

**DESCRIPTIONS OF THE FULL-GROWN *CEPHALAESCHNA PATRORUM* NEEDHAM AND *PLANAESCHNA SHANXIENSIS* ZHU & ZHANG LARVAE FROM CHINA
(ANISOPTERA: AESHNIDAE)**

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The ♂ and ♀ ultimate instar larvae of the 2 spp. from the Beijing area are described and illustrated. Differential characters with other species from Taiwan, Hong Kong, China and Japan are summed up.

INTRODUCTION

The genus *Cephalaeschna* Selys, 1883 is known from studies by SELYS (1883), MARTIN (1909), NEEDHAM (1930), ASAHINA (1951, 1978, 1981, 1982), WILSON (2003), ZHOU & WEI (1980, 1998), YANG & LI (1994), and XU (2006); *Planaeschna* McLachlan, 1895 has been studied by McLACHLAN (1895), NEEDHAM (1930), KOBAYASHI (1941), ASAHINA (1951, 1964, 1978), ISHINDA (1991), ISHIDA et al. (1985, 1994, 1996), and ZHU & ZHANG (2001). Here, we use ultimate instar larvae and exuviae, collected from Songshan State Forest Park and Huairou of Beijing, China for a description.

***CEPHALAESCHNA PATRORUM* NEEDHAM, 1930**

Figures 1-7

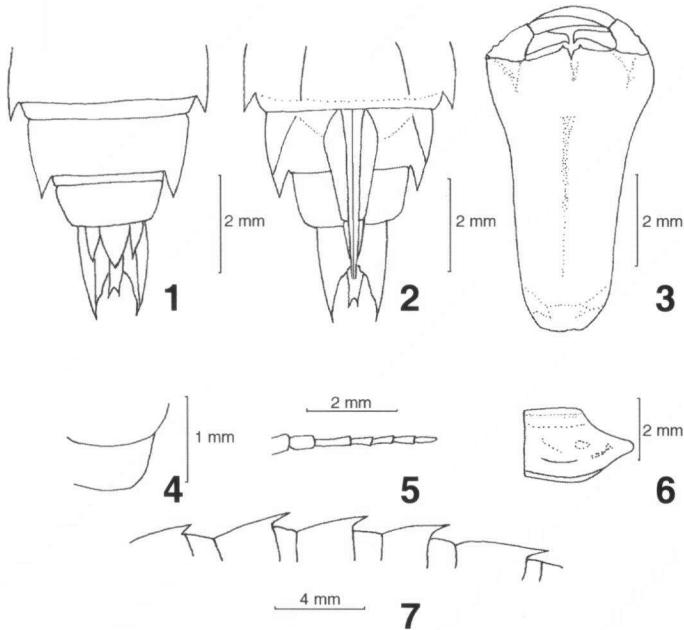
Material. – 1♂, 1♀ exuviae, 19-VI-2005, Songshan State Forest Park, Beijing, China, Jiang Yao-Hua leg; – 2♂ exuviae, 1♀ larva, Huairou of Beijing City, China, 3-VII-2007, Zhang Hao-Miao leg. The adult emerged on 15-VII-2007.

Body length 41mm, length of abdomen (including caudal appendages) 32 mm,

maximum head width 7 mm. Ground colour yellow-brown, length of hind femur 7 mm; abdomen with yellow markings and little black spots on the markings. Body surface without luster; both sexes with lateral spines on abdominal segments 5-9.

H e a d. — Labium yellow (Fig. 3), labrum of the usual shape with deep brown colour, its surface with white, slender hairs and a pale brown spot in the centre, approximately $3/4$ the length of the labrum. Mandible with a big pale yellow spot; anteclypeus deep brown, with a hollow shaped like the crescent moon, its surface with a few slender hairs; postclypeus pale brown with yellow hair, with two symmetrical brown markings at each side, ocellar triangle brown. An irregular yellow spot at the base of the antenna and median side of the ocelli, lateral ocellus with pale yellow spots at the back. Antennae filiform, 7-segmented, length ratio of segments 1-7 as follows: 0.4:0.8:0.5:0.5:0.5:0.5:0.5 (Fig. 5). Occiput pale brown with pale yellow hair, a black spot on the centre and sides, occipital lobe rounded at sides (Fig. 4).

T h o r a x. — Sides of pronotum rhomboidal in shape (Fig. 6). Wing cases not parallel. Forewing cases reaching to middle of fourth abdominal segment.



Figs 1-7. *Cephalaeschna patrorum* Needham, female exuviae: (1) abdomen in dorsal view; — (2) abdomen in ventral view; — (3) labium in ventral view; — (4) right occipital lobe in dorsal view; — (5) right antenna; — (6) right prothorax in dorsal view; — (7) right lateral spines of abdomen in dorsal view.

Hindwing cases reaching to fore border of fourth abdominal segment, fore and hindwing cases with yellow spot on the fore border.

A b d o m e n. — Slender, yellow brown in colour, with lustre. Dorsal hooks absent, lateral spines on segments 5-9 present (Fig. 7). Abdomen with black spots on tergum and pleurae. Dorsum of 5 to 9th abdominal segment with big yellow markings, entire dorsal of 8-10th abdominal segments with pale yellow patches. Apex of anal pyramid bent downwards and fork-shaped, anal appendages with yellow fine hair (Fig. 1). Ovipositor sheath of female reaching to 1/2 of length of paraproct (Fig. 2). Primary lateral and primary inner valvula brown with luster and white hairs.

BIOMETRIC RATIOS. — Head/prothorax: 1.30-1.38 (\bar{X} = 1.34; n = 4), prementum L/W+: 0.40-1.45 (\bar{X} = 1.42; n = 4), prementum W+/W-: 2.50-2.53 (\bar{X} = 2.51; n = 4), prementum 1.40-1.45 (\bar{X} = 1.42; n = 4), antennal annulus 1 < antennal annuli 4+5, anal pyramid L/W: 2.00-2.04 (\bar{X} = 2.02; n = 4).

PLANAESCHNA SHANXIENSIS ZHU & ZHANG, 2001

Figures 8-14

M a t e r i a l. — 2♂, 1♀ exuviae, 1♀ larva, Huairou of Beijing City, China, 3-VII-2007, Zhang Hao-Miao leg. The adult emerged on 25-VII-2007.

Body length 45 mm, length of abdomen (including caudal appendages) 31 mm, maximum head width 7.1 mm; length of hind femur 8.5 mm. Dorsal hooks absent. Lateral spines present on segments 5-9, rather sharp.

H e a d. — Dark brown without conspicuous patches or bands, rather broad and flat; labium narrow and elongate. Prementum long, narrow and hardly divergent, median lobe prominent, with a pair of teeth on its distal margin (Fig. 10).

Labrum blackish brown and rounded on the sides, two black spots in the centre; anteclypeus brown, postclypeus pale yellow with a black trapezium-shaped spot at the sides. Antefrons brown, ocellar triangle brown, ocellus fringed with yellow hairs, between lateral ocelli a pale yellow spot. Antennae filiform, 7-segmented (Fig. 12). Length ratio of segments as follows: 0.4:0.6:0.8:0.5:0.5:0.5:0.4. First segment of antenna black at base and with yellow marking in the end. Occipital lobe standing out at the sides (Fig. 11).

T h o r a x. — Prothorax and metathorax narrower than head, wing cases parallel and brown. Forewing cases reaching to posterior border of second abdominal segment, hindwing cases extending to posterior border of third abdominal segment, not outstripping third abdominal segment.

A b d o m e n. — Narrowly lanceolate, evenly tapered. Dorsal hooks absent. Lateral spine present on abdominal segments 5-9 (Fig. 14). Black spots on abdominal segments 3-8; 8th segment with big pale yellow marking, 9th segment without marking, 10th segment with two pale brown spots. Female primary genitalia long, more than 1/3 of paraproct, primary inner valvula and primary ven-

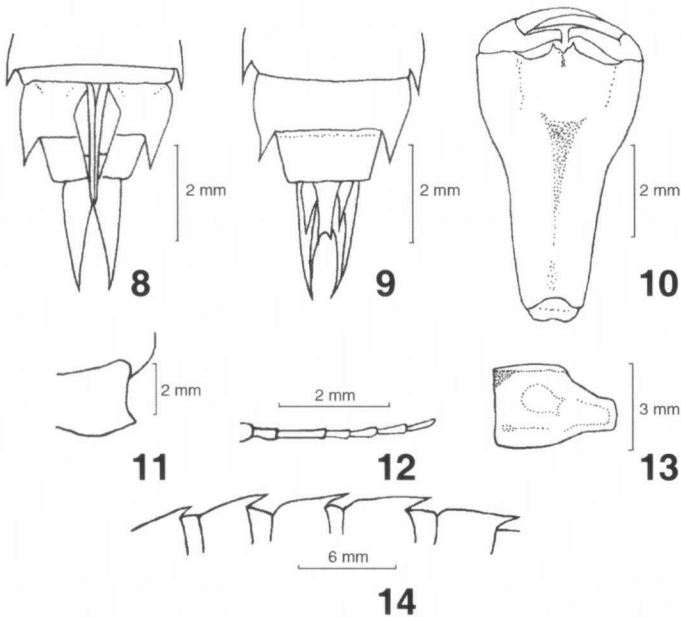
tral valvula brown, with luster, primary lateral valvula yellow at base.

BIOMETRIC RATIOS. – Head/prothorax: 1.33-1.35 (\bar{X} = 1.34; n = 3), prementum L/W+: 1.42-1.46 (\bar{x} = 1.44; n = 3), prementum W+/W-: 1.81-1.85 (\bar{x} = 1.83; n = 3), antennal annulus 1 < antennal annuli 4+5, anal pyramid L/W: 1.45-1.46 (\bar{x} = 1.45; n = 3).

DISCUSSION

Cephalaeschna Selys, 1883 and *Planaeschna* McLachlan, 1895 are endemic to Asia; *Cephalaeschna* currently includes about 14 species, of which seven occur in China. *Planaeschna*, with 17 species, has six species in China. Many papers deal with the adults of the two genera, but the larvae had to date remained almost unstudied in mainland China. NEEDHAM (1930) described the larvae of two *Cephalaeschna* species, one of which remained unnamed. WILSON (2003) recorded larval *C. klotsi* Asahina on photograph, but it is clearly different from *C. patrorum* because: (1) the female primary genitalia do not outstrip the 10th abdominal segment; and – (2) lateral spines are present on abdominal segments 4-9.

Adult *C. patrorum* and *P. shanxiensis* occur from May till August at approxi-



Figs 8-14. *Planaeschna shanxiensis* Zhu et Zhang, female exuviae: (8) abdomen in dorsal view; – (9) abdomen in ventral view; – (10) labium in ventral view; – (11) right occipital lobe in dorsal view; – (12) right antenna; – (13) right prothorax in dorsal view; – (14) right lateral spines of abdomen in dorsal view

mately 1000-1500 m altitude. Their exuviae are found on shrubs, rocks and weeds, of ten up to 0.5-1.5 m away from water. The larvae co-occur with those of *Cordulegaster pekinensis* and *Anotogaster sieboldii*, which have the same habitat preference.

As to *Planaeschna*, those species of which the larvae are known and occurring in Taiwan and Japan differ in larval morphology as follows: their ovipositor process is not reaching the hind edge of the 10th abdominal segment. The primary lateral valvula is the same, but the occipital lobe markedly projects on both sides.

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