

# THE FAUNA OF AKKESHI BAY

## VI. A NEW SPECIES OF *CLUNIO* (DIPTERA)

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FIVE FIGURES

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At present only eight species of *Clunio*, including a new species described below, are known and they are all highly specialized, the known females being apterous and the known larvæ being found on the seashore between tide marks.

These eight species are distinguished from each other by the following specific characters:

### *Table for the species of Clunio (males)*

- 1.—Antennæ always 7-segmented ..... *C. takahashii* Tokunaga.  
—Antennæ normally 10-segmented ..... 2.
- 2.—Ultimate segment of antenna usually shorter than preceding  
seven segments taken together ..... 3.  
—Ultimate segment of antenna usually longer than preceding  
seven segments taken together ..... 7.
- 3.—Wing vein  $Cu_1$  slightly cruved ..... 4.  
—Wing vein  $Cu_1$  distinctly curved ..... 5.
- 4.—Ultimate segment of antenna subequal to or slightly longer  
than preceding four segments taken together.....  
..... *C. setoensis* Tokunaga.  
—Ultimate segment of antenna shorter than preceding four  
segments taken together ..... *C. africanus* Hesse.
- 5.—Wing vein  $R_{4+5}$  longer than or subequal to twice of proximal  
section of M ..... *C. adriaticus* Schiner.  
—Wing vein  $R_{4+5}$  shorter than twice of proximal section of  
M..... 6.

Contribution from Entomological Laboratory of Kyoto Imperial University.

Contributions from Akkeshi Marine Biological Station of Hokkaido Imperial University. No. 6.

- 6.—Wing vein  $R_1$  shorter than one-third of  $R_{4+5}$  ..... *C. marinus* Haliday.  
 —Wing vein  $R_1$  subequal to one-third of  $R_{4+5}$  ..... *C. aquilonius* sp. nov.
- 7.—Wing vein  $Cu_1$  slightly curved ..... *C. pacificus* Edwards.  
 —Wing vein  $Cu_1$  distinctly curved ..... 8.
- 8.—Ultimate segment of antenna shorter than half of entire length..... *C. tsushimensis* Tokunaga.  
 —Ultimate segment of antenna subequal to or longer than half of entire length..... *C. tsushimensis* var. *minor* Tokunaga.

Of these species tabulated above, five species and one variety are known from coasts of Japan and their known localities are as follows:

- C. takahashii*. Tansui, Formosa (R. Takahashi).  
*C. setoensis*. Seto, Wakayama Prefecture (H. Yuasa); Ishigaki-Jima, Okinawa Pref. (T. Esaki); Takashiba, Wakayama Pref. and Toshi-Wagu, Mie Pref. (M. Tokunaga).  
*C. aquilonius*. Shimoda, Shizuoka Pref. (T. Fukui); Matsushima, Miyagi Pref. (I. Motomura); Akkeshi, Hokkaido (S. Asahina).  
*C. pacificus*. Ishigaki-Jima, Okinawa Pref. (T. Esaki).  
*C. tsushimensis*. Tsushima, Nagasaki Pref. and Okinoshima, Fukuoka Pref. (T. Esaki and H. Hori); Misaki, Kanagawa Pref. (H. Oka and N. Yoshii); Ujina, Hiroshima Pref. (S. Miyamoto); Seto and Tanabe, Wakayama Pref., Anori, Mie Pref. and Tomioka, Kumamoto Pref. (M. Tokunaga).  
*C. tsushimensis* var. *minor*. Ujina, Hiroshima Pref. (S. Miyamoto); Seto, Wakayama Pref. and Shukutaso, Mie Pref. (M. Tokunaga).

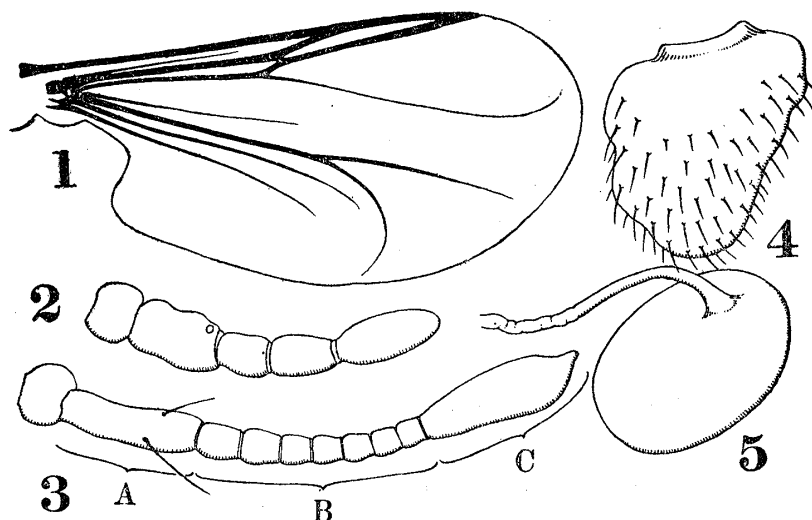
*Clunio aquilonius* sp. nov.

The following descriptions of the new species is mainly based on the alcoholic specimens collected from Akkeshi Bay of Hokkaido:

*Male*.—Body length about 2–2.2 mm; head and thorax mainly dark brown; thoracic scutal vittæ obscure; antennæ normally 10-segmented; ultimate segment usually shorter than seven preceding segments taken together; maxillary palpi dark brown; wing with vein  $Cu_1$  strongly curved. Antennæ (fig. 3) mainly dark brown; second elongate segment pale brown excepting dark brown distal end, with two small setæ; ultimate segment usually with a small papiliform apical projection. Legs mainly dark brown; femora, tibiæ and first tarsal segments of

all legs and third tarsal segment of hind leg mainly pale brown; both ends of these segments broadly dark brown; all tarsal segments of hind leg mainly brown; tibia with one apical spur which is distinctly curved apically. Relative lengths of segments from femur to ultimate tarsal segment as follows: 32:45:10:32:3:2.5:4 in foreleg, 40:37:7:2.5:2.5:2.4:3 in middle leg and 43:42:8:3.5:6:2.5:4 in hind leg. Wing (fig. 1) pale brown by transmitted light; anterior veins brown;  $R_1$  about one-third as long as  $R_{4+5}$ ;  $R_{2+3}$  completely atrophied;  $M_{1+2}$ ,  $M_{3+4}$  and  $Cu_1$  atrophied before wing margin;  $M_{1+2}$  distinctly upcurved distally;  $Cu_1$  distinctly curved throughout its entire length. Abdominal tergum brown on anterior half and dark brown on posterior half; ventral side mainly white, with indigo blue subcutaneous pigment on anterior half. Hypopygium dark brown; style with a small blunt tooth on ventral corner, without apical teeth.

*Female*.—Body about 2–2.3 mm in length; head pale brown; thorax brown; abdomen mainly white, with indigo blue subcutaneous pigment; ultimate abdominal segment brown. Compound eyes each with about eleven ommatidia. Antennæ (fig. 2) usually 5-segmented (9:17:9:12:21). Legs mainly dark brown or brown; femora and tibiae broadly white at middle; ventral side of femur brown; ultimate tarsal segments of all legs white; tibial spurs absent. Relative lengths of segments of legs as follows: 12:9:1:1:1:1:3 in foreleg, 12:8:1:1:1:1:3 in



*Clunio aquilonius* sp. nov.

1: male wing; 2: female antenna; 3: male antenna; 4: female cercus; 5: spermatheca; A: second segment; B: seven proximal flagellar segments; C: ultimate segment.

middle leg, and 13:8:1:1:1:1:4 in hind leg. Spermathecae (fig. 5) two, similarly oval and brown, each with a long brown duct; cerci (fig. 4) pale brown with small scattered setae.

*Relative lengths of segments of male antennae.*—All specimens (50 males), both from Akkeshi and Shimoda, provided with comparatively short ultimate segments of antennae (C) which are shorter than preceding eight segments taken together (A+B); ratio of length of C to that of A+B (antennal ratio)  $0.5539 \pm 0.0098$  (standard deviation  $0.0695 \pm 0.0070$ ). According to observation on 25 males from Akkeshi, ultimate antennal segments of all specimens shorter than preceding seven moniliform segments taken together (B) and antennal ratio  $0.5003 \pm 0.0081$  (standard deviation  $0.0428 \pm 0.0061$ ). Specimens from Shimoda with relatively longer ultimate antennal segments than from Akkeshi, antennal ratio observed on 25 males being  $0.6074 \pm 0.0080$  (standard deviation  $0.0412 \pm 0.0058$ ); 15 males (60%) of these specimens with ultimate segments shorter than preceding seven segments taken together and their antennal ratio  $0.5768 \pm 0.0067$  (standard deviation  $0.0260 \pm 0.0048$ ), 5 males (20%) with ultimate segments equal to preceding seven put together and their antennal ratio  $0.6309 \pm 0.0060$  (standard deviation  $0.0133 \pm 0.0042$ ), and 5 males (20%) with ultimate segments longer than preceding seven put together and their antennal ratio  $0.6756 \pm 0.0065$  (standard deviation  $0.0146 \pm 0.0046$ ).

*Habitat.*—Rocky shore, between tidal lines; northern Honshu and Hokkaido, Japan.

*Holotype.*—Male; Akkeshi, Hokkaido; August 6, 1937.

*Allotopotype.*—Female; August 6, 1937.

*Paratypes.*—Males and females; Shimoda, Izu, Shizuoka Prefecture; February 26, 1936; Miyato-Jima, Matsushima, Miyagi Prefecture; April 13, 1937 and Akkeshi, Hokkaido; August 6, 1937.

*Type specimens.*—Alcoholic; deposited in the entomological laboratory, Kyoto Imperial University; collected by Prof. Dr. T. Fukui, Prof. Dr. I. Motomura and Mr. S. Asahina.

The present species is somewhat allied to *C. marinus*, but it distinctly differs in having the wing vein  $R_{4+5}$  comparatively shorter and  $R_1$  longer than in the allied European species. The specimens of the present species which are provided with a longer ultimate segment of the antennae are somewhat related to *C. tsushimensis*; the present species, however, is easily distinguished from the related species by the comparatively short ultimate segments of the antennae which are

always shorter than the preceding eight segments put together and the longer  $R_{4+5}$  which is far longer than the distance between ends of  $R_{4+5}$  and  $M_{1+2}$ .

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