Four new species and four newly recorded species of the genus *Hydrotaea* Robineau-Desvoidy from Japan with a key to Japanese species (Diptera, Muscidae)

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**Abstract:** Four new species of the genus *Hydrotaea* R.-D., namely, *H. daisetsuzana*, *H. exigua*, *H. ontakensis* and *H. multipilosa*, are described and illustrated. *H. pilipes* Stein, *H. cinerea* R.-D., *H. pandellei* Stein, and *H. parva* Meade are newly recorded from Japan. A key to the Japanese species of the genus *Hydrotaea* is presented.

Eight species belonging to the genus *Hydrotaea* R.-D. have been recorded and revised by the authors from Japan (Shinonaga and Kano, 1971). Since their report, there are no taxonomic studies on the genus except for Iwasa's report (1980) which described mature larvae of *H. albipuncta* Zetterstedt and *H. meteoreica* (Linné). In the present paper, the authors described 4 new species and 4 newly recorded species from Japan. The adult of *H. albipuncta* was also described and illustrated.

*Hydrotaea daisetsuzana* Shinonaga and Kano, new species

Japanese name: Daisetsu togeashi-mematoi

(Figs. 1, 2)

**Male:** Body length 6.5–8.0 mm. **Head:** Frons narrow, slightly wider than front ocellus; parafurcata and parcaffacia black, with grayish dust; frontal bristles (ori) long, confined to lower half of frons; ors absent; frontal lunula brown; eyes densely covered with long hairs; antennae black, length of 3rd segment about 1.5× of 2nd segment; arista black, pubescent; face black with grayish pollen; genae black with numerous upcurved bristles; palpi black. **Thorax:** Scutum and scutellum metallic black, slightly covered with grayish pollen; ac 0+1; dc 2+4; ia 0+2; prs 1; h 2; ph 1; nt 2; pra absent; sa 1; pa 2; scut 2 lateral, 1 preapical and 2 or 3 irregular discals; st 1+1; propleuron and prosternum bare; several hairs present on the area between pteropleuron and hypopleuron; mesothoracic spiracles dark brown. **Wings:** Hyaline; veins brown; r₁ and r₁+5 bare; m₁+2 straight; squamae yellowish brown; lower squamae triangular, with inner margin close to supraquama ridge, but not so broad as in the genus *Musca*; halteres black. **Legs:** Black; f₁ with a pair of rigid protuberance which situated distal part of ventral surface, a pair of rows of pd, 4 long pv on basal 1/3 and several short bristles on dorsal surface of posterior process; t₁ with 4 p on distal half, basal half of ventral surface dentate; f₂ with a row of pd and numerous long hairs on ventral surface; 2 preapical pd; t₂ with 2 p; f₃ with a row of ad and av and long hairs on v; t₃ with 1 ad, 1 pd, 2 or 3 av on distal 1/3 and numerous short hairs on distal half of ventral surface. **Abdomen:** Metallic black, slightly covered with dust; 2nd to 5th tergites with marginal
bristles; sternites black; 3rd to 5th tergites with median stripes, but obscure.

**Female:** Unknown.

**Holotype:** Male, Mt. Tokachidake, Hokkaido, 11 Aug. 1971, S. Shinonaga (Type in National Science Museum, Tokyo).

**Paratypes:** 1♀, Mt. Tomuraushi, Hokkaido, 1 Aug. 1968, H. Kurahashi.

**Remarks:** The present species is closely related to *H. dentipes*, but differs from it by having numerous hairs on compound eyes and short setae on ventral surface of hind tibiae.

**Hydrotaea multipilosa** Shinonaga and Kano, new species

**Japanese name:** Kebuka togeashi-mematoi (Figs. 3, 4)

Small and blackish species.

**Male:** Body length 3.5–4.0 mm. **Head:** Eyes large, bare; parafrontals black, close to each other on the middle part; 2 or 3 ori confined to lower half of frons; antennae black, length of 3rd segment about 1.5× of 2nd segment; arista short pubescent; parafacials narrow, black with grayish dust, with several upcurved bristles; face black. **Thorax:** Black, slightly covered with pollen; ac 2–3+4–5; dc 2+4; ia 0+2; prs 1; h 2; ph 1; nt 2; pra absent; sa 1; pa 2; scut 1 preapical, 2 lateral; st 1+1; propleuron and hypopleuron bare. **Wings:** Brownish; veins dark brown; \( r_1 \) and \( r_{4+5} \) bare; \( m_{3+2} \) and \( m-m \) straight; squama dark brown; halteres dark brown or black. **Legs:** Black; \( f_3 \) with a pair of rigid processes on apical part and several long \( pv \) on basal half; \( t_1 \) with 2 shallow ventral notches; \( f_2 \) with 1 strong \( av \) on basal 1/3, 1 long \( pv \) on sub-basal part and 2 short \( pv \) on distal 1/4; \( t_2 \) with 1 \( ad \) and 2 \( pv \); \( f_3 \) with a row of \( ad \) and short hairs curled at apices on basal 1/4 and middle part; \( t_3 \) with hairs on the middle part of \( av \) surface. **Abdomen:** Black with brownish pollen and median longitudinal stripes seen behind.

**Holotype:** Male, Iwaouchi, Shibetsu, Hokkaido, 15–16 July 1974, K. Nishida (Type in National Science Museum, Tokyo).

**Paratypes:** 3♀, the same data as holotype; 2♂, Komaba, Tokachi, Hokkaido, 7 Sept. 1980, M. Iwasa.

**Remarks:** The present species is closely related to *H. parva* Meade and *H. exigua*...
n. sp., but distinguished by having characteristic bristles and hairs on hind tibia as shown in Fig. 4.

**Hydrotaea exigua** Shinonaga and Kano, new species

**Japanese name:** Chibi togeashi-mematoi

(Figs. 8, 9)

Very small fly.

**Male:** Body length 2.0-3.0 mm. **Head:** Eyes large, bare; parafrontals black, close to each other on the middle part; 2 or 3 pairs of **ori** confined to lower half of frons; **ors** absent; antennae black, length of 3rd segment about 1.5× of 2nd segment; arista short pubescent; parafrontals narrow, invisible from lateral surface, with grayish dust. **Thorax:** Black, with grayish dust, **ac 2-5+4-5; de 2+4; ia 0+2; prs 1; h 2; ph 1; pra** absent; sa 1; pa 2; **scut** 2 lateral, 1 preapical: st 1+1; propleuron and hypopleuron bare; meso- and metathoracic spiracles dark brown. **Wings:** Slightly infuscated, veins dark brown; **r1** and **r1+5** bare; **m1+2** straight; **m-m** slightly bending toward wing base; squamae dark brown with concolorous marginal cilia; halteres black. **Legs:** Black; **f1** with a pair of rigid processes on distal part and 2 long bristles on basal 1/4; **t1** without **p** and ventral notch not remarkable; **f2** with straight blunt bristles (1 strong and 2 small); **t2** with 1 **ad**, 2 **av**; **f3** with a row of **ad**, 2 preapical **av** and 2 long hair-like setae on distal 1/3; **t3** with 1 **ad** and 2 **av**: 1 hair-like long **pv**. **Abdomen:** Black with grayish dust; 2nd tergite black; 3rd to 5th with black median longitudinal stripes seen behind.

**Female:** Body length 2.5-3.0 mm. **Frons** about 0.25 of head width; frontal stripe black, parallel-sided; 3 pairs of **ori**, 2 proclinate **ors** and interfrontal cruciate bristles present; thorax grayish; **f1** with a row of **ad** and **pv**; without a pair of rigid processes: **t1** without **p**; **f2** with a row of **av** and 2-3 **pv**; **t2** with 1 **ad**; **f3** with a row of **ad** and 2 long preapical **av**; **t3** with 1 **ad** and 2 **av**.

**Holotype:** Male, Narita, Chiba, 14 Sept. 1980, M. Iwasa (Type in National Science Museum, Tokyo).

**Paratypes:** 13♂♂, 4♀♀, the same data as holotype; 1♀, Teansude, Setouchi, Amami-oshima, Kagoshima, 25 Oct. 1971, H. Suzuki.

**Remarks:** This species is closely related to *H. parva* and *H. multipilosa* n. sp., but is easily separated from both the species by the characters of bristles and hairs on mid-femur as shown in Fig. 9. *Hydrotaea* sp. of Kano and Shinonaga (1977) correspond to this species.

**Hydrotaea ontakensis** Shinonaga and Kano, new species

**Japanese name:** Miyama togeashi-mematoi

(Figs. 15, 16)

**Male:** Body length about 6.0 mm. **Head:** Eyes bare; parafrontals narrow, black, closed each other on the middle part; parafrontals black with grayish pollen; **ori** confined to lower half of frons; **ors** absent. **Thorax:** Scutum black, slightly covered with grayish pollen; **ac 0+2; de 2+4; ia 0+2; pra** absent; notopleuron with small hairs around anterior bristle; hypopleuron bare; ventral surface of mesopleuron with 2 strong bristles. **Wings:** Slightly infuscated; **m-m** straight; squamae yellowish brown, marginal cilia yellow; knob of halter dark brown, stem reddish brown. **Legs:** Black, fore and hind legs as shown in Figs. 15, 16. Hind femur with strong spines, consisting of 2 coalescent bristles with the tip bent over ventrally. **Abdomen:** Black, densely covered with grayish dust; 2nd to 5th tergites with narrow undusted median longitudinal stripes seen behind, lateral surfaces of tergites 2 to 5 with long bristles.

**Holotypes:** Male, Mt. Ontake, Nagano, 28-29 July 1971, S. Shinonaga.

**Remarks:** This species is closely related to *H. basdeni* (Collin). According to the private letter of Mr. A. C. Pont, British Museum (Nat. Hist.), who compared this species with determined *basdeni* for us, present species differs from *basdeni* in having normal pruinosity on pleura (*basdeni*: the anterior pleural plates extensively glossy). In addition, this new species has undusted abdominal vitta much thinner than that of *basdeni*; no **prst** **ac** setae; sternopleuron with 2 stout setae on ventral edge, between **cx** 1 and **cx** 2; mid-femur with **av** isolated and
Figs. 3, 4 Hydrotaea multipilosa, n. sp.
3: fore femur and tibia, posterolateral view, 4: hind femur and tibia, anterolateral view.

Figs. 5-7 Hydrotaea parva Meade
5: fore femur and tibia, posterolateral view, 6: basal part of mid-femur, anterolateral view, 7: hind femur and tibia, anterolateral view.

Figs. 8, 9 Hydrotaea exigua, n. sp.
8: fore femur and tibia, posterolateral view, 9: hind femur, anterolateral view.
Scale: 0.5 mm.
Figs. 10, 11 Hydrotaea zao Shinonaga and Kano
10: fore femur and tibia, posterolateral view, 11: hind femur and tibia, anterolateral view.
Figs. 12, 13 Hydrotaea cinerea R.-D.
12: fore femur and tibia, posterolateral view, 13: hind femur and tibia, anterolateral view.
Fig. 14 Hydrotaea chalcara Loew, basal part of mid-femur, posterolateral view.
Figs. 15, 16 Hydrotaea ontakensis n. sp.
15: fore femur and tibia, posterolateral view, 16: hind femur and tibia, anterolateral view. Scale: 0.5 mm.
conspicuous submedian \( p \) seta; hind tibia with reduced setae (basdeni: \( ad \) row bushier, \( row \) of \( p_v \) present on apical 2/3, \( av \) and \( a \) rows longer and denser).

**Hydrotaea pilipes** Stein, 1903  
**Japanese name:** Kurotsuya togeashi-mematoi


Only one female specimen was obtained from Ozegahara by Dr. Kurahashi. Body length about 6.0 mm. Parafrontals and upper part of parafacial metallic black without any dust. Thorax and abdomen metallic black without dust. Wings yellowish brown, squamae and halteres yellowish brown.

*Specimen examined:* 1 \( \varphi \), Ozegahara, Gunma, 28–30 Aug. 1978, H. Kurahashi.

**Hydrotaea albipuncta** Zetterstedt, 1845  
**Japanese name:** Shirahoshi togeashi-mematoi

(Figs. 20–22)

**Hydrotaea albipuncta** Zetterstedt, Dipt. Scand., 4: 1581.

**Male:** Body length 5.0–6.0 mm. Eyes bare; frons narrow, about 2 \( \times \) of width of front ocellus; \( ori \) long and cruciate, confined to lower 2/3. Scutum and scutellum black slightly covered with grayish pollen and 3 obscure dark stripes; stripes on the middle part broad and long, reaching to the level of 3rd dorsocentral bristles and lateral ones short, reaching to thoracic suture; \( ac \) 3+5–6; \( dc \) 2+4; \( ia \) 0+2–3; \( pra \) absent; \( st \) 1+1; mesothoracic spiracles dark brown. Wings hyaline; veins dark brown; \( r_1 \) and \( r_{4+5} \) bare; \( m_{1+3} \) straight; \( m-m \) bending toward wing base; squamae yellowish brown; lower squamae tongue-shaped; halteres brown, with paler knob. **Legs:** Black; fore, mid- and hind legs as shown in Figs. 20–22. Abdomen black and densely covered with grayish pollen; anterior half of 2nd tergite without pollen; 3rd to 5th with dark longitudinal stripes, stripe on 3rd tergite rounded; 3rd to 5th tergites with long marginal bristles.

**Female:** Body length about 5.0 mm, whith gray dusted entirely; frons about 0.35 to 0.40 of head width; interfrontal cruciate bristles present; legs without long bristles and protuberance like male.

*Specimens examined:* 2 \( \delta \), 1 \( \varphi \), Toyotomi, Soya-gun, Hokkaido, 8 Aug. 1971, S. Shinonaga; 1 \( \delta \), Wakasakankan, Soya-gun, Hokkaido, 8 Aug. 1971, S. Shinonaga.

Remarks: The present species was collected on cow dung. According to Iwasa (1980), the larva of this species is carnivorous.

**Hydrotaea cinerea** Robineau-Desvoidy, 1830  
**Japanese name:** Hai-iro togeashi-mematoi  
(Figs. 12, 13)

**Hydrotaea cinerea** R.-D., Essai Myod., 551.

Body length of the male about 4.0 mm. Eyes bare; \( ori \) confined to lower 1/3 of frons. Scutum black, slightly covered with grayish pollen; \( ac \) 2+4; \( dc \) 2+4; \( ia \) 0+3; \( pra \) absent; notopleuron and hypopleuron bare. Wings yellowish brown; veins light brown; squamae yellowish brown; knob of halteres dark brown and stem reddish brown. **Legs:** Black; fore and hind legs as shown in Figs. 12 and 13. Abdomen black, densely covered with grayish dust, 3rd and 4th tergites with median stripes seen behind.

*Specimen examined:* 1 \( \delta \), Mt. Tokachidake, Hokkaido, 24 Aug. 1970, S. Shinonaga.

**Hydrotaea pandellei** Stein, 1899  
**Japanese name:** Panduru togeashi-mematoi

(Figs. 17–19)


Body length of male about 6.0 mm. Eyes bare; parafrontals narrow, closed to each other on the middle part; \( ori \) confined to lower half of frons; \( ors \) absent. Thorax black, slightly covered with dust; scutum covered with numerous long hairs; \( ac \) 0+2; \( dc \) 2+4; \( ia \) 0+2; \( pra \) absent; \( st \) 1+1; notopleuron with numerous hairs. Wings brownish; \( m-m \) bending toward wing base; squamae light brown; halter dark brown. Fore femur with a pair of rigid processes and
Figs. 17-19 *Hydrotaea pandeli* Stein  
17: fore femur and tibia, posterolateral view, 18: hind femur and tibia, anterolateral view, 19: mid-tarsi, anterolateral view.  
Figs. 20-22 *Hydrotaea albipuncta* Zetterstedt  
20: fore femur and tibia, posterolateral view, 21: mid-femur, anterolateral view, 22: hind femur and tibia, anterolateral view. Scale: 0.5 mm.
numerous long hairs on posterior margin; $t_1$ with 2 deep ventral notches and numerous long bristles on distal half of $pv$ surface; $f_2$ with 3 short and strong bristles on ventral surface; $t_2$ without $ad$, with 2 $pv$; $f_3$ remarkably bending, with a row of $pd$ and $pv$; $t_3$ ventrally bending, with 1 $ad$ on middle, 1 strong $v$ on distal 1/5 and 4 short bristles on distal 1/3 of ventral surface. Abdomen black with grayish dust entirely seen behind and narrow median longitudinal stripes on 2nd to 5th tergites.

Specimen examined: 1♀, Mt. Nyugasa, Nagano, 27 July 1971, S. Shinonaga.

**Hydrotaea parva** Meade, 1889

Japanese name: Maguso togeashi-mematoi

*(Figs. 5–7)*

Hydrotaea parva Meade, **Entomol. Mon. Mag.**, 25: 448.

Small and blackish species. Body length 3.5–4.0 mm. Eyes bare, frons narrow, parafonals closed each other on the middle part; antennae black, with 3rd segment about 1.5× of 2nd segment. Scutum black, covered with grayish pollen; $ac$ 2+5; $dc$ 2+4; $ia$ 1+2; $prs$ 1; $h$ 2; $ph$ 1; $nt$ 2; $pra$ absent; $st$ 1+1; propleuron and hypopleuron bare. Wings hyaline, brownish infuscated; $r_1$ and $r_4+5$ bare; $m-m$ straight; squamae brown; halter black. Legs black, fore and hind legs as shown in Figs. 5–7. Abdomen black, with grayish pollen; 2nd tergite black, 3rd to 5th with dark rounded median marks.


**Key to the species**

1. Upper half of facial orbits and thorax shining black without dusting of any sort .................. **H. pilipes** Stein
   Upper half of facial orbits and thorax more or less with dusted ........ (2)
2. Fore femur ($f_3$) at apex of ventral surface with 2 short stout spines, the proximal one strongly dilated in basal half (Figs. 10, 12) ................ (3)
3. Hind tibia with several long hair-like bristles curled at apex (Fig. 11) .................. **H. zao** Shinonaga and Kano
   Hind tibia with 1 $av$ on distal 1/3 ........ (4)
4. Thorax and abdomen seen from behind, deep brownish black with brownish dust; hind femur with 3–4 long $av$ on apical part .................. **H. meteorica** (L.)
   Thorax and abdomen seen from behind, densely and uniformly whitish gray dusted; hind femur with complete row of $av$ (Fig. 13) .................. **H. cinerea** R.-D.
5. Fore femur at apex beneath with a pair of rigid processes (Figs. 1, 3, 5, 8, 15, 17, and 20) ........ (6)
   Fore femur at apex beneath with 4 strong bristles; hind femur anterolaterally posteroventrally with long hair-like bristles on distal 1/3 only; hind tibia with 4 $av$ .... **H. spinifemora** Shinonaga and Kano (= **H. jacobsoni** (Stein) of Kano and Shinonaga, 1977, misidentification)
6. Hind femur with 2 narrowly separated erect straight blunt bristles on middle part; hind tibia with 3–4 closely adjacent pointed bristles on the middle part (Fig. 22) .................. **H. albipuncta** Zetterstedt
   Hind femur without such bristles .. (7)
7. Hind femur ventrally with strong spines, which consisting of 2 coalescent bristles with the tips bent over (Fig. 16) .................. (8)
   Hind femur without strong spines, which consisting of 2 coalescent bristles .................. (9)
8. Eyes densely covered with long hairs; mid-tibia with long hairs on apical half .......... **H. occulta** Meigen
   Eyes with microscopic hairs; mid-tibia with only short hairs .................. **H. ontakensis**, n. sp.
9. Middle metatarsus with fine hairs on entire length (Fig. 19); hind tibia with several closely adjacent blunt bristles on $pv$ surface (Fig. 18) ........ **H. pandellei** Stein

Middle metatarsus normal ...... (10)
10. Hind femur with short hair-like bristles
curled at apices on basal half; hind
tibia with several long bristles on mid-
dle part (Fig. 4) ............... H. multipilosa n. sp.
Hind femur without short hair-like
bristles .................................. (11)
11. Mid-femur with strong erect straight
blunt bristles on ventral surface (Fig.
14) ..................................... (12)
Mid-femur without strong blunt bristles
........................................... (14)
12. Hind tibia with strong spines bending
at apex ...... H. chalcara Loew
Hind tibia with 3-4 long bristles on av
surface ............................... (13)
13. Mid-femur with 2 strong erect straight
blunt bristles on ventral surface (Fig.
6) ................... H. para Meade
Mid-femur with 3 (1 strong, 2 small)
erect straight blunt bristles on ventral
surface (Fig. 9) ...... H. exigua n. sp.
14. Eyes densely covered with long hairs;
hind tibia densely covered with hair-
like bristles on distal half of ventral
surface (Fig. 2) .................... H. daisetsuzana n. sp.
Eyes bare; hind tibia only with normal
bristles .............................. (15)
15. Small fly, abdomen seen from behind,
mainly shining black with some brown
dusting on anterior margin; mid-
femur with only 2 distinct bristles
beneath at base .. H. glabricula Stein
Large fly, abdomen grayish dusted .......................... (16)
16. Hind tibia with at most 4 av; mid-
femur with numerous strong bristles
assembling on the basal half of the
ventral and lateral surfaces

............ H. dentipes (Fabricius)
Hind tibia with about 7 av on basal
half; distal half with a row of short
bristles ............................ H. similis Meade

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REFERENCES

Iwasa, M. (1980): Description of three species
of muscid larvae and eggs newly recorded from
Japanica, Muscidae, I, 242 pp., 28 plates, Kei-
gaku Shuppan, Tokyo.

概 要

日本産トゲアシメモトイ属 (Genus Hydrotaea
R.-D.) の 4 新種と 4 新記録種

日本産トゲアシメモトイ属のハエについては、篠
永・加納 (1971) が 8 種記録している。その後、岩佐
(1980) は、シラホシトゲアシメモトイ (H. albi-
puncta) とキリガクレメモトイ (H. meteorica) の 3
令幼虫の形態について報告した。このうち、前種は日
本未記録の種であった。著者らは、日本各地の牧場な
どで動物糞上から採集されるハエ類のうち、トゲア
シメモトイ属の 4 新種、ダイセットトゲアシメモトイ
(H. daisetsuzana), ケブカトゲアシメモトイ (H.
multipilosa), チビトゲアシメモトイ (H. exigua) と
オンタケトゲアシメモトイ (H. ontakensis) を見いただ
したので記載した。このほかに 4 新記録種を加え、
これら17種についての検索表を付した。