A PRELIMINARY REPORT ON WINTER STONEFLIES (INSECTA, PLECOPTERA) IN THE HAKUSAN REGION. A LIST OF AQUATIC INSECTS OF STREAMS IN THE HAKUSAN REGION, III.

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白山地域の雪カワゲラ類（予報）
—白山周辺の河川における水生昆虫目録, III—

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In the preceding reports on the entomofauna of streams in the Hakusan region (TANIDA; 1975, 1980), I reported eight species of winter stoneflies belonging to Nemouridae, Taeniopterygidae and Capniidae collected on the snow. In the winter and the spring of 1980 a fairly large number of winter stoneflies were collected by the staff of Hakusan Nature Conservation Center including the author. These specimens will add some valuable information on the ecological and geographical distribution of the winter stonefly in this area.

In this third report on the entomofauna of aquatic insects in this region, I present an additional list of the fauna of winter stoneflies with some brief notes. I also present a list and some brief notes on some other stoneflies collected in the year. In this preliminary article, five species are newly recorded from this area.

At first I wish here to express my thanks to Professor T. KAWAI of Nara Women's University and Dr. P. ZWICK of Max Plank Institute for Limnology who kindly gave me many helpful suggestions on the stonefly fauna of this region and Professor I. TOGASHI of Ishikawa Prefecfure College of Agriculfure who encouraged this study and provided a great deal of valuable material and literature. My sincerest thanks are also due Professor R. OHGUSHI and Messrs M. EGUCHI and H. TAKIZAWA of Kanazawa University, Mr. K. MASUI and Mr. Y. TAKEMON of Kyoto University, and the staff of Hakusan Nature Conservation Center for their kind offer of material.

METHODS AND STUDY AREA

The imagines of winter stonefly were collected on the snow in the sunny days in winter and early spring, using a hand picking method. In most cases of collection, they were caught randomly with respect to species and sex. Other stoneflies were collected mainly by sweeping.

Almost all materials are preserved in 70–80% ethanol for further identification in the laboratory. Most materials presented in this article are deposited in the collection of the

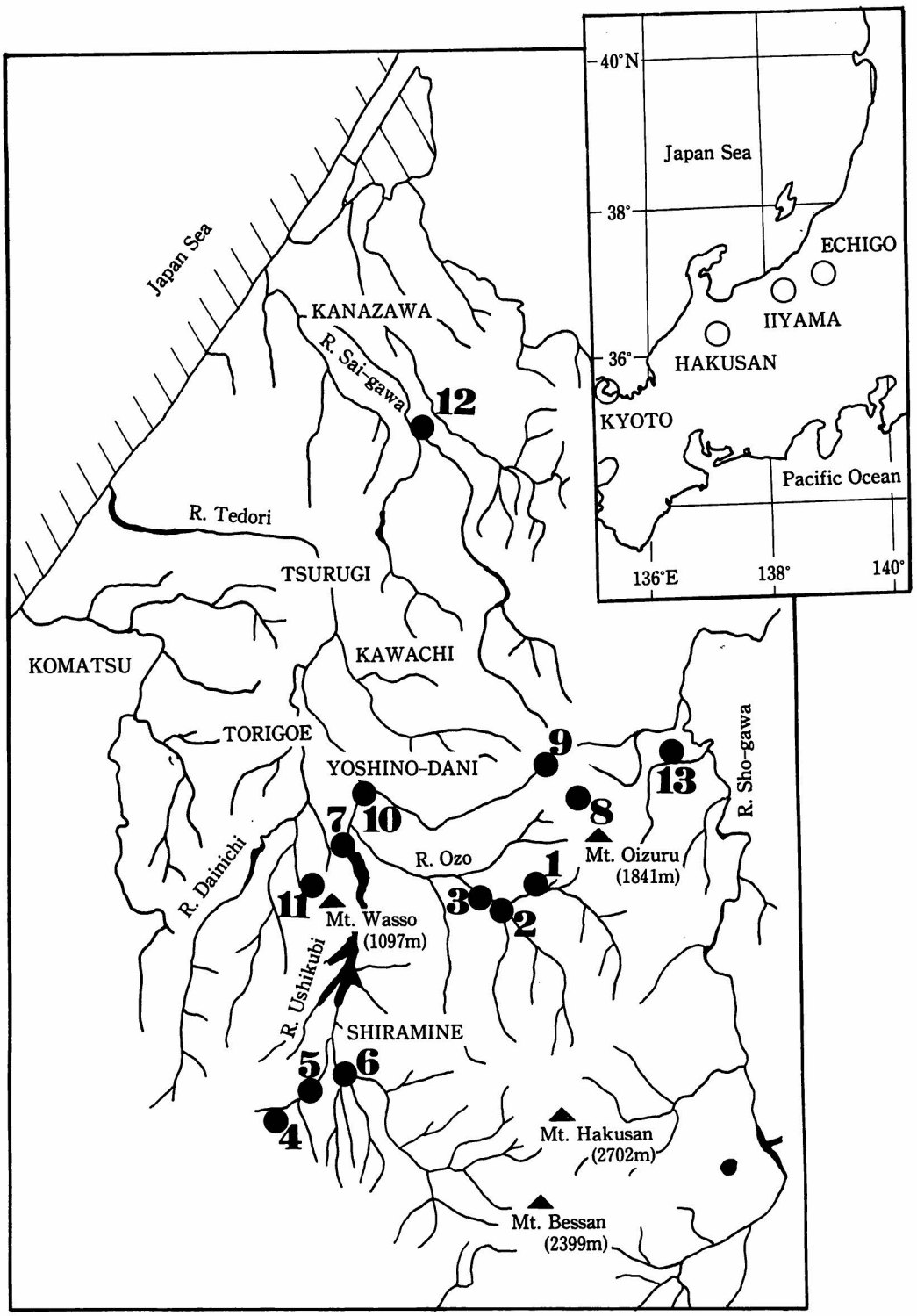

Fig. 1. A map of the Hakusan region and the location of the sampling sites (solid circle). The number shows the locality (see Table 1). The area where the fauna of winter stonefly was reported is represnted by an open circle.

Table 1. Sampling site of stonefly in the Hakusan region.

Locality number in Fig. 1 & Name	River	Tributary	Altitude (m)
1. HNCC	R. Ozo	Jadani	600
2. Jadani	R. Ozo	Jadani	600
3. Omenashi	R. Ozo	Jadani	600
4. Tani-toge	R. Ushikubi	Ohmichi-dani	800
5. Dono-mori	R. Ushikubi	Ohmichi-dani	560
6. Kaza-arashi	R. Ushikubi	Kaza-arashi-dani	520
7. Mt. Shiranuki	R. Ushikubi	Ohkura-dani	620
8. Mt. Ohgasa	R. Tedori	Senami-gawa	1700
9. Mt. Nara-dake	R. Tedori	Nomi-dani	1500
10. Ichihara	R. Tedori	No name	280
11. Mt. Waso	R. Dainichi	Wasso-dani	600
12. Sue	R. Sai-gawa	Uchi-kawa	100
13. Kazura	R. Sho-gawa	Kazura-dani	900

Hakusan Nature Conservation Center and that of the author.

Among the thirteen sampling sites, eleven are located in the basin of the Tedori River which flows northward from Mt. Hakusan (2702m above sea level) to the Japan Sea. It has three large tributaries, the R. Ushikubi, the R. Ozo, and the R. Dainichi. Most of the sampling sites are situated near the streams of the first to third orders of these tributaries. Another two sites, Sue and Kazura, are located in the basins of the R. Sai-gawa and the R. Sho-gawa respectively, both of these rivers also flow to the Japan Sea (Table 1).

The map of the Hakusan Region and the sampling sites are shown in Fig. 1.

LIST AND SOME NOTES OF STONEFLIES[1)]

TAENIOPTERYGIDAE

Strophopteryx nohirae (OKAMOTO)

2 ♂♂, HNCC, Jadani, Yoshino, Mar. 19, 1980, H. TAKIZAWA; 2♂♂, 1♀, Tani-toge, Ohmichi-dani, Shiramine, Feb. 29, 1980, K. TANIDA & Y. TAKEMON; 1 nymph (♂), Dono-mori, Ohmichi-dani, Shiramine, Feb. 29, 1980, K. TANIDA & Y. TAKEMON; 1♀, Omenashi, Jadani, Oguchi, Mar. 9, 1980, K. TANIDA; 1♂, Ichihara, Yoshino, Feb. 21, 1980, K. TANIDA.

The emerging nymph of this species was observed in February at Ohmichi-dani tributary where snow was heavily deposited on the river bank. The emerging nymph was crawling on the cliff of snow and some exuviae were found on the cliff of snow. It seems that this

1) The nomenclature in this list follows KAWAI (1967).

winter stonefly can use the face of snow as the emergence site.

This species was already reported from this region under the name, *Doddosia nohirae* (OKAMOTO) (TANIDA, 1975).

Obipteryx femoralis OKAMOTO

1♀, Mt. Wasso, Torigoe, May 28, 1980, I. TOGASHI; 1♀, Omenashi, Jadani, Oguchi, Apr. 8, 1980, Y. UEUMA, T. IBARAGI, & T. SHIBATA.

The imagines of this species had been collected from the streams in the Hakusan region from April to June (TANIDA, 1975, 1980) in a habitat without snow. But during the spring of 1980 a female was collected at Omenashi on the snow. It seems that the emergence of this species covers a period of considerable length, more than three months, when the imagines can be active on the snow. KOMATSU (1972) reported that this species was found on the snow in a district of Nagano.

CAPNIIDAE

Allocapniella monticola KAWAI

1♂, 2♀♀, Kaza-arashi, Shiramine, Mar. 8, 1980, N. TOGA; 2♂♂, 1♀, Jadani, Yoshino, Feb. 21, 1980, M. KOTOSAI; 2♂♂, Jadani, Yoshino, Feb. 22, 1980, A. MIZUNO; 1♂, 3♀♀, HNCC, Jadani, Yoshino, Mar. 19, 1980, H. TAKIZAWA; 1♂, 9♀♀, HNCC, Jadani, Yoshino, Mar. 20, 1980, H. TAKIZAWA; 7♂♂, 6♀♀, Dono-mori, Ohmichi-dani, Shiramine, Feb. 29, 1980, K. TANIDA & Y. TAKEMON; 8♂♂, 16♀♀, Tani-toge, Ohmichi-dani, Shiramine, Feb. 29, 1980, K. TANIDA & Y. TAKEMON; 7♂♂, 17♀♀, Omenashi, Ichirino, Oguchi, Mar. 3, 1980, K. TANIDA; 2♂♂, 8♀♀, Omenashi, Ichirino, Oguchi, Mar. 9, 1980, K. TANIDA; 1♂, Ichihara, Yoshino, Feb. 21, 1980, K. TANIDA; 1♀, Ichihara, Yoshino, Mar. 6, 1980, K. TANIDA; 2♂♂, 7♀♀, Naradake, Nomi-dani, Kawachi, May 5, 1980, N. TOGA; 2♂♂, 3♀♀, Mt. Ogasa, Yoshino, May 5, 1980, N. TOGA; 4♂♂, 9♀♀, The summit of Mt. Ogasa, Yoshino, May. 5, 1980, N. TOGA; 1♀, Kazura, Shirakawa, Gifu Pref., Apr. 28, 1980, M. EGUCHI.

This completely wingless winter stonefly is the most abundant species on the snow in the Hakusan region. The vertical distribution of this species is fairly wide. The imagines were collected from elevations between 280m (Ichihara) to 1700m (Mt. Ogasa). It seems to me that this species is more abundant in the upper stretches of streams, compared with the same wingless capniid, *Eocapnia nivalis*. But this problem of the vertical distribution of these wingless capiid will be discussed in later papers.

Capnia flebilis KOHNO

1♂, 2♀♀, Kaza-arashi, Shiramine, Mar. 8, 1980, N. TOGA; 1♂, HNCC Jadani, Yoshino, 19 Mar. 1980, H. TAKIZAWA; 3♂♂, 3♀♀, HNCC, Jadani Yoshino, Mar. 20, 1980, H. TAKIZAWA; 1♂, 1♀, Omenashi, Jadani, Oguchi, Mar. 9, 1980, K. TANIDA; 1♂, Ichihara, Yoshino, Mar. 6, 1980, K. TANIDA.

Capnia naebensis KAWAI

3 ♂♂, 3 ♀♀, Kaza-arashi, Shiramine, Mar. 8, 1980, N. TOGA; 1 ♀, Omenashi, Jadani, Oguchi, Mar. 9, 1980, K. TANIDA; 1 ♀, Tani-toge, Ohmichi-dani, Shiramine, Feb. 29, 1980, K. TANIDA & Y. TAKEMON.

Capnia bituberculata UÉNO

12♂♂, 4♀♀, Sue, Uchikawa, Kanazawa, Mar. 2, 1980, N. TOGA; 1♂, Ichihara, Yoshino, Mar. 6, 1980, K. TANIDA; 1♂, HNCC, Jadani, Yoshino, Mar. 20, 1980, H. TAKIZAWA.

In March at the middle reach of R. Uchi-kawa in the suburb of Kanazawa City, only this species were collected in a large numbers.

Eocapnia nivalis (UÉNO)

1♂, Jadani, Yoshino, Feb. 22, 1980, A. MIZUNO; 3♂♂, 9♀♀, HNCC, Jadani, Yoshino, Mar. 20, 1980, H. TAKIZAWA; 1♂, 2♀♀, Tani-toge, Ohmichi-dani, Shiramine, Feb. 29, 1980, K. TANIDA & Y. TAKEMON; 16♂♂, 21♀♀, Dono-mori, Ohmichi-dani, Shiramine, Feb. 29, 1980, K. TANIDA & Y. TAKEMON; 1♂, 4♀♀, Omenashi, Jadani, Oguchi, Mar. 3, 1980, K. TANIDA; 3♂♂, 5♀♀, Omenashi, Jadani, Oguchi, Mar. 9, 1980, K. TANIDA; 1♀, Ichihara, Yoshino, Mar. 6, 1980, K. TANIDA; 2♂♂, 2♀♀, Nara-dake, Nomi-dani, Kawachi, May. 5, 1980, N. TOGA; 1♀, The summit of Mt. Ogasa, Yoshino, May. 5, 1980, N. TOGA.

This is the second most abundant species among the winter stoneflies in this region. This is also a wingless form like *A. monticola* and in general resembles it, but we can easily distinguish *Eocapnia nivalis* by the mesosternal structures of both the male and female, and by the size of its body, which is bigger. Two species of *Eocapnia*, *E. nivalis* and *E. shigensis* are reported from Honshu Island (UÉNO, 1929; KAWAI, 1967). To date, besides fairly large collections of this genus, only *E. nivalis* has been collected in this region.

Eucapnopsis stigmatica OKAMOTO

1♂, Kaza-arashi, Shiramine, Mar. 8, 1980, N. TOGA; 1♂, Omenashi, Jadani, Oguchi, Mar. 9, 1980, K. TANIDA; 1♂, Jadani, Yoshino, Apr. 4, 1980, K. MASUI.

Both normal and brachypterous types of wings were reported in this genus (KAWAI, 1967). To date, only the macropterous imagines were collected in this region (Fig. 2).

Takagripopteryx nigra OKAMOTO

3♂♂, 4♀♀, Jadani, Yoshino, Feb. 21, 1980, T. IBARAGI; 6♂♂, 3♀♀, Jadani, Yoshino, Feb. 21, 1980, M. KOTOSAI; 1♂, 3♀♀, Jadani, Yoshino, Feb. 22, 1980, A. MIZUNO; 1♀, Ichihara, Yoshino, Mar. 5, 1980, N. TOGA; 4♂♂, HNCC, Jadani, Yoshino, Mar. 20, 1980, H. TAKIZAWA; 9♀♀, Omenashi, Jadani, Oguchi, Mar. 3, 1980, K. TANIDA; 1♂, 1♀, Omenashi, Jadani, Oguchi, Mar. 9, 1980, K. TANIDA; 1♀, Ichihara, Yoshino, Feb. 21, 1980, K. TANIDA; 1♂, Jadani, Yoshino, Apr. 4, 1980, K. MASUI; 1♀, Kaza-arashi, Shiramine, Mar. 8, 1980, N. TOGA; 1♂, Dono-mori, Ohmichi-dani, Shiramine, Feb. 29, 1980, K. TANIDA & Y. TAKEMON.

This species is one of the commonest winter stoneflies in the Hakusan region. Both

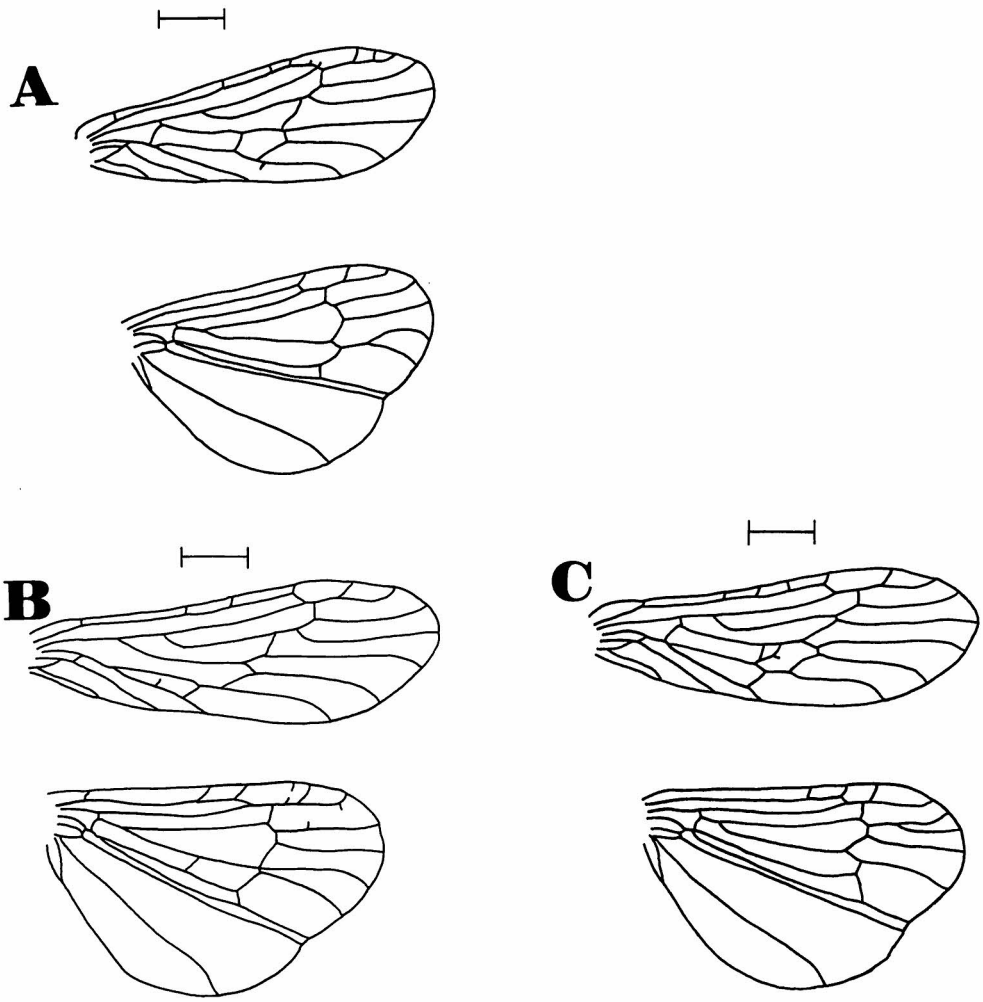

Fig. 2. A; Wings, male of *Eucapnopsis stigmaticas.* from Kaza-arashi. B; Wings, female from Tani-toge. C; Wings, the same from Tani-toge. Each bar shows 1 mm.

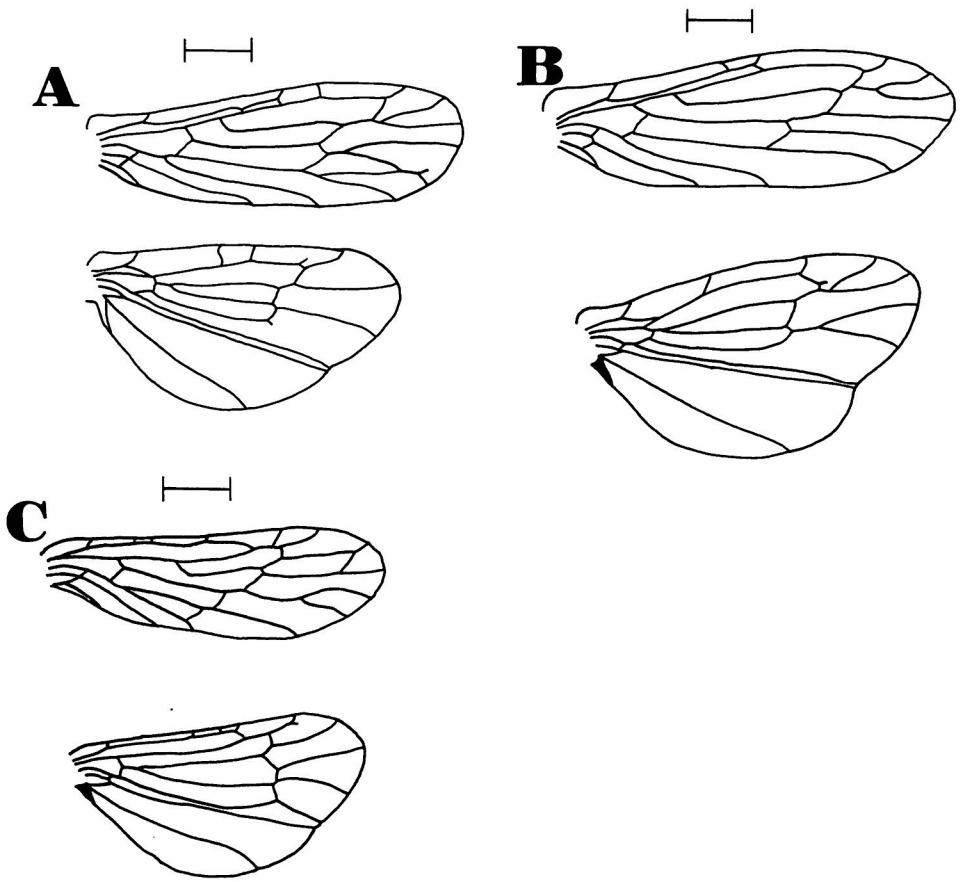

Fig. 3. A ; Wings, male of *Takagripoteryx nigra,* from Jadani. B ; Wings, the same from the same locality. C ; Wings, female of *T. nigra* from Kaza-arashi. Each bar shows 1 mm.

Table 2. Wing and body size of the *Takagripopteryx nigra* (male) from Jadani.

Individual Number	Body length (mm)	Fore wing length (mm)	Hind wing length (mm)
1.	3.2	2.4	2.1
2.	3.6	2.5	2.1
3.	4.5	2.6	2.2
4.	5.1	2.9	2.6

macropterous and micropterous males are known in this species, but only the males with macropterous wings were collected to this date (Table 2), but there exist fairly wide variations in wing veneation (Fig. 3).

NEMOURIDAE

Protonemura towadensis (KAWAI)

3♂♂, Omenashi, Jadani, Oguchi, Apr. 8, 1980, Y. UEUMA, T. IBARAGI, & T. SHIBATA; 1♂, Kazura, Shirakawa, Gifu Pref. Apr. 28, 1980, M. EGUCHI.

Nemoura fluva (SĂMAL)

1♂, HNCC, Jadani, Yoshino, Mar. 20, 1980, H. TAKIZAWA.

Nemoura stratum KAWAI

3♂♂, Omenashi, Jadani, Oguchi, Apr. 8, 1980, Y. UEUMA, T. IBARAGI, & T. SHIBATA; 1♀, Ichinose, Yoshino, Apr. 18, 1980, M. KOTOSAI; 1♂, 1♀, Jadani, Yoshino, Apr. 4, 1980, K. MASUI.

PELTOPERLIDAE

Nogiperla uenoi (KOHNO)

3 nymphs, Mt. Shiranuki, Oguchi, Apr. 20, 1980, K. TANIDA; 12♂♂, 1♀, *ditto,* May. 28, 1980, I. TOGASHI.

The male of this species was first described by M. UÉNO (1929) under the name of *Peltoperla japonica* as female, and the nymph was described as *Peltoperla* sp. no. 1 in the same paper. CHINO (1978) described the femle and the egg of this species and associated the imagines with the nymphs. The record from Mt. Shiranuki is the first one of this species from the Hakusan region and it seems also to be the first record from the rivers that flow to the Japan Sea.

The imagines of this species were collected in great numbers at Mt. Shiranuki in late May by Professor I. TOGASHI by sweeping a shrub of willows near a small spring (ca. 0.5 m wide of flow) at ca. 650m above sea level. At the same spring I collected nymphs including mature ones, from the face of a rock in madicolous habitat and the interstices of cobbles.

The general external morphological characters including genitala of the males and females collected at Mt. Shiranuki (Fig. 4) agree with the descriptions made by UÉNO (1929) and CHINO (1978), but there exist some differences in wing venation such as in the median and intercubital cross veins in the fore wing and in the position of cubital forks in the hind wing (Fig. 4). But these differences seem to be intraspecific ones.

Abdominal segments of the female yellowish, brown markings on the ventral side of eighth and nineth segments are distinct (Fig. 4-E). The markings were not represented in the description of the female by CHINO (1978).

CHINO (personal information) showed that this species is restricted in altitudes beyond

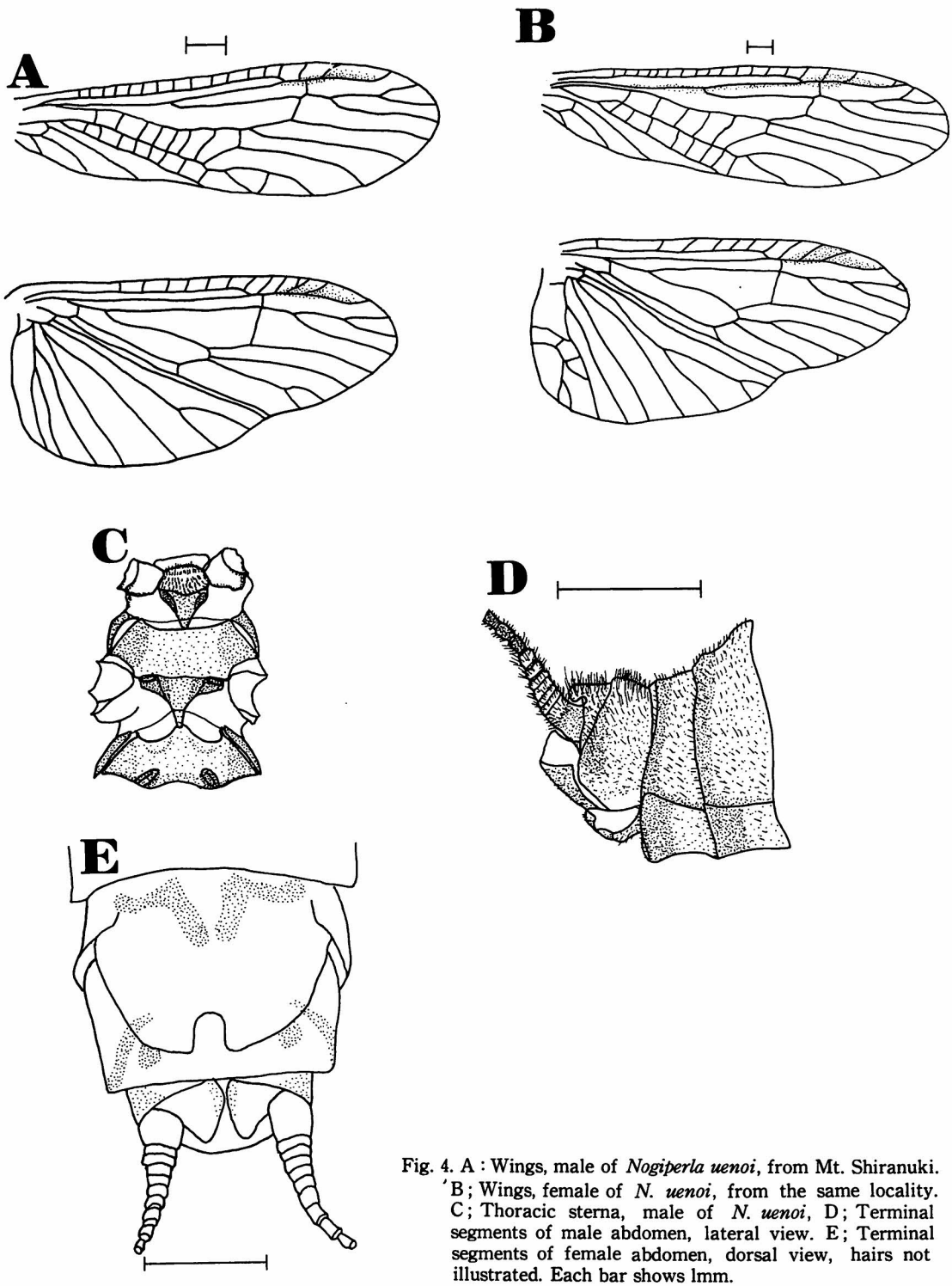

Fig. 4. A : Wings, male of *Nogiperla uenoi*, from Mt. Shiranuki. B; Wings, female of *N. uenoi*, from the same locality. C; Thoracic sterna, male of *N. uenoi*, D; Terminal segments of male abdomen, lateral view. E; Terminal segments of female abdomen, dorsal view, hairs not illustrated. Each bar shows lmm.

1000m. But the altitude of the locus at Mt. Shiranuki is only ca. 650m and the nymphs of this species are fairly abundant at the upper reaches of the tributaries of the Tedori River, where the altitude is between 600m and 1300m (TANIDA, unpublished). It seems to me that the vertical distributional range of this species has expands to lower altitudes in the Hakusan region.

Male: Body 7.0–8.3mm. Female: Body 11.6mm.

PERLIDAE

Gibosia thoracica OKAMOTO

many ♀♀, HNCC, Jadani, Yoshino, Aug. 19 & 20, 1978, R. OHGUSHI.

This species is newly recorded from this region.

PERLORIDAE

Pseudomegarcys japonicus KOHNO

1♀, Jadani, Yoshino, Apr. 3, 1980, A. MIZUNO.

Spkalia yamadae (OKAMOTO)

1♀, Ichihara, Yoshino, Apr. 7, 1980, S. HONDA.

CHLOROPERLIDAE

Suwallia nipponica (OKAMOTO)

4♀♀, HNCC, Jadani, Yoshino, Aug. 19 & 20, 1978, R. OHGUSHI.

Sweltsa abdominalis (OKAMOTO)

1♂, 3♀♀, Mt. Wasso, Torigoe, May. 28, 1980, I. TOGASHI; 1♀, Mt. Shiranuki, Oguchi, Apr. 28, 1980, I. TOGASHI.

This species is newly recorded from this region.

Sweltsa shibakawae (OKAMOTO)

1♂, Mt. Wasso, Torigoe, May. 28, 1980, I. TOGASHI.

SUMMARY AND NOTES ON THE FAUNA OF WINTER STONEFLIES

Twelve species of winter stoneflies belonging to Taeniopterygidae, Capniidae, and Nemouridae are listed in this article. Seven species of stoneflies which appear in snowless seasons are also listed in this article. Among these species, four, *Nemoura fluva* (SĂMAL), *Nogiperla uenoi* (KOHNO), *Gibosia thoracica* (OKAMOTO), and *Sweltsa abdominalis* (OKAMOTO) are newly recorded from this region.

In the Hakusan region, the most abundant winter stoneflies are wingless capniid, *Allocapniella monticola* and *Eocapnia nivalis*. The distributional range of these two species in the Hakusan region seems to be very wide in horizontal and vertical axes. The imagines of these

species were sometimes found far from permanent flows. It seems that these two species have a high dispersion ability in spite of their wingless forms and/or that their nymphs can survive in interminent flows or very small bodies of water near the summits of mountains. This problem would be clarified through a study of their dispersion and their habitats in the nymphal stage.

Concerning the regional fauna of winter stoneflies in Japan, two faunal lists were reported. One is from the Province of Echigo in Niigata Prefecture (KAWAI, 1961, 1967) and the other is from the district of Iiyama in Nagano Prefecture (see Fig. 1). Both of these districts are located in the northern part of Honshu Island. Although there exist many differences in survey methods, in the duration and in the area of these three survey, a comparison of the winter stonefly fauna among these three regions, Echigo, Iiyama, and Hakusan will be briefly discussed (Table 3).

According to KAWAI (1961, 1967), one species of Taeniopterygidae, three species of Nemouridae, and nine species of Capniidae (the names of two species of female capniid were not presented in the original paper) were collected from the snow in the province of Echigo. KOMATSU (1972) found three species of Taeniopterygidae, nine species of Nemouridae, and nine species of Capniidae on the snow in the district of Iiyama during his eight year survey.

In all, three species of Taeniopterygidae, ten species of Nemouridae, and thirteen species of Capniidae were reported in these three regions. Among them seven species, Taeniopterygidae, Nemouridae and five Capniidae, are common in these three regions. Most of these species are fairly abundant in the Hakusan region.

Concerning the wingless capniid, *Allocapniella monticola* and *Eocapnia nivalis* are dominant species in all three regions. Of the winter stonefly fauna reported in Kyoto Prefecture (KAWAI, 1956; HAGIWARA, 1977), only one wingless species, *E. nivalis*, was collected from the snow. Judging from the collection records of the genus *Allocapniella* (KAWAI, 1967, etc.), the Hakusan region seems to be located in the southern or western regions of the distribution of this genus.

With regard to the Japanese genera of wingless Capniidae, five species of *Allocapniella* and two species of *Eocapnia* are known to exist in the northern part of Honshu Island (KAWAI, 1967). Although further studies on the stonefly fauna in the Hakusan region would add some species to this list, only two species of wingless capniid have been found to date. The rarity of these genera seems to be due to the geography of the Hakusan region which is located at the south-eastern periphery of an alpine zone with heavy snow.

要　　約

白山地域で1980年冬から春に雪上で採集したカワゲラ類を検索した結果，ミジカオカワゲラ科，クロカワゲラ科，オナシカワゲラ科の合計9属12種を同定した。それらの種類と採集地の概略は次のとおりである。

ミジカオカワゲラ科　Taeniopterygidae

Table 3. A comparison of the winter stonefly fauna (Taeniopterygidae, Capniidae, and Nemouridae) of three regions, Echigo, Iiyama and Hakusan.

Species name	Echigo (Niigata) KAWAI (1961, 1967)	Iiyama (Nagano) KOMATSU (1972)	Hakusan (Ishikawa) present study
Taeniopterygidae			
Strophopteryx nohirae	+	+	+
Doddosia O-nata		+	
Obipteryx femoralis		+	+
Capniidae			
Allocapniella monticola	+	+	+
A. verdea	+		
Capnia bituberculata	+	+	+
C. yasumatsui	+	+	
C. breviptera		+	
C. naebensis	+		+
C. japonica	+		
C. flebilis			+
Eocapnia nivalis	+	+	+
E. shigensis	+	+	
Takagripopteryx nigra	+	+	+
T. imamurai		+	
Eucapnopsis stigmatica	+	+	+
Nemouridae			
Amphinemura decemceta	+	+	
A. dichotoma		+	
A. longispina		+	
Protonemura towadensis	+	+	+
P. hotakana		+	
P. chinonis		+	
Nemoura asakawae		+	
N. uenoi		+	
N. stratum		+	+
N. fluva	+		+

ミジカオカワゲラ　*Strophopteryx nohirae*：蛇谷，大道谷，瀬波川（市原）.
オビミジカオカワゲラ　*Obipteryx femoralis*：蛇谷，杖川.
クロカワゲラ科
セッケイカワゲラモドキ　*Allocapniella monticola*：蛇谷，大道谷，直海谷，瀬波川，風嵐谷，加須良谷〔岐阜県〕〔この種が優占種で，分布域も広い。無翅〕.
ヒメクロカワゲラ　*Capnia flebils*：蛇谷，風嵐谷，瀬波川（市原）.
ナエバクロカワゲラ　*Capnia naebensis*：風嵐谷，大道谷.
フタトゲクロカワゲラ　*Capnia bituberculata*：内川（末），蛇谷，瀬波川（市原）.
セッケイカワゲラ　*Eocapnia nivalis*：蛇谷，大道谷，直海谷，瀬波川（市原）.〔この種はセッケイカワゲラモドキに次ぐ優占種であり，両種とも無翅である〕
ミジカオクロカワゲラ　*Eucapnopsis stigmatica*：蛇谷，風嵐谷.
オカモトクロカワゲラ　*Takagripopteryx nigra*：蛇谷，風嵐谷，大道谷，瀬波川（市原）.
オナシカワゲラ科　Nemouridae
トワダオナシカワゲラ　*Protonemura towadensis*：蛇谷，加須良谷〔岐阜県〕.
オナシカワゲラ　*Nemoura fluva*：蛇谷.
————*N. stratum*：蛇谷，市ノ瀬.

白山地域の雪カワゲラの優占種は，セッケイカワゲラモドキとセッケイカワゲラのクロカワゲラ科に属する2種で，ともに無翅である。

雪上以外で採集されたカワゲラは，以下の7種が同定され，ミヤマノギカワゲラ，オオメフタツメカワゲラ，セスジミドリカワゲラの3種は本地域からはじめて記録された種である。そのうちミヤマノギカワゲラは，日本海側河川からはじめて記録され，幼虫・雄成虫・雌成虫が同一地点より確認された。また本種の白山地域での分布は，長野県での標高1,000 m以上に較べて，低山帯まで広がっているようであった。

ノギカワゲラ科　Peltoperlidae
ミヤマノギカワゲラ　*Nogiperla uenoi*：白抜山.
アミメカワゲラ科　Perlodidae
ヤマトヒロバアミメカワゲラ　*Pseudomegarcys japonicus*：蛇谷.
ヤマダアミメカワゲラ　*Sopkalia yamadae*：瀬波川（市原）.
カワゲラ科　Perlidae
オオメフタツメカワゲラ　*Gibosia thoracica*：蛇谷.
ミドリカワゲラ科　Chloroperlidae
ミドリカワゲラ　*Suwallia nipponica*：蛇谷.
セスジミドリカワゲラ　*Sweltsa abdominalis*：鷲走谷，白抜山.
シバカワミドリカワゲラ　*Sweltsa shibakawae*：鷲走谷.

現在のところ我国において，雪カワゲラ相の比較的判明している地域は，新潟県越後，長野県飯山の2地域にすぎない。白山地域の雪カワゲラ相を上記2地域と比較した。

その結果，3地域でミジカオカワゲラ科3種，クロカワゲラ科10種，オナシカワゲラ科13種（合計26種）がみられ，そのうち7種は3地域に共通し，それらはいずれも比較的個体数の多い種類であった。白山地域だけにみられた種類は，ヒメクロカワゲラ一種だけであった。

無翅のクロカワゲラ（セッケイカワゲラモドキ属とセッケイカワゲラ属）に限ってみると，本州全体でそれぞれ5種と2種の合計7種が知られ，そのうち，越後では2属3種が，飯山では2属4種が

みられるのに対して，白山では2属2種しかみられなかった。京都で確認できている種が，セッケイカワゲラ1種であることから推察すると，白山地域はセッケイカワゲラモドキ属の西限にあたる可能性が高い。またいずれにしても，これら無翅のクロカワゲラの分布域としては，西南に位置する分布周辺部にあたると考えられる。

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