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Title	Notes on some Species of the Genus Culicoides from Manchoukuo with Description of a new Species (Ceratopogonidae, Diptera)
Author(s)	Takahashi, Hirosi
Citation	Insecta matsumurana, 15(3), 80-85
Issue Date	1941-03
Doc URL	http://hdl.handle.net/2115/9465
Type	bulletin (article)
File Information	15(3)_p80-85.pdf

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NOTES ON SOME SPECIES OF THE GENUS *CULICOIDES* FROM MANCHOUKUO WITH DESCRIPTION OF A NEW SPECIES*

(CERATOPOGONIDAE, DIPTERA)

By

HIROSI TAKAHASI
(高　橋　　弘)

(With 2 figures)

So far as the author is aware, only two *Culicoides*-species, *C. nubeculosus* (MEIGEN) and *C. onoi* TOKUNAGA, have been recorded by M. TOKUNAGA** from Manchoukuo. On this occasion six more species, one of which is new to science, are added to the Ceratopogonid fauna of Manchoukuo.

Key to the Species

1. Wings either unmarked or with a single dark spot on the costal two radial cells, without any markings on the membrane 2
– Wings with markings on the membrane 3
2. Wings with macrotrichia spread over the whole surface, wing-length more than 1 mm. Maxillary palpus with many scattered spoon-like sensillae on the distal half of the third segment ..... *C. albicans* (WINNERTZ)
– Wings nearly bare, wing-length less than 1 mm. Maxillary palpus with short spoon-like sensillae in a common pore on the third segment .... *C. chiopterus* (MEIGEN)
3 Wings with the second radial cell including marginal veins entirely dark ... 4
– Wings with the second radial cell including marginal veins mainly pale 5
4. Wings bare except at the tip; markings indefinite. Thorax without any definite markings. Wing-length about 1 mm. ..... *C. obsoletus* (MEIGEN)
– Wings clothed with macrotrichia on the greater part of the surface; markings sharply definite. Thorax with three large irregular dark marks. Wing-length 2 mm. ..... *C. pulicaris punctatus* (MEIGEN)

*The studies on which this paper is based were conducted with the support and under the auspices of the "Rikugun Gun-i Gakko", Tokyo.

**TOKUNAGA, M.: Biting midges from Japan and neighbouring countries, including Micronesian Islands, Manchuria, North China and Mongolia. (Tenthredo, III, pp. 58–165, 1940).

5. Wings with gray clouds on pale ground; a dark marking in the median fork and in the cubital fork. Wing-length 2 mm. ..... *C. buhetoensis* n. sp.
– Wings with as many as fifteen clear spots on the dark ground, three clear spots in the median fork and a clear spot in the cubital fork. Wing-length about 1.3 mm. ..... *C. erairai* KÔNO et TAKAHASI

1. ***Culicoides albicans*** (WINNERTZ)

Ceratopogon albicans WINNERTZ, Linnaea Entomolog., Stettini, VI, p. 41, Pl. VI, fig. 36 (1852); WALKER, Ins. Britannica, Dipt., III, p. 221 (1856); SCHINER, Fauna Austriaca, Dipt., II, p. 582 (1864); KERTÉSZ, Cat. Dipt., I, p. 159 (1902).

Culicoides albicans KIEFFER, Ann. Mus. Nat. Hist. Hungarici, XVII, p. 32 (1919); KIEFFER, in Faune de France, XI, p. 78 (1925); GOETGHEBUER & LENZ, in LINDNER, Die Fliegen, 13a, Heleidae, pp. 38, 40 (1934); EDWARDS, in British Blood-sucking Flies, pp. 41, 42, 141, figs. 58, a, b (1939).

Habitat: Sekimonshi (石門子), 1 ♀, 20/VII, 1940, H. TAKAHASI; Hengtaohotze (黃道河子), 5 ♀ ♀, 24/VII, 1940, H. TAKAHASI.

Gen. Dist.: Manchoukuo; Europe.

Remarks: No definite record of the blood-sucking habit of this species has yet been published. The author caught the midge together with *C. pulicaris punctatus* and *C. erairai*.

This species is new to the fauna of Manchoukuo.

2. ***Culicoides buhetoensis*** n. sp.

♀. Length, 2.3 mm.; Wing, 2 mm.

Head brown with the eyes widely separated from each other. Frons and vertex pubescent. A large seta situated in the middle of the frons; rather short setae scattered on the vertex. Maxillary palpus (Fig. 1, b) 5-segmented (13 : 30 : 30 : 12 : 17), pale brown, with the 3rd segment having a sensory pore in which several spoon-like sensillae are assembled. Antennae pale brown, with the scape reddish brown. Relative length of seven distal segments as follows— 13 : 15 : 15 : 16 : 19 : 20 : 31. Antennal ratio about 1 (112 : 111). Mandible with about thirteen minute teeth; galea with sixteen teeth; labrum-epipharynx with four lateral large teeth on each side and with three minute terminal teeth. Mesonotum and scutellum brown. Wings (Fig. 1, a) hyaline, with small scattered markings on the membrane; first dark costal marking not visible; second dark costal marking covering the whole of the two radial cells; third dark costal marking constricted at the middle. r-m as long as M_{1+2}. Radius and costa with macrotrichia. Macrotrichia comparatively sparse, spreading over the distal one-fourth of the membrane of the wing. Halters white. Legs pale brown. Relative length of femora, tibiae and tarsi (1st : 2nd : 3rd : 4th : 5th) as follows: Fore leg—37 : 30 : 36 (15 : 8 : 5 : 3 : 5); middle leg—37 : 39 : 43

(20 : 9 : 6 : 3 : 5); hind leg—37 : 37 : 58 (22 : 11 : 7 : 3 : 5). Abdomen mouse-gray, tergum somewhat darker than sternum. Spermatheca only one.

Holotype (♀): Buheto (博克圖), 31/VII, 1940, H. TAKAHASI.

Type in the Entomological Institute of the Hokkaido Imperial University, Sapporo.

Habitat: Manchoukuo.

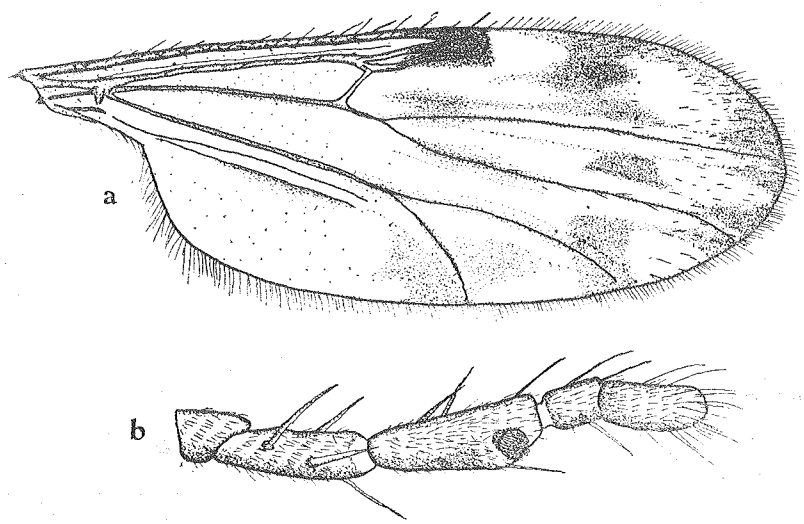

Fig. 1. *Culicoides buhetoensis* n. sp.
a: Wing; b: Maxillary palpus

Remarks: The new species closely resembles *C. nubeculosus* (MEIGEN)*, but is easily distinguished from the latter in having an indefinite first costal dark marking of the wing.

It was a cold and cloudy evening when the specimen was collected by the author, the temperature being 5°C. The midge stung the back of his hand giving a sharp pain. The inflammation continued about an hour. It is noteworthy that the midge is active on such a cold evening.

3. ***Culicoides chiopterus*** (MEIGEN)

Ceratopogon chiopterus MEIGEN, Syst. Beschr., VI, p. 263 (1830); WALKER, List Dipt. British Mus., I, p. 24 (1848); KERTÉSZ, Cat. Dipt., I, p. 163 (1902).

*MEIGEN, Syst. Beschr., VI, p. 263 (1830); EDWARDS, in British Blood-sucking Flies, pp. 31, 33 (1939).

Ceratopogon amoenus WINNERTZ, Linnaea Entomolog., Stettini, VI, p. 29, Pl. V, fig. 29 (1842); WALKER, Ins. Britannica, Dipt., III, p. 218 (1856); SCHINER, Fauna Austriaca, II, p. 590 (1864).

Culicoides amoenus KIEFFER, Ann. Mus. Nat. Hist. Hungarici, XVII, p. 32 (1919).

Culicoides chiopterus KIEFFER, in Faune de France, XI, p. 76 (1925); EDWARDS, Trans. Ent. Soc. London, LXXIV, pp. 404, 405 (1926); GOETGHEBUER & LENZ, in LINDNER, 13a, Heleidae, pp. 38, 41, Pl. V, fig. 51 (1934); EDWARDS, in British Blood-sucking Flies, pp. 31, 45, 143, fig. 60, b (1939).

Habitat: Hengtaohotze, 1 ♀, 24/VII, 1940, H TAKAHASI.

Gen. Dist.: Manchoukuo; Europe.

Remarks: This species belongs to a group having the 3rd segment of the maxillary palpus with a sensory pore in which several spoon-like sensillae are assembled.

There are as yet no definite records of the blood-sucking habit of this midge. The present specimen was collected together with *C. obsoletus*, *C. pulicaris* and *C. erairai* in a bush on the hill near Hengtaohotze in the evening.

This species is new to the fauna of Manchoukuo.

4. ***Culicoides erairai*** KÔNO et TAKAHASI

Culicoides erairai KÔNO et TAKAHASI, Ins. Mats., XIV, 2/3, p. 70, fig. 1 (1940); TOKUNAGA, Tenthredo, III, 2, p. 142 (1940).

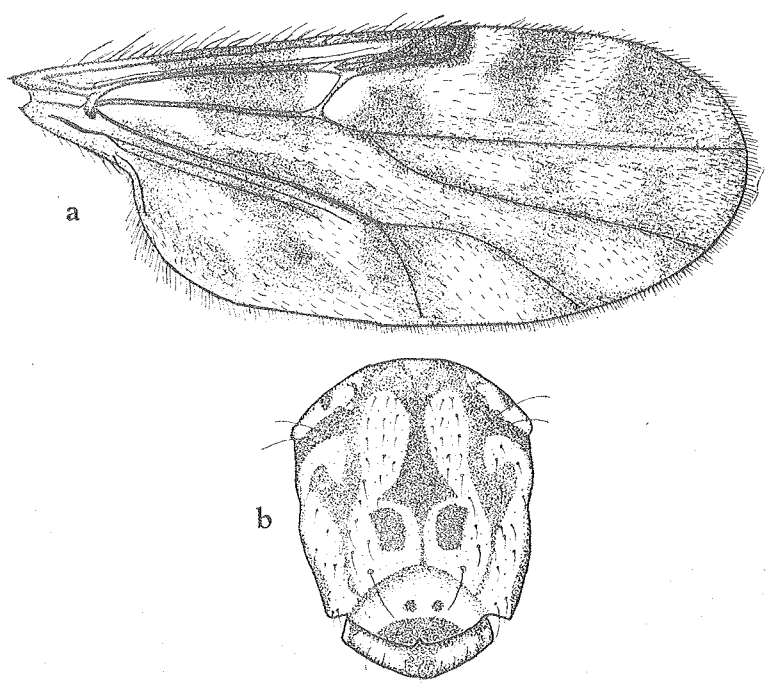

Fig. 2. *Culicoides erairai* KÔNO et TAKAHASI (♀). a: Wing; b. Thorax

Habitat: Sekimonshi, 3♀♀, 20/VII, 1940, H. TAKAHASI; Tonei (東寧), 4♀♀, 21/VII, 1940, H. TAKAHASI; Hengtaohotze, 10♀♀, 24/VII, 1940, H. TAKAHASI, Mutanchiang (牡丹江), 1♀, VIII, 1940, T. KONNO; Masan (麻山), 2♀♀, VIII, 1940, H. KAMIJIMA.

Gen. Dist.: Nippon; Manchoukuo.

Remarks: This species belongs to a group having the 3rd segment of the maxillary palpus with scattered spoon-like sensillae.

C. erairai is a troublesome and abundant species in north-eastern Manchoukuo. It chiefly attacks the hairy parts of the human body, such as the head or beard. The bite is very painful and causes a big swelling, and sometimes inflammation and eczema. *C. erairai* is only troublesome out of doors. It is most active in the evening or in cloudy weather.

5. ***Culicoides obsoletus*** (MEIGEN)

Ceratopogon obsoletus MEIGEN, Syst. Beschr., I, p. 76 (1818).

Ceratopogon yezoensis MATSUMURA, Jour. Coll. Agr. Tohoku Imp. Univ., Sapporo, IV, 1, p. 60 (1911).

Culicoides obsoletus KIEFFER, Ann. Mus. Nat. Hist. Hungarici, XVII, p. 33 (1919); KIEFFER, in Faune de France, XI, p. 82 (1925); EDWARDS, Trans. Ent. Soc. London, LXXIV, p. 405, Pl. XCII, fig. 16 (1926); GOETGHEBUER & LENZ, in LINDNER, Die Fliegen, 13a, Heleidae, pp. 39, 45, Pl. VI, fig. 62 (1934); TOKUNAGA, Tenthredo, I. 3, p. 321, fig. 23, Pl. XXVIII, fig. 18 (1937); EDWARDS, in British Blood-sucking Flies, pp. 32, 45, 143, figs. 14, 60, a (1939); KÔNO et TAKAHASI, Ins. Mats., XIV, 2/3, p. 71 (1940).

Habitat: Hengtaohotze, 2♀♀, 24/VII, 1940, H. TAKAHASI; Mutanchang, 1♀, VIII, 1940, T. KONNO.

Gen. Dist.: Nippon; Manchoukuo; Europe.

Remarks: This very troublesome small midge was first found in Manchoukuo in the summer of 1940. The bite is often painful and sometimes makes a big swelling as the author has already reported (l. c.).

6. ***Culicoides pulicaris punctatus*** (MEIGEN)

Culex pulicaris LINNÉ, Syst. Nat., ed. X, p. 603 (1758); MEIGEN, Klass. Beschr. Eur. Zweifl. Ins., I, p. 6 (1804).

Ceratopogon punctatus MEIGEN, Klass. Beschr. Eur. Zweifl. Ins., I, p. 29 (1804).

Culicoides punctatus LATREILLE, Gen. Crust. et Ins., IV, p. 252 (1809).

Ceratopogon pulicaris MEIGEN, Syst. Beschr., I, p. 75, Pl. II, fig. 17 (1818); WALKER, Ins. Britannica, Dipt., III, p. 220 (1858); SCHINER, Fauna Austriaca, II, p. 581 (1864); WULP, Dipt. Needl., I, p. 232 (1877); KERTÉSZ, Cat. Dipt., I, p. 178 (1902).

Culicoides pulicaris KIEFFER, Ann. Mus. Nat. Hist. Hungarici, XVII, pp. 34, 41, fig. 24 (1919); KIEFFER, in Faune de France, XI, p. 87 (1925); EDWARDS, Trans. Ent. Soc. London, LXXIV, pp. 404, 406, Pl. XCII, fig. 24 (1926); GOETGHEBUER & LENZ, in LINDNER, Die Fliegen. 13a, Heleidae, pp. 39, 46, Pl. XI, fig. 107 (1934); TOKUNAGA, Tenthredo, I, 3, pp. 274, 308, Fig. 22, l. XXVI, fiig. 12 (1937).

Culicoides pulicaris var. *punctatus* EDWARDS, in British Blood-sucking Flies, pp. 32, 46 (1939).
Culicoides sawamotoi KÔNO et TAKAHASI, Ins. Mats., XIV, 2/3, p. 75, fig. 5 (1940) (n. syn).

Habitat: Sekimonshi, 5 ♀ ♀, 20/VII, 1940, H. TAKAHASI; Tonei, 3 ♀ ♀, 21/VII, 1940, H. TAKAHASI; Hengtaohotze, 3 ♀ ♀, 24/VII, 1940, H. TAKAHASI.

Gen. Dist.: Nippon; Manchoukuo; Europe.

Remarks: In the course of the present study the author's observations have convinced him that *C. sawamotoi* KÔNO et TAKAHASI should be a synonym of *C. pulicaris punctatus* (MEIGEN). In the original description *C. sawamotoi* is placed in a group having the 3rd segment of the maxillary palpus with a sensory pore in which several spoon-like sensillae are assembled, but it truly belongs to a group having the 3rd segment of the maxillary pulpus with scattered spoon-like sensillae.

The midge is a troublesome species in Manchoukuo as well as in Europe, and it is usually most active in the evening out of doors, but is inactive indoors similarly to *C. erairai*.

This species is new to the fauna of Manchoukuo.

摘　　要

満洲國東北部地區にはヌカカ屬の吸血昆蟲が多く、夏期野外に於ける勞働を著しく阻害せられ大問題となつて居る。著者は、昭和 15 年夏、同地方に採集旅行をなし、下記の種類を採集した。

1.	*Culicoides albicans* (WINNERTZ)	シロヌカカ	(新記錄)
2.	*C. buhetoensis* n. sp.	ブヘトヌカカ	(新　種)
3.	*C. chiopterus* (MEIGEN)	チビヌカカ	(新記錄)
4.	*C. erairai* KÔNO et TAKAHASI	エゾヌカカ	(新記錄)
5.	*C. obsoletus* (MEIGEN)	ヌカカ	(新記錄)
6.	*C. pulicaris punctatus* (MEIGEN)	サワモトヌカカ	(新記錄)

同地に於ける被害狀況は、樺太の場合と共通するものがあり、且種類も共通種が多い。滿洲國に於ては *Culicoides nubeculosus* (MEIGEN), *C. onoi* TOKUNAGA (德永氏に據る)の 2 種、並びに今回の 6 種を加へ、合計 8 種が知られて居るにすぎないが、更に多くの種類が發見出來るものと考へられる。本文を草するに當り、被害狀況其他の點に於て、武藤二郎氏の御教示に負ふ所が多い。

終りに陸軍軍醫學校並びに在滿各機關の絶大なる御庇護に對し厚く感謝の意を表する。