basal lateral spot; segment 9 with a small basal lateral spot.

Anal appendages. — Black. Superior appendages curved towards each other, with a spine in middle of outer border, apex very acute. Inferior appendages slightly longer than the superiors.

Accessory genitalia. — Posterior hamulus very stout, its apex triangular.

Measurements (in mm). — Total length 76, abdomen (incl. app.) 56, hind wing 50.

FEMALE. — Coloration similar as in male, but: abdominal yellow markings more extensive; segment 10 yellow, with black dorsal spot at the base; wings golden-amber.

Measurements (in mm). — Total length 71, abdomen 51, hind wing 50.

AFFINITIES. — The new species can be easily separated from all other members of the genus by the shape of posterior hamulus and by the body markings.

MACROMIA MACULA SPEC. NOV.

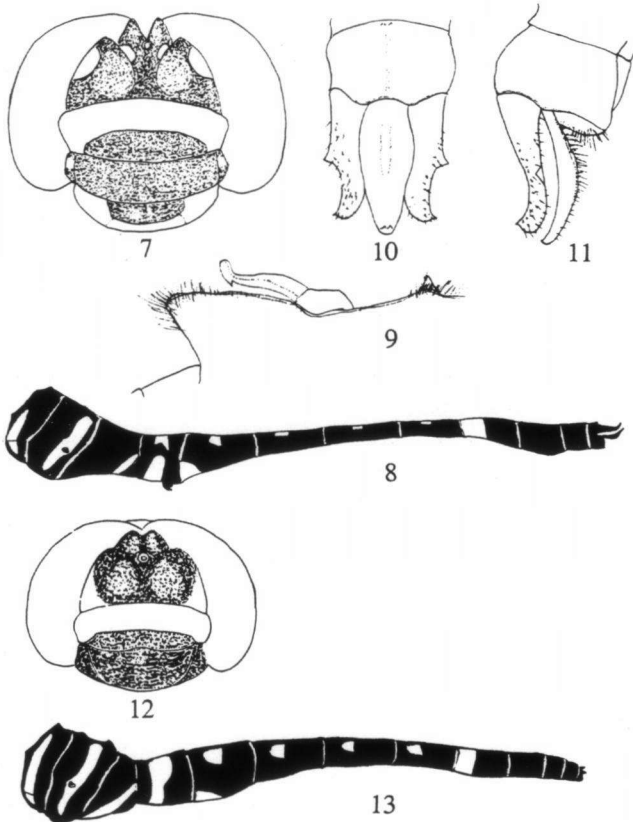
Figures 7-13

Material. — **Holotype** ♂: Baishanzu [27°05'N 119°E], alt. 850 m, Zhejiang prov., 20-VIII-1993. W.-b. Zhou leg.; — **allotype** ♀: same locality, alt. 500 m, 1-VI-1990; — **paratypes**: 3 ♀, same locality and date as allotype. All specimens deposited in Zhejiang Museum of Natural History, Hang Zhou.

Etymology. — The name, "macula", refers to the 2 small yellow spots in front of the middle ocellus.

MALE. — Head. — Frons as in Figure 7. Labium yellowish green, with middle border black. Mandibles black with a yellow spot at base. Labrum and anteclypeus black, postclypeus forming a transverse stripe across the face. Frons black with bright metallic blue reflections, with two small yellow spots situated in front of the middle ocellus and an isolated lateral spot on each side, lateral spots larger than dorsal spots. Vertex black and occiput shining black.

Pterothorax. — Black, with metallic green reflection, marked with yellow as follows: antealar triangles entirely, antehumeral narrow stripe which is pointed upward and extends about half-way up the dorsum, a mesinfraepisternal spot just below the antehumeral stripe; an oblique narrow stripe on the mesepimeron



Figs 7-13. *Macromia macula* sp.n., male (Figs 7-13): (7) head, frontal view; — (8) pterothorax and abdomen, lateral view; — (9) accessory genitalia, lateral view; — (10) anal appendages, dorsal view; — (11) ditto, lateral view; — female (Figs 12-13): (12) head, frontal view; — (13) pterothorax and abdomen, lateral view.

traversing the spiracle and a narrow stripe on the posterior border of the metepimeron.

Legs. — Robust and very long, entirely black, save for the keels which are pale yellow, keel on fore-leg tibia $\frac{1}{2}$ of the tibia length, on hind leg tibia extends from its base to distal end, middle tibia without trace of a keel.

Wings. — Long and narrow, hyaline; all triangles and subtriangles free, the anal angle of the wing is rounded; pterostigma black; veins black, fore wing supratriangle 2,2; hind wing 1,1; nodal index: 9,19:16,9/12,11:11,11; anal loop 7,6.

Abdomen. — Black. Segment 2 with a yellow ring interrupted at the level of auricles, segment 3 with large basal lateral spot on each side, segments 3-6 with a pair of dorsal spots separated in the middorsal line, segment 7 with a broad basal ring.

Anal appendages. — Black. Superior appendages with a small lateral external tooth midway the appendage, upturned at tip; inferior appendages slightly exceed the superiors in length.

Accessory genitalia. — Posterior hamulus, with hammer-like apex, similar to *M. hamifera* Lieft., but has a more prominent genital lobe.

Measurements (in mm). — Total length 78, abdomen (incl. app.) 56, hind wing 46.

FEMALE. — **Head.** — Frons as in Figure 12. Labium yellow, the lateral lobes darker along anterior border; labrum and mandibles black; anteclypeus and lower border of postclypeus dark brown, postclypeus yellow; frons black with a lateral spot on each side; vesicle and occiput black.

Pterothorax. — Black, with metallic green reflection and marked with yellow as follows: antealar triangles entirely, antehumeral narrow stripe long, extending about four-fifth up the dorsum; an oblique narrow stripe on the mesepimeron, traversing the spiracle and a narrow stripe on the posterior border of the metepimeron.

Legs. — Black.

Wings. — Hyaline or slightly tinged with brown, and showing a trace of brown at base, but extending distally nearly to level of first antenodal nervure. Nodal index: 11,19:18,9/12,11:12,12; pterostigma black; anal loop 14,14; fore wing supratriangle 3,3; hind wing 2,2; Cux fore wing 6,6; hind wing 4,5.

Abdomen. — Black. Segment 2 with a very wide and in middorsal line interrupted yellow ring, segment 3 with a lateral yellow spot at the ventral margin; segments 3-6 with a pair of dorsal spots, separated in the middorsal line; segment 7 with broad basal ring.

Measurements (in mm). — Total length 65, abdomen 47, hind wing 46.

AFFINITIES. — The new species is very similar to *M. hamifera* Lieftinck, 1955 in its size and accessory genitalia, but differs from it in the following characters: (1) frons with two small yellow dorsal spots and a lateral spot on each side; — (2) middle tibia without trace of a keel; — (3) superior appendage possesses an

apical point which is strongly upcurved. — This new species somewhat resembles *M. fraenata* martin, 1907 from Korea in having two pairs of yellow spots on the frons, but it differs from that species in the shape of the anal appendages and in the body markings.

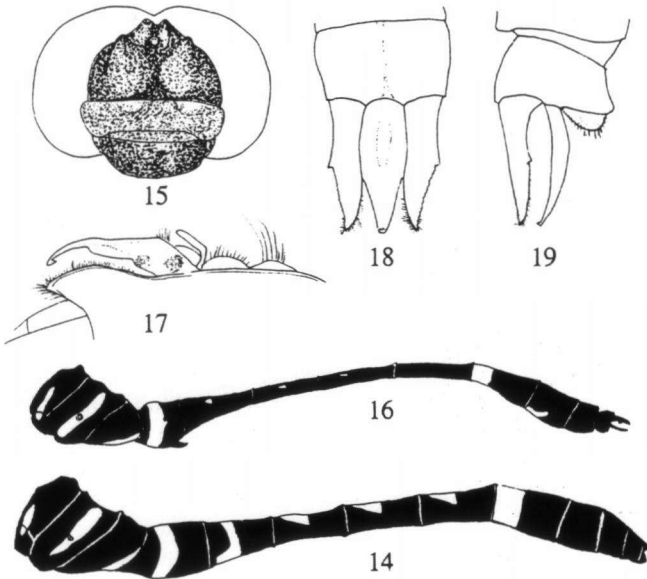
MACROMIA MALLEIFERA LIEFTINCK, 1955

Figure 14

Material. — 2 ♂, 2 ♀, Baishanzu [27°05'N 119°E], Zhejiang prov., 20-VIII-1982, W.-b. Zhou leg.

The species was originally described by LIEFTINCK (1955) from a single male, from Fukin province. Our specimens agree fairly closely with the original description and figures. The female was first described by ZHOU et al. (1993). So far, specimens were collected only in the provinces of Fukin and Zhejiang.

Measurements (in mm). — male: abdomen (incl. app.) 57, hind wing 50; — female: abdomen (incl. app.) 60, hind wing 53.



Figs 14-19. *Macromia malleifera* Lieft., female (Fig. 14) and *M. yunnanensis* Zhou, male (Figs 15-19): (14) pterothorax and abdomen, lateral view; — (15) head, frontal view; — (16) pterothorax and abdomen, lateral view; — (17) accessory genitalia, lateral view; — (18) anal appendages, dorsal view; — (19) ditto, lateral view.

MACROMIA M. MOOREI SELYS, 1874

Material. — 1 ♂, Shichuan prov., no date, W.-b. Zhou leg.

MACROMIA URANIA RIS, 1916

Material. — 3 ♂, Sanjiang [25°08'N 109°05'E], Guengxi prov., 1-V-1983, W.-b. Zhou leg.;
— 1 ♂, 2 ♀, Baishanzu [27°05'N 119°E], Zhejiang prov., 1-VI-1991, W.-b. Zhou leg.

MACROMIA YUNNANENSIS ZHOU, 1993

Figures 15-19

Material. — Holotype ♂: Xishuangbanna [26°N 101°E], Yunnan prov., 25-VIII-1984, W.-b. Zhou leg.; deposited in Zhejiang Museum of Natural History, Hang Zhou.

Measurements (in mm). — Male: abdomen (incl. app.) 50, hind wing 40.

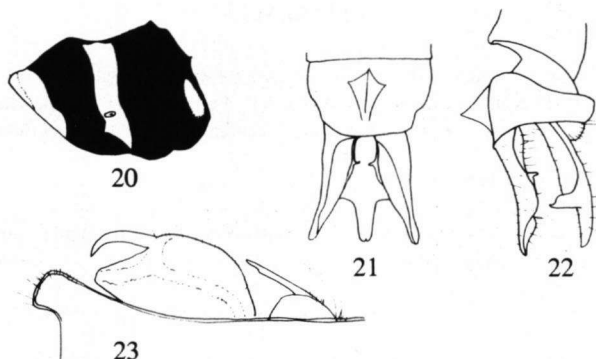
IDIONYX LIEFTINCKI ZHOU, 1984

Material. — Holotype ♂, allotype ♀: Huang-yang Mountain, Zhejiang prov., 20-VII-1983;
— paratypes: 10 ♂, 35 ♀, same locality, 8-VII-1993.

IDIONYX YUNNANENSIS SPEC. NOV.

Figures 20-23

Material. — Holotype ♂, allotype ♀: Wandingzhen [24°01'N 98°01'E], Yunnan prov., 26-V-1985; — paratypes: 1 ♂, 1 ♀, same locality and date; all W.-b. Zhou leg., all deposited in Zhejiang Museum of Natural History, Hang Zhou.



Figs 20-32. *Idionyx yunnanensis* sp.n., male: (20) pterothorax, lateral view; — (21) anal appendages dorsal view; — (22) ditto, lateral view; — (23) accessory genitalia, lateral view.

E t y m o l o g y. — Named after the province of type locality.

MALE. — **H e a d.** — Labium yellow; labrum yellow, its anterior margin with thin brown border. Anteclypeus deep brown, with a large medial yellow triangular spot. Postclypeus black; frons and vesicle black, with dark metallic green; occipital triangle black.

T h o r a x. — Prothorax brown, except for the yellow border of anterior lobe and posterior lobe. Pterothorax metallic blue or green, marked with yellow as follows: a short yellow antehumeral stripe not extending half way up the dorsum, laterally an oblique yellow stripe on the mesepimeron and another on the lower part of the metepimeron.

Legs. — All femora dark brown, tibiae of the first pair brown, the others yellow.

Wings. — Hyaline. Nodal index: 8,12:12,9/10,8:8,10. Pterostigma black, covering two cells. Hypertrigone crossed once in fore and hind wing. Two cubito-anal crossveins in hind wing, anal loop made of 9 cells, membranule pale brown.

A b d o m e n. — Black. Segments 1-3 yellow along the ventral borders, intersegmental joints between 2 and 3 narrowly yellow.

Anal appendages. — Black. The superiors as long as the inferiors; apex slightly upturned, with a short digitate ventral spine. Inferior appendages claw-like, lateral projections point straight and laterad in dorsal view.

M e a s u r e m e n t s (in mm). — Total length 43, abdomen (incl. app.) 30, hind wing 33.

FEMALE. — Closely similar to the male, differing only in wings broadly tinted with golden-amber, from the bases to the level of the 5th antenodal vein.

M e a s u r e m e n t s (in mm). — Total length 45, abdomen 33, hind wing 33.

AFFINITIES. — This new species is very similar to *I. stevensi* Fraser, 1924. Males can be separated easily by the equal length of the superior and inferior appendages, and by the lateral projections of the inferior appendages pointing straight and laterad in dorsal view.

REFERENCES

- ASAHINA, S., 1968. Taiwanese Odonata taken by Mr Y.I. Chu. *Kontyû* 36(1): 89-98.
- ASAHINA, S., 1978. Notes on Chinese Odonata. VII. Further studies on the Graham collection preserved in the U.S. National Museum of Natural History, suborder Anisoptera. *Kontyû* 46(2): 234-252.
- DAVIES, D.A.L. & P. TOBIN, 1985. *The dragonflies of the world: a systematic list of the extant species of Odonata*. Vol. 2: *Anisoptera*. SIO, Utrecht.
- FRASER, F.C., 1924. A survey of the odonate (dragonfly) fauna of western India with special remarks on the genera *Macromia* and *Idionyx* and descriptions of thirty new species. *Rec. Indian Mus.* 26: 423-522, pls 25-27 excl.
- FRASER, F.C., 1926. A revision of the genus *Idionyx* Selys. *Rec. Indian Mus.* 28: 195-208, pls 8-10 excl.
- FRASER, F.C., 1936. *The fauna of British India, including Ceylon and Burma. Odonata*. Vol. 3. Taylor & Francis, London.
- HÄMÄLÄINEN, M., 1985. *Idionyx thailandica* spec. nov., a new dragonfly species from Thailand (Odonata: Corduliidae). *Opusc. zool. flumin.* 2: 1-6.

- HAMALAINEN, M., 1991. *Idionyx victor* spec. nov. (Anisoptera: Corduliidae) and some other Odonata from Hongkong. *Odonatologica* 20(3): 343-347.
- LIEFTINCK, M.A., 1929. A revision of the known Malaysian dragonflies of the genus *Macromia* Rambur, with comparative notes on species from neighbouring countries and descriptions of new species. *Tijdschr. Ent.* 72: 61-108.
- LIEFTINCK, M.A., 1941. Une espèce nouvelle de *Macromia* du Tonkin. *Revue fr. Ent.* 8(2): 94-98.
- LIEFTINCK, M.A., 1950. Further studies on southeast Asiatic species of *Macromia* Rambur, with notes on their ecology, habits and life history, and with descriptions of larvae and two new species (Odon., Epophthalmiinae). *Treubia* 20(3): 657-716.
- LIEFTINCK, M.A., 1955. Further inquiries into the Old World species of *Macromia* Rambur (Odonata). *Zool. Meded.* 33(25): 251-277.
- LIEFTINCK, M.A., J.C. LIEN & T.C. MAA, 1984. *Catalogue of Taiwanese dragonflies (Insecta: Odonata)*. Asian Ecol. Soc., Taichung.
- RIS, F., 1916. H. Sauter's Formosa-Ausbeute. Odonata. (Mit Notizen über andere ostasiatische Odonaten). *Suppl. ent.* 5: 1-81, pls 1-3 excl.
- TINKHAM, E.R., 1936. A new species of *Macromia* from Canton (Odonata: Anisoptera: Libellulidae). *Lingnan Sci. J.* 15(3): 457-459.
- VICK, G.S., 1988. A new species of *Macromia* from Nepal (Anisoptera: Corduliidae). *Odonatologica* 17(2): 141-146.
- WILSON, K.D.P., 1993. Notes on *Macromia* from Hong Kong, with a description of *M. katae* spec. nov. (Anisoptera: Corduliidae). *Odonatologica* 22(2): 233-241.
- ZHOU, W., H. LUO, Y. HU & X. WU, 1993. Notes on Chinese *Macromia* (Odonata: Corduliidae, Macromiinae). *J. Yunnan agric. Univ.* 8(2): 111-114. – [Chin., with Engls.].