The Piophilidae (Diptera) of Japan

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Abstract: The Japanese species of the Piophilidae are reviewed. Three species, Protopiophilota contacta (Walker), Liopiophila varipes (Meigen) and Stearibia nigriceps (Meigen), are newly recorded from Japan. Five species are briefly described with illustrations of head, thorax, legs and male genitalia. A key to the Japanese species is provided.

INTRODUCTION

The flies of the family Piophilidae are distributed in all faunal regions, well represented in the temperate and boreal regions of the Northern Hemisphere. Adult flies are mostly found in many kinds of proteinaceous animal matter where their larvae develop; many larvae especially prefer to develop in exposed animal carcasses and their bones, including human corpses. Several species prefer human environment and are more or less synanthropic; 

**Piophilota casei** (Linnaeus) is the most pronounced synanthropic fly with high degree of endophily and a serious pest of meat products, fish, cheese and hides in the food and leather industries. In Japan, 

**P. casei** has caused damage imported hides of cows in the leather factories. Taxonomic studies of the Palaeartic species have been done by Hennig (1943), Zuska and Laštovka (1965), McAlpine (1977) and Zuska (1984). The Oriental species have been treated by Hennig (1943), McAlpine (1977) and Steyskal (1977). Up to the present, two species are known to occur in Japan (Fukuhara, 1965), but nobody has virtually brought taxonomic and distributional knowledges of the Japanese species. In the present paper, I reviewed the Japanese Piophilidae with 3 newly recorded species and give an identification key for the Japanese species.

Key to the Japanese species of the 

**Piophilidae (♂ ♀)**

1. Postpronotum (humerus) with 2 setae, the inner one incurved (Fig. 4); mesonotum with 1 + 3 dorsocentrals. .......... 

**Protopiophilota** Duda ............... 2

Postpronotal setae absent; mesonotum with 0 + 1 dorsocentrals. .......... 3

2. Anepisternum (mesopleuron) entirely glossy black (Fig. 5); hind femur apically with dark ring (Fig. 11). .......... 

**P. latipes** (Meigen)

Anepisternum pruinose dorsally (Fig. 6); hind femur wholly yellow (Fig. 12). .......... 

**P. contacta** (Walker)

3. Frons anteriorly yellow; anepisternum hairy. .......... 4

Frons wholly black (Fig. 1); anepisternum bare. .......... 

.......... **Stearibia nigriceps** (Meigen)

4. Fronto-orbitals present (Fig. 2); anepimeron (pteropleuron) hairy. .......... 

.......... **Liopiophila varipes** (Meigen)

Fronto-orbitals absent (Fig. 3); anepimeron bare. .......... 

.......... **Piophilota casei** (Linnaeus)
**Protopiophila latipes** (Meigen, 1838)  
(Japanese name: Chibi-chizubae)  
Figs. 5, 7, 11, 13, 14.


♀♂. Frons black, anteriorly brown; fronto-orbitals developed; 1st to 3rd segments of antenna brown; gena dark brown and shining except margin of eye near face; occiput black and pruinose; thorax wholly black; postpronotum with 2 setae; mesonotum with 1+3 dc; anepisternum, anepimeron and katepisternum shining; meropleuron pruinose; wing hyaline, slightly tinged with brown; halter whitish yellow; all coxae yellow; fore femur basally yellow to near half and black in distal half (Fig. 7); fore tibia and tarsus

Fig. 4. Thorax of *Protopiophila contecta*, dorsal view.  
Figs. 5–6. Anepisternum and katepisternum—5, *Protopiophila latipes*; 6, *P. contecta*. 
black; middle leg wholly yellow; hind femur yellow with dark ring apically (Fig. 11); tergites wholly black and shining; male genitalia like as Figs. 13 and 14. Body length: 2.5–3.2 mm.


[Honshu]—4♂, 4 ♀, Tokyo, 20 Apr. 1961, T. Okazaki; 1 ♀, Tokyo, 17 June 1954, N. Fukuhara.

Distribution. Holarctic, Oriental and Australasian Regions; Japan (Hokkaido and Honshu).

Bionomics. This species was recorded from a slaughterhouse in Czechoslovakia (Zuska and Laštovka, 1965). In Japan, the adult flies were collected from carcasses of cat and wild deer, and also by carrion bait-trap.

Remarks. This species is closely related to P. contecta (Walker), but is distinguishable from it by the characteristics mentioned in the key.

Protopiophila contecta (Walker, 1860)
[Japanese name: Minami-chizubae]

Figs. 4, 6, 8, 12, 15, 16.

Figs. 13–20. Male genitalia—13, Protopiophila latipes, posterior view; 14, ditto, lateral view (left); 15, P. contexta, posterior view; 16, ditto, lateral view (left); 17, Stearibia nigriceps, posterior view; 18, ditto, lateral view (left); 19, Liopiophila varipes, posterior view; 20, ditto, lateral view (left).


♀♂. Frons wholly black; fronto-orbital setae developed; antenna dark brown; gena black and shining; postgena thickly pruinose; occiput black and thinly pruinose; thorax wholly black; postpronotum with 2 setae (Fig. 4); mesonotum with 1 + 3 dc; anepisternum shining, but dorsal margin pruinose (Fig. 6); anepimeron and katepisternum shining; meropleuron pruinose; wing hyaline, slightly tinged with brown; halter whitish yellow; all coxae yellow; fore femur basally yellow and distally black in more than half (Fig. 8); fore tibia and tarsus black; middle and hind femora (Fig. 12) wholly yellow; tergites wholly black and shining; a pair of dorsal
setae on epandrium of male very long (Figs. 15 and 16). Body length: 3.0–3.8 mm.


Distribution. Oriental Region; Japan (Honshu and Ryukyu Is.). New to Japan.

Bionomics. In Japan, the adult flies are frequently attracted to decayed meat, so the larvae may be necrophagous.

**Stearibia nigriceps** (Meigen, 1826)

[Japanese name: Kuro-chizubae]

Figs. 1, 9, 17, 18.

**Piophila nigriceps** Meigen, 1826, Syst. Beschr., 5: 397.


♂♀. Frons wholly black; fronto-orbital setae absent (Fig. 1); 1st to 2nd antennal segments yellow, 3rd segment brown to dark brown; gena wholly black and shining; occiput and postgena glossy black; thorax wholly black; postpronotal setae absent; mesonotum with 1 dc; anepisternum, anepimeron and katepisternum glossy; meropleuron pruinose; wing hyaline, slightly tinged with brown; halter light yellow; all femora black except basal and distal ends (Fig. 9); fore tibia and tarsus black; middle and hind tibiae and tarsi yellow; tergites wholly black and shining; male genitalia shown in Figs. 17 and 18. Body length: 3.0–4.0 mm.


Distribution. Holarctic and Neotropical Regions; Japan (Hokkaido and Honshu). New to Japan.

Bionomics. According to Zuska and Laštovka (1965), this species was found from slaughterhouses, meat factories, poultry farms and from a human corpse. In Japan, this species was reared from bones of a whale in preparation for making the skeleton specimen and a carcasse of wild deer, and was also attracted to decayed meat.

**Liopiophila varipes** (Meigen, 1830)

[Japanese name: Kebuka-chizubae]

Figs. 2, 10, 19, 20.


♂♀. Frons black, anteriorly yellow; fronto-orbital setae present (Fig. 2); antenna light brown; gena yellow to light brown; postgena black and pruinose; occiput black and shining; thorax black; postpronotal setae absent; mesonotum with 1 dc; anepisternum and katepisternum glossy and hairy; meropleuron pruinose; wing hyaline, slightly tinged with brown; halter yellow; fore femur black except basal and distal ends and ventrally bristly (Fig. 10); middle leg wholly yellow; hind femur and tibia basally yellow and distally black; hind tarsus yellow; tergites black and shining; 3rd to 5th sternites covered with comparatively long hairs; male epiphallus pigmented (Figs. 19 and 20). Body length: 3.0–4.0 mm.
mm.
Distribution. Holarctic Region; Japan (Hokkaido). New to Japan.
Bionomics. This species is known as a hemisynanthropic fly which is found in food industry premises (slaughterhouses, meat factories and poultry farms) (Zuska and Laštovka, 1965). This species is widely distributed from plain land to a higher place of mountainous area in Hokkaido. The adult flies were also attracted to decayed meat and a carcass of wild deer.

_Piophila casei_ (Linnaeus, 1758)
[Japanese name: Chize-bae]
Fig. 3.


♂ ♀. Frons wide, dark brown and anteriorly yellow; fronto-orbital setae absent (Fig. 3); antenna yellow; gena broad and yellow; postgena dark brown; occiput dark brown; thorax black; postpronotal setae absent; mesonotum with 1 dc; anepisternum and katepisternum shining and hairy; anepimeron bare; meropleuron pruinose; wings hyaline, slightly tinged with brown; halter whitish yellow; fore and hind femora and tibiae black except bases; middle leg yellow, except for distal part of femur; hind tarsus yellow; tergites dark brown and shining. Body length: 3.5–4.0 mm.
Specimens examined. [Honshu]—15♂, 15 ♀, Tokyo, 25–27 June 1954, N. Fukuhara; 1 ♂, Tokyo, 3 Sept.1957, R. Kano.

Distribution. Cosmopolitan; Japan (Honshu and Kyushu (?)).
Bionomics. This species is known to cause serious damage meat products, fish, cheese and hides of cattle in food and leather industries. In Japan, the larvae and adults have occurred from the imported salted-hides of cows in the leather factories and from bones of the same whale mentioned in item of _S. nigriceps_.

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**摘要**

日本産チーズバエ科（双翅目）の分類
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日本産チーズバエ科（Family Piophilidae）のハエについては、福原（1965）が2種、*Piophila casei*（Linnaeus）チーズバエおよび*Protopiophila latipes*（Meigen）チビチーズバエを記録して以来、分類学的研究はなされていなかった。本報告では、いままで記録されていた2種に加えて次の日本新記録3種を見出した：*Protopiophila constrecta*（Walker）ミナミチーズバエ（新称），*Lio-piophila variipes*（Meigen）ケブカチーズバエ（新称），*Stearibia nigriceps*（Meigen）クロチーズバエ（新称）。これにより日本産の種は5種となり、これらの種の特徴を示した図とともに再記載を行い、検索表を付した。本科の成虫は、野外で腐肉よく集まり、幼虫は、人を含む動物の死骸（骨（骨髄）を好む死肉・腐肉食性の種が多い）とにくに*Piophila casei*（Linnaeus）チーズバエは、人類親和性で、肉製品、魚、チーズ、毛皮などに発生することが知られている。