# AN APTEROUS SNOW CRANEFLY, *CHIONEA* SP., FROM MT. HAKUSAN, CENTRAL JAPAN (DIPTERA: TIPULIDAE)

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# 白山麓で採集されたクモガタガガンボ（ユキガガンボ），*Chionea* sp.（昆虫；双翅目）の雌成虫について

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**Abstract** A female of an apterous snow cranefly, *Chionea* sp., was recorded and described, based on material collected on the snow at the foot of Mt. Hakusan, Ichirino, Oguchi, Ishikawa Prefecture (ca. 600 m a. s. l.).

## Introduction

Three species of *Chionea*, apterous craneflies mainly found on snow in winter, have been recorded from Japan (Alexander, 1932, 1936; Takahashi, 1978; Sasakawa, 1986). In the course of my study of the winter stoneflies of the Hakusan Region (Tanida, 1981), I found a female belonging to the genus *Chionea* on the snow in midwinter 1982. This is the first record of this genus from the Hakusan Region.

Despite intensive efforts, to date no additional specimens have been located in this area and this, along with the absence of male specimens, has precluded any specific designation of this cranefly. Therefore I will present the record and description of this curious wingless cranefly for the first time from the Hakusan region, for the purpose of drawing the attention of other entomologists and ecologists to this curious insect.

The morphological nomenclature used in this paper follows that of Alexander and Byers (1981). The material used in the present study is deposited in the collection of the Hakusan Nature Conservation Center, Ishikawa Prefecture.

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## Morphology

*Material Examined*: A female collected on snow, ISHIKAWA, Oguchimura, Ichirino, near

Omenashi flow (ca. 600 m a. s. l.), February 1982, collected by K. Tanida.

*Female*: General colour in alcohol yellow to yellow-brown, body and appendages very hairy. Body length in alcohol ca. 6 mm (Fig. 1).

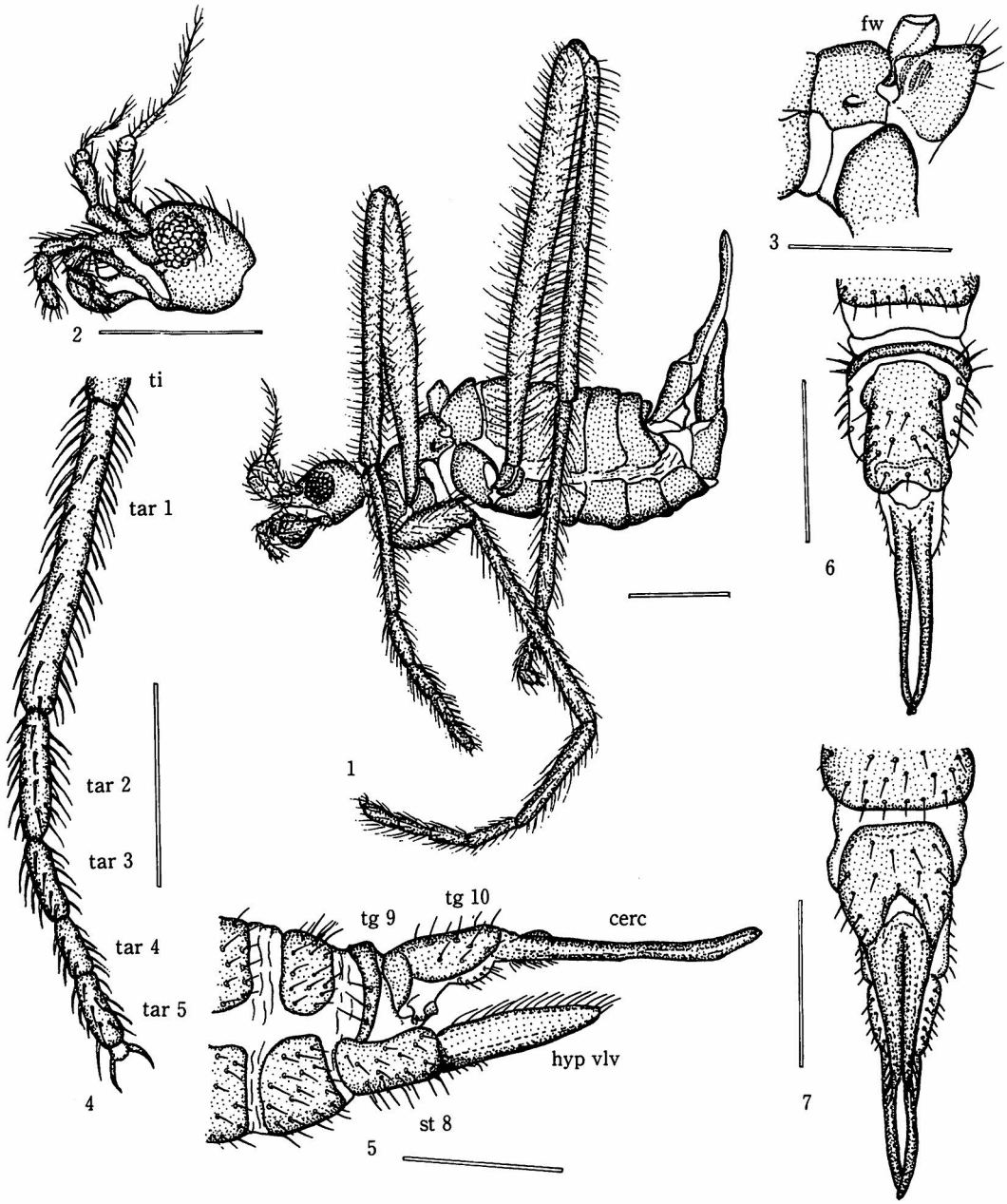


Fig. 1. General, lateral. Fig. 2. Head, lateral. Fig. 3. Vestigial fore wing, lateral. Fig. 4. Tarsi of foreleg. Fig. 5. Ovipositor, lateral. Fig. 6. Same, dorsal. Fig. 7. Same, ventral. Abbreviations, fw: forewing, ti: tibia, tar: tarsomere, tg: tergite, st: sternite, cerc: cercus, hyp vlv: hypogynial valve. Scale = 1 mm.

Antennae 11-segmented, scape cylindrical, approximately twice as long as wide, stout setae developed only on apico-dorsal face near apex, pedicel cylindrical, twice as long as scape. First flagellar segment cone shaped, as wide as pedicel at base and narrowed at apex, other flagellar segments slender, covered with short appressed setae and with two to four long transparent setae. Palpi four segmented, similar in length to each other, covered with short setae.

Forewing (Fig. 3) reduced to small vestigial lamellae, with a weak reduced vein running meso-longitudinally. Legs yellow to brown and hairy, without darkened or paler portions except for darkened joint between femur and tibia. Femur and tibia approximately as long as abdomen. Tibia similar in length to femur in all legs, without tibial spurs. Tarsi (Fig. 4) composed of five tarsomeres, the first three times as long as the second, the third to terminal (fifth) tarsomeres fairly similar in length, ca. 2/3 as long as the second, terminal tarsomere with a pair of curved sharp claws. Relative length of segments (Femur, tibia, and five tarsomeres, respectively) as follows, foreleg: 3.1, 2.9, 1.6, 0.65, 0.45, 0.33, 0.43, middle leg: 3.0, 2.9, 1.5, 0.58, 0.35, 0.30, 0.38, hind leg: 4.3, 3.6, 2.1, 0.75, 0.45, 0.33, 0.45.

Ovipositor of female (Fig. 5-6) including two pairs of elongate sclerosed valves. Paired cerci long and slender, slightly curved upward near apex and pointed at apex. Hypogynial valves sword shaped in lateral aspect, pointed at apex, half as long as cerci, transparent long spiny setae developed on dorsomesal edge and short sparse setae on ventral face near base.

*Remarks*: This female is quite similar to the female of *Chionea kanenoi* Sasakawa, in both the general shape of the ovipositor and the number of antennal segments: the female of *C. kanenoi* has 11-segmented antennae, the female of *C. nipponica* Alexander has 10-segmented antennae, while for *C. gracilistyla* Alexander although the male has 6-segmented antennae, no female is yet known. From the number of antennal segments, it is possible to place this female material in the species *C. kanenoi*, however, at present we have no reliable diagnoses to distinguish the females of the three species of *Chionea* from Japan, and there is no clear difference in the structure of ovipositor between *C. nipponica* (Anbo, 1952) and *C. kanenoi* (Sasakawa, 1986). Therefore I consider it apprpriate to designate the specific status of the *Chionea* specimen from the Hakusan region only after the discovery of additional material including adult males.

## Biology and a note on the geographical distribution of *Chionea* species

Adults of *C. nipponica* have been found on the snow in the hilly to mountainous zone in Hokkaido, and in the mountainous to alpine zone in Honshu (Alexander, 1932; Sunose, 1986). In central Japan near Mt. Hakusan, *C. nipponica* have been found on the snow at high altitude (more than 3000 m) in October (Mt. Tsurugi in Toyama Prefecture, collected by K. Imanishi & M. Tokunaga) and at lower altitude mountains (ca. 1000 m) in winter (Alexander, 1932). In contrast to this species, *C. kanenoi* was collected by pit-fall set in forest without snow at a hilly area near Kyoto City. The female used in the present study was collected on the snow in midwinter, and its habitat environment was similar to that of *C. nipponica* and quite different from that of *C. kanenoi*. The most common Japanese species among this genus, *Chionea nipponica*, has been widely recorded from Hokkaido, Honshu, and Kyushu (Takahashi, 1978), but *C. kanenoi* has been

recorded only from near Kyoto City, Kinki District. Concerning *C. gracilistyla*, only males have been recorded, and these were described only once, based on material from Honshu and East Siberia (Alexander, 1936).

Judging from the original description of *C. gracilistyla*, the male may be easily distinguished from these other two species by its body size and the number of antennal segments, however, there is no additional record of this species from Japan. Moreover, the only and original record of this species from Japan is quite doubtful in the designation of locality (type locality) from Japan: "Chiosen, Honshiu, Japan (*Imanishi*); additional material from this same sourec in Kyoto Imperial University collection" (no collection date). Other localities of Japan mentioned in the same text were designated clearly with prefectual names and the date of collection, and I have also been unable to find any locality that corresponds to "Chiosen, Honshiu". At that time, K. Imanishi was collecting and studying Korean Ephemeroptera intensively (Imanishi, 1940) and it therefore seems very probable that the holotype collected by K. Imanishi came from some locality in Korea (Chosen), then occupied by Japan.

The taxonomical status of this material seems to be interesting not only from the zoogeographic viewpoint but also from the ecological viewpoint of *Chionea* species from Japan.

## References


ALEXANDER, C. P. (1932) New or little-known Tipulidae from Eastern Asia (Diptera), X. *Philippine J. Sci.*, **49**: 105-136+3 pls.

ALEXANDER, C. P. (1936) New or little-known Tipulidae from Eastern Asia (Diptera), XXX. *Philippine J. Sci.*, **60**: 165-204+2 pls.

ALEXANDER, C. P. and BYER, G. W. (1981) Tipulidae. in "Manual of Nearctic Diptera, Vol. 1.": 153-190. Biosystematics Res. Ins., Ottawa, Ontario.

ANBO, K. (1952) Observation on *Chionea nipponica* Alexander on snow. *New Ent.*, **5**: 6-8. (In Japanese.)

IMANISHI, K. (1940) Ephemeroptera of Manchouchou, Inner Mongolia and Chosen. *Rep. Limnobiol. Surv., Kwantung and Manchouchou,* 169-263. (In Japanese.)

SASAKAWA, M. (1986) A new species of *Chionea* Dalman from Japan (Diptera: Tipulidae). *Akitu* (new series), **77**: 1-4.

SUNOSE, T. (1986) The biology of the Japanese snow crane fly *Chionea nipponica* Alexander (Diptera, Tipulidae). *Makunagi/Acta Dipterologica,* **14**: 1-7. (In Japanese.)

TAKAHASHI, M. (1978) Snow cranefly, *Chionea. Insectarium,* **15**: 23. (In Japanese.)

TANIDA, K. (1981) A preliminary report on winter stoneflies (Insecta, Plecoptera) in the Hakusan Region. A list of aquatic insects of streams in the Hakusan region, III. *Ann. Rep. Hakusan Nat. Cons. Center,* **7**: 9-22.


## 摘　　要


1982年の冬、白山麓一里野の雪上で採集された翅の退化したガガンボ，クモガタガガンボ（ユキガガンボ）（昆虫，双翅目）の雌成虫の形態などを記載した。雄の成虫が得られていないこと，日本から記録されている3種の雌成虫の区別点が明らかでないことから，現時点ではこの雌成虫の種名は決定できない。しかし，本属は石川県ないし白山地域からは初めて記録されたものであり，生物地理的にも生態的にも興味深い。今後さらに標本が集められ，種名の確定を行うことが必要であろう。