

A NEW SPECIES OF GENUS *EPHEMERA* (EPHEMEROPTERA: EPHEMERIDAE)

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(Received Oct. 18, 1997; accepted Jan. 15, 1997)

Abstract The imagoes of a new species *Ephemera nigroptera* sp. nov. are described in detail. The characters of this species distinguished from the other species in same genus were discussed.

Key words New species, *Ephemera nigroptera*, Ephemeridae, Ephemeroptera

1 INTRODUCTION

There are more than 60 named species in genus *Ephemera* Linnaeus (1758) of the world (Edmunds *et al.* 1976, Needhan *et al.* 1935, McCafferty and Gillies 1979, Tshernova 1973). Asia has 42 species (Tshernova *et al.* 1986, Bae 1995, McCafferty 1973). McCafferty and Edmunds (1973) divided this genus into 3 subgenera: *Ephemera* s. s., *Dicrephemera* and *Aethephemera*. China has 30 species, but they have never been divided into subgenera or groups (You and Gui 1995, Zhang *et al.* 1995). In June 1996, a new species of this genus was collected in Anhui Province of China. It is described below in detail. The type specimens are deposited in the Department of Biology, Nanjing Normal University.

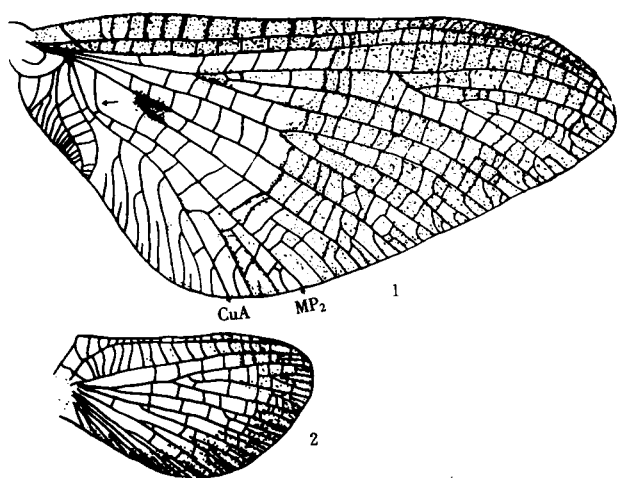
2 DESCRIPTIONS

Ephemera nigroptera sp. nov. (Figs. 1-9)

Male imago (in alc.): Length: Body 18.0 mm, caudal filaments 45.0 mm, fore leg 17.0 mm, middle leg 5.8 mm, hind leg 6 mm, fore wing 15.0 mm, hind wing 6.0 mm. Head: color dark brown; antennae pale, unicolorous; compound eyes black, ocelli with conspicuous black basal ring. Thorax: Notum black brown. The inner half portion of fore wings hyaline, the out half portion brown and semihyaline, crossveins with dark marking, two crossveins between the base of CuA and CuP; MP₂ joining MP₁ at base, with crossvein joining CuA only at basal curvature (Fig. 1); the outer margin of hind wing brown and semihyaline and with longitudinal intercalaries between R₂ and IR₃ (Fig. 2); fore femur brown. Ratio of femur : tibia : tarsus = 2.5 :

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6.5 : 7.5, the formula of fore tarsus; 2, 3, 4, 5, 1., tarsus with two similar blunt claws (Fig. 3). Ratio of femur : tibia : tarsus of mid-leg = 1.8 : 2.5 : 1.5, the formula of tarsus; 4, 3, 2, 1 (Fig. 4). Ratio of femur : tibia : tarsus of hind leg = 2.5 : 2.5 : 1.0, the formula of tarsus; 4, 3, 2, 1 (Fig. 5). The middle and hind legs yellowish, unicolorous, with two different claws, one blunt, one sharp; Abdomen pale, the terga of 1-6th abdomen segments each with a pair of black stripes, 7-10th terga without any markings (Figs. 6,7). Forceps with brown marking as in the figure, 4 segments, the 2nd segment longest; two penis very close together with brown marking, length is 2 times of base segments of forceps (Fig. 8). Terminal filament as long as the cerci, color yellowish brown.



Figs. 1-2 *Ephemera nigroptera* sp. nov. male imago. 1. Fore wing; 2. hind wing.

Female imago (in alc.): Body length 20 mm, caudal filaments 45.0 mm, fore leg 7.0 mm, middle leg 5.8 mm, hind leg 6 mm, forewing 15.0 mm, hind wing 8.0 mm. Fore wings whitish and hyaline, veins black, with dark markings. Hind wings without markings. The 1-4th abdomen terga each with one pair of stripes, 5, 6 and 9th terga with two pairs of stripes, 7 and 8th terga with three pairs of stripes, the outer pair is

weak (Fig. 9). Subanal plate with posterior margin deeply convex. Terminal abdominal sternum with posterolateral processes.

Nymph unknown.

Holotype: ♂ imago; paratype: 3 ♂♂, 1 ♀♀, collected at Huangtukeng, Jixi County, Anhui Province, China; May 1, 1996, by Changfa Zhou.

3 ETYMOLOGY

The name *nigroptera* is composited with the Latin words: *nigro-*(meaning black) and *pter-*(meaning wing). It means that the outer margin of fore wing of male adult *E. nigroptera* is brown and semihyaline and hind wing with brown markings.

4 DIFFERENTIAL DIAGNOSIS AND DISCUSSION

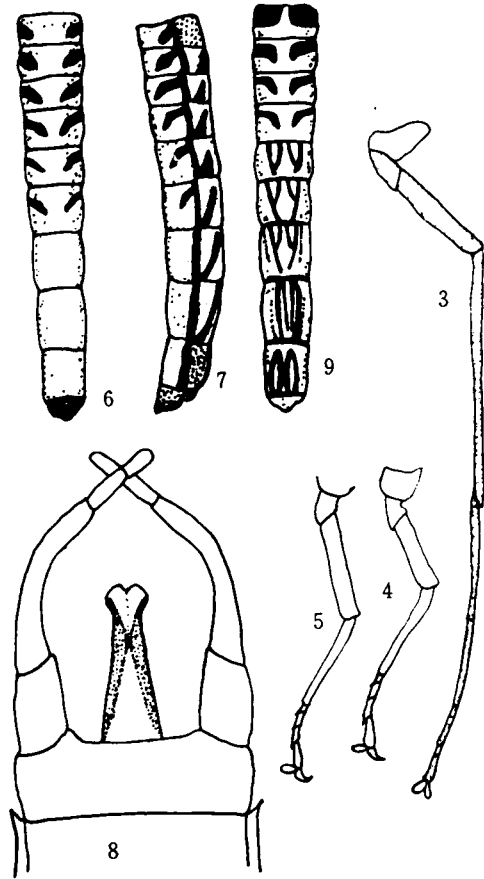
E. nigroptera sp. nov. can be distinguished from remaining species of the genus *Ephemera* by the following combination of characters; 1) the outer half portion of fore wings of male imago with brown marking and semihyaline; 2) the outer margin of hind wing whitish brown markings and semihyaline, but that of female without markings; 3) the pattern of the stripes on the abdomen terga; 4) the forceps of *E. nigroptera* with brown markings; 5) the penis very close together and its shape.

McCafferty and Edmunds (1973) divided *Ephemera* into three subgenera using the following characteres; the fore wing with MP₂ joining CuA at basal curvature or not ; the length of the hind wing ; hind wing with longitudinal intercalaries between R₂ and IR₃ or not ; the shape of subanal plate of female imago. It is interesting that; the fore wing of *E. nigroptera* sp. nov. with MP₂ not joining CuA at basal curvature showing that *E.*

nigroptera sp. nov. should be put in subgenus *Dicrephemera*. But the shape of subanal plate of female *E. nigroptera* and hind wing relatively more than one third of length of fore wing and with longitudinal intercalaries between R₂ and IR₃ showing it should be put in *Ephemera* s. s.

So now the characters used to divide *Ephemera* into subgenera must be modified. The fore wing of subgenus *Dicrephemera* with MP₂ not joining CuA at basal curvature (Fig. 1), but that of subgenus *Ephemera* s. s. joining together at basal curvature.

Acknowledgments Many thanks to Dr. W. P. McCafferty (Department of Entomology, Purdue University, West Lafayette, Indiana , USA) and Dr. Y. J. Bae



Figs. 3-9 *Ephemera nigroptera* sp. nov. Male imago; 3. fore leg; 4. middle leg; 5. hind leg; 6. abdomen (dorsal view); 7. abdomen (lateral view); 8. genitalia. Female imago; 9. abdomen (dorsal view).

(Department of Biology, Seoul Women's University, Korea) for sending us the useful papers.

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蜉蝣属一新种 (蜉蝣目: 蜉蝣科)

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详细描述了采自安徽黄土坑的一新种, 黑翅蜉 (*Ephemera nigroptera* sp. nov) 的形态特征, 并对前人划分蜉蝣属各亚属的标准作了修订. 认为将前翅 MP₂ 脉与 CuA 脉在基部连接与否作为划分蜉蝣亚属的标准比较可行. 这样, 黑翅蜉应归入到蜉蝣属叉蜉亚属 (*Dicrephemera*).

黑翅蜉区别于蜉蝣属其它种的特征为: 1) 雄成虫前翅外侧大部分呈棕红色, 半透明, 雌成虫的前翅只具少许斑点, 翅透明; 2) 后翅外侧缘具棕红色斑纹, 半透明, 而雌成虫后翅不具斑纹, 透明; 3) 雄、雌成虫腹部背板上的斑纹形式及排列; 4) 雄成虫的尾铗大部分为黑色; 5) 雄成虫的阳茎的形状独特, 且两阳茎紧靠。