SYNOPSIS OF THE GENUS HALICTOPHAGUS (STREPSIPTERA : HALICTOPHAGIDAE) OF JAPAN, WITH DESCRIPTION OF A NEW SPECIES (Studies on the Japanese Strepsiptera VIII)

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SYNOPSIS OF THE GENUS *HALICTOPHAGUS* (STREPSIPTERA: HALICTOPHAGIDAE) OF JAPAN, WITH DESCRIPTION OF A NEW SPECIES
*(Studies on the Japanese Strepsiptera VIII)*

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**Abstract**

Five species of *Halictophagus* are recognized from Japan. Of these, *H. (H.) bipunctatus* Yang, 1955 and *H. (H.) spectrus* Yang, 1964 are new to Japan. *Halictophagus (Halictophagus) yaeyamanus* Kifune, new species, is described from the Iriomote Island, the Ryukyus.

Recently we had a good chance to examine Strepsiptera specimens of the Ryukyus from two sources. One is from Dr. Y. Wada, National Institute of Health, Tokyo. His material includes a male specimen collected by Prof. I. Miyagi, University of the Ryukyus, on the Iriomote Island. Another is from Dr. H. Satomi, Okinawa Branch of Tropical Agricultural Research Centre. His material includes a number of Strepsiptera associated with Homoptera which were collected by himself at light on the Ishigaki Island. As a result of our study, we found a new species and two species new to Japan. The result is given in this paper.

1. *Halictophagus (Halictophagus) yaeyamanus* Kifune, new species
   [Nom. Jap.: Yaeyama-kushihige-nejirebane (new name)]

**Male**

Size. Body length 2.2 mm excluding genital capsule; head breadth 0.75 mm; metathoracic breadth 0.70 mm; length of head and thorax together 1.43 mm; radial

* Contribution from the Entomological Laboratory, Faculty of Agriculture, Kyushu University, Fukuoka (Ser. 3, No. 156).
length of hind wing 1.50 mm; length of aedeagus 0.125 mm.

Structure. Head transversely expanded, its posterior margin remarkably arcuate anteriorly; eyes hemispherical, each composed of about 15 large facets; antennae 7-segmented; 3rd to 6th segments and 7th segment itself flabellate, flabellae of 3rd to 5th segments subequal in length, those of 6th and 7th a little longer than those of the preceding segments; mandibles short, triangular; maxillary palpi Z-segmented, basal segment short, apical segment very long and slender, ensiform, about two and a half times as long as basal segment, thickest at about 1/4 of its length from tip, and narrowest at about 2/5 of its length from base. Pronotum transverse, belt-like; acrotergite long, almost square, slightly tapered towards posterior margin; mesonotum trapezoidal, its anterior margin remarkably arched posteriorly; prescutum triangular, its anterolateral angles rounded; scuti quadrilateral with rounded angles; scutellum pentagonal; postlumbium transverse, its anterior margin gently arcuated, posterior margin almost straight; postscutellum thick, posterior portion semicircularly rounded. Legs slender; first tarsal segments broad, hemispherical; 2nd and 3rd tarsal segments normal. Hind wing typical for the subgenus, *Rf* rather long, but not so strongly curved along the wing margin as seen in a sympatric species, *H. iriomotensis*. Aedeagus with prominent ventral projection and slender stem.

Fig. 1 *Halictophagus* (H.) yaeyamanus Kifune, new species, male, dorsal view. Scale: 0.5 mm.
Fig. 2 Halictophagus (H.) yaeyamanxs Kifune, new species, male. — A : Right antenna, dorsal view. B : Right mandible, dorsal view. C : Right maxillary palpus, dorsal view. D : Right fore leg, dorsal view. E : Right mid leg, dorsal view. F : Right hind leg, dorsal view. G : Aedeagus, left lateral view. Scale : 0.1 mm for G, 0.2 mm for others.

No information is available for the female, 1st instar larva and host of this new species.

**Type material** : Holotype male (Type No. 2452, Kyushu Univ.), mounted, Funaura, Iriomote Is. (Yaeyama Isls.), Okinawa Pref., 3. vii. 1977, I. Miyagi leg. (light trap).

**Type depository** : Holotype is deposited in the Entomological Laboratory, Faculty of Agriculture, Kyushu University, Fukuoka, Japan.

**Distribution** : Japan-Okinawa (Iriomote Is.).

**Remarks**. This new species is distinguishable from a sympatric species, *H. (H.) iriomotensis* Hirashima et Kifune, 1978, by the facets of each eye fewer in number and the apical segment of maxillary palpus longer. By the long maxillary palpus, this resembles *H. schwarzi* Perkins, 1905, from Australia, *H. barberi* (Pierce, 1908), from U.S.A., *H. regina* Fox, 1967, and *H. irwini* Riek, 1975, from Africa, but differs from them by the combinations of other characters. This is allied to *H. piperi* Bohart, 1943, from the Philippines, in the shape of aedeagus, but differs from it by the longer maxillary palpus. This is the third species of the genus from Japan.

2. **Halictophagus (Halictophagus) orientalis** (Esaki et Hashimoto, 1931)  
[Nom. Jap. : Kushihige-nejirebane]


As shown above, this species was described from the material taken from _Parabolocratus prasinus_ Matsumura (Homoptera: Jassidae) [= Homoptera: Hecalidae]. Later, Esaki and Hashimoto thought that _Halictophagus orientalis_ is also parasitic on _Nephotettix cincticeps_. Accordingly, their identification of _H. orientalis_ taken from _Nephotettix cincticeps_ has been believed to be correct and cited in various subsequent literatures. However, so far as we know, _H. orientalis_ is associated only with _Parabolocratus prasinus_, and the species parasitic on _Nephotettix_ and probably on _Inazuma_ should be known as _H. bipunctatus_ Yang, as shown below. Fig. 3 was drawn from the original specimens of Esaki and Hashimoto (1931).

HOST. _Parabolocratus prasinus_ Matsumura [Homoptera: Hecalidae].

DISTRIBUTION. Japan-Kyushu (Fukuoka, Yakushima Is.).

REMARKS. Esaki (1932) added Yakushima Is as a distributional area but we could not see the very specimen from Yakushima in the collection of Kyushu University.

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Fig. 3 _Halictophagus (H.) orientalis_ (Esaki et Hashimoto, 1931), A-E: Male. F: Female. — A: Head, dorsal view. B: Right antenna (basal 2 segments omitted), dorsal view. C: Right mandible (top) and maxillary palp, dorsal view. D: Scutellum and postlumbium, dorsal view. E: Aedeagus, right lateral view. F: Cephalothorax, ventral view, m: mandibles. Scale: 0.2 mm for E & m, 0.5 mm for others. (Drawn from type specimens)

3. _Halictophagus (Halictophagus) bipunctatus_ Yang, 1955
[Nom. Jap.: Futaten-kushihige-nejirebane (new name)]


Several males and females of a halictophagid species associated with *Nephotettix*, which were collected by Dr. H. Satomi on the Ishigaki Island, are identified here as *Halictophagus bipunctatus* Yang originally described from China.

At the same time, we found that Esaki and Hashimoto (1931) mixed up the two species. The type material of *Tettigoxenos orientalis* includes 15 specimens. The

![Fig. 4 Halictophagus (H.) bipunctatus Yang, 1955, from Kyushu, A-E: Male. F: Female. — A: Head, dorsal view. B: Left antenna, ventral view. C: Right mandible (top) and maxillary palpus, ventral view. D: Scutellum and postlumbium, dorsal view. E: Aedeagus, right lateral view. F: Cephalothorax and anterior portion of abdomen, ventral view. Scale: 0.2 mm for E, 0.5 mm for others. (Drawn from Esaki & Hashimoto's specimens)](image1)

![Fig. 5 Halictophagus (H.) bipunctatus Yang, 1955, from Okinawa, A-G: Male. H: Female. — A: Head, dorsal view. B: Left antenna, ventral view. C: Left mandible (top) and maxillary palpus, dorsal view. D: Scutellum and postlumbium, dorsal view. E: Right hind wing, dorsal view. F: Aedeagus, right lateral view. G: Cephalotheca, frontal view. H: Cephalothorax and anterior portion of abdomen, ventral view, m: mandibles. Scale: 1 mm for E, 0.2 mm for F and m, 0.5 mm for others.](image2)
holotype of it is being mounted on a slide with 8 paratypes. One paratype, however, should be identified as *Halictophagus bipunctatus*. Five out of 6 undesignated specimens in the type series should also be known as *bipunctatus*.

So far as our study goes, the halictophagid parasitic on *Nephotettix* in Japan is known as *Halictophagus bipunctatus*. Sakai (1933) recorded *Tettigoxenos orientalis* from *DeltcephaIus (= Inazuma) dorsalis*. Although his record has been neglected by Japanese authors, the species may also be identified as *Halictophagus bipunctatus*.

It is interesting to note that Esaki and Hashimoto (1932 et seq.) often remarked the absence of stylopids on *Nephotettix* in Fukuoka Pref. notwithstanding the presence of them on *Parabolocatus* there.


**HOSTS.** *Nephotettix nigropictus* (Stål), *N. cincticeps* (Uhler), *N. virescens* (Distant), and ? *Inazuma dorsalis* (Motschulsky) [Homoptera: Deltocephalidae].

**DISTRIBUTION.** China-Kwantung (Kwangchow), Kiangsu (Soochow) ;Japan—Honshu (Nagano), Kyushu (Oita, Nagasaki), Okinawa (Ishigaki Is.).

**REMARKS.** Yang (1955) describes the female mandibles of *bipunctatus* as “blunt at tips” in the Chinese text (p. 329) but he does not mention the character in the English text (p. 333). Both of the female specimens of *bipunctatus* from Kyushu and Okinawa have clear bidentate mandibles as shown in Fig. 5H. We suppose that Yang might overlook the teeth overlapping to the cephalothoracic margin. This species is distinguishable from *orientalis* by the long basal portion of 3rd and broad flabella of 4th antennal segments and the shape of aedeagus in male and longer cephalothorax and two brownish spots on the anterior portion of the abdomen in female.

4. *Halictophagus* (*Halictophagus*) *spectrus* Yang, 1964

[Nom. Jap. : Futo-kushihige-nejirebane (new name)]


* The symbols, ♂ and ♀, are used for the parasites only.
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Ceylon (= Sri Lanka). Host : Same as above.

As listed above, this species was first described from China and then recorded from Sri Lanka and Malaysia. All of the host was *Cicadella spectra* (Distant) which is widely distributed in the Oriental Region. The following specimens were obtained from the same source as the preceding species.

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Fig. 6 *Halictophagus* (*H.*) *spectrums* Yang, 1964. A-H : Male. I : Female. — A : Head, dorsal view. B : Right antenna (basal 2 segments omitted), dorsal view. C : Right mandible (top) and maxillary palp, dorsal view. D : Right fore leg, dorsal view. E : Right mid leg, dorsal view. F : Right hind leg, dorsal view. G : Aedeagus, left lateral view. H : Cephalotheca, frontal view. I : Cephalothorax and anterior portion of abdomen, m : mandibles, ventral view. Scale : 0.2 mm for G and m, 0.5 mm for others.


Host : *Cicadella spectra* (Distant) [Homoptera : Cicadellidae].

Distribution : China-Szechuan (Yaan); Sri Lanka (Kandy); Malaysia-Borneo (Sarawak); Japan-Okinawa (Ishigaki Is.).

Remarks. The present specimens well agree with the description of *spectrums* by...
Yang (1964) and of *helleri* by Kinzelbach (1971). Distribution of this species may depend on that of the host species. This is the fifth species of the genus and the nineteenth species of the Strepsiptera from Japan (Cf. Miyamoto & Kifune, 1984).

5. **Halictophagus** (*Halictophagus*) *iriomotensis* Hirashima et Kifune, 1978
   
   [Nom. Jap. : Iriomote-kushihige-nejirebane (new name)]

   This species was described on a single dried male specimen. Until today, no additional material has been collected. The holotype is compared with the above-mentioned specimens of *H. yaeyamanus* sp. nov. and several differences were found in the number of facets and the length of the maxillary palpi as stated in the description of *yaeyamanus*.

   The host of this species is unknown.

**Distribution**: Japan-Okinawa (Iriomote Is.).

### Key to the Japanese Species of *Halictophagus*

#### Males

<table>
<thead>
<tr>
<th>Condition</th>
<th>Species</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flabellae of 5th and 6th antennal segments shorter than other flabellae</td>
<td><em>H. (H.) orientalis</em> (Esaki et Hashimoto, 1931)</td>
</tr>
<tr>
<td>Flabellae of 5th and 6th antennal segments subequal to others</td>
<td><em>H. (H.) bipunctatus</em> Yang, 1955</td>
</tr>
<tr>
<td>Basal portion of 3rd antennal segment about twice as long as that of 4th.</td>
<td><em>Nephotettix nigropictus,</em> <em>N. cincticeps,</em> <em>N. virescens,</em> &amp; (probably) <em>Inazumá dorsalis.</em></td>
</tr>
<tr>
<td>Hosts: <em>Nephotettix nigropictus,</em> <em>N. cincticeps,</em> <em>N. virescens,</em> &amp; (probably) <em>Inazumá dorsalis.</em></td>
<td></td>
</tr>
<tr>
<td>Distribution: China (Kwantung, Kiangsu), Japan (Honshu, Kyushu, Okinawa)</td>
<td>....................................................................................</td>
</tr>
<tr>
<td>Apical segment of maxillary palpi short, as long as basal segment; numbers of facets of each eye about 20. Host: Unknown. Distribution: Japan (Okinawa).</td>
<td><em>H. (H.) yaeyamanus</em> Kifune, new species</td>
</tr>
</tbody>
</table>

#### Females

(Those of *iriomotensis* and *yaeyamanus* are unknown)

<table>
<thead>
<tr>
<th>Condition</th>
<th>Species</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cephalothorax as long as broad</td>
<td><em>H. (H.) orientalis</em> (Esaki et Hashimoto, 1931)</td>
</tr>
<tr>
<td>Cephalothorax longer than broad</td>
<td>....................................................................................</td>
</tr>
<tr>
<td>Mandible with 1 tooth</td>
<td><em>H. (H.) spectus</em> Yang, 1964</td>
</tr>
<tr>
<td>Mandible with 2 teeth</td>
<td><em>H. (H.) bipunctatus</em> Yang, 1955</td>
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</tbody>
</table>
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Acknowledgements

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References


