

Taxonomic Description of Idolothripinae (Thysanoptera: Tubulifera: Phlaeothripidae) of Taiwan. I. Tribe Idolothripini

Chin-Ling Wang¹, Yi-Ju Chen², and Feng-Chyi Lin^{3,*}

Abstract

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Five genera and 11 species of Tribe Idolothripini of subfamily Idolothripinae in Taiwan are reviewed. Identification keys are provided, and diagnostic characteristics are described and illustrated. *Dinothrips spinosus* (Schmutz) is the first species and genus recorded in Taiwan.

Key words: Taxonomy, Thysanoptera, Phlaeothripidae, Idolothripinae, Taiwan.

INTRODUCTION

The thrips, insects belonging to order Thysanoptera, are divided into two suborders, Terebrantia and Tubulifera. The suborder Tubulifera contains a single family Phlaeothripidae which is divided into two subfamilies, Idolothripinae and Phlaeothripinae. In this study, the members of Idolothripini of subfamily Idolothripinae in Taiwan are reviewed.

More than 80 genera and 700 species of Idolothripinae have been described worldwide (ThripsWiki 2018). The world genera of Idolothripinae was reviewed by Mound & Palmer (1983). Eow *et al.* (2011) provided a key to 31 genera and 34 species of Idolothripinae in Peninsular Malaysia and Singapore. Majid *et al.* (2011) listed 59 species and 18 genera of this subfamily in China; the number increased

to 62 species and 19 genera by Dang & Qiao (2013) who provided illustrated keys to these taxa.

For Taiwanese Idolothripini, Karny (1913b) first described 2 new genera and species: *Phoxothrips pugilator* (= *Mecynothrips pugilator*) and *Idolothrips formosanus* (= *Ophthalmothrips formosanus*). Priesner (1935a) published three new species, *Elaphrothrips mucronatus*, *E. sumbanus*, and *E. productus*, though all species are synonyms of *E. denticollis* Bagnall (Mound & Palmer 1983). Priesner (1935a) also listed *E. formosanus* (Karny) [= *Ophthalmothrips formosanus* (Karny)]. Priesner (1935b) described two new species, *Elaphrothrips clarispinis* (= *E. spiniceps* Bagnall) and *E. takahashii* [= *Mecynothrips pugilator* (Karny)]. Forty years later, Haga (1975) recorded *Pyrgothrips formosanus* (Karny) [= *Ophthalmothrips formosanus*

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* Corresponding author, e-mail: fclin@tari.gov.tw

¹ Former Research Fellow, Applied Zoology Division, Taiwan Agricultural Research Institute, Council of Agriculture, Taichung, Taiwan, ROC.

² Assistant Research Fellow, Applied Zoology Division, Taiwan Agricultural Research Institute, Council of Agriculture, Taichung, Taiwan, ROC.

³ Associate Research Fellow, Applied Zoology Division, Taiwan Agricultural Research Institute, Council of Agriculture, Taichung, Taiwan, ROC.

(Karny)] and *P. longiceps* Haga [= *Ophthalmothrips longiceps* (Haga)] in Taiwan. Chen (1982) recognized 10 genera and 15 species of Idolothripinae, including 6 species belonging to Idolothripini, of which *Megathrips* (= *Bactrothrips*) *honoris* Bagnall was a new record. Okajima (1979) described *Mecynothrips taiwanus* in Taiwan. Recently, he published 3 *Bactrothrips* species from Japan and Taiwan (Okajima 2006).

Species of Idolothripinae feed on fungal spores under rotten leaves on ground and on dried woody stems and branches. Their feeding behavior does not harm plants. Unlike some Terebrantian thrips, they are never agricultural pests. As with many other tiny organisms, though small in size, they play essential roles in biodiversity and contribute to environmental balance.

Diagnostic characters between two subfamilies of Phlaeothripidae (modified from Okajima, 2006)

Maxillary stylets broader, width in distal half 5–10 microns in diameter, without maxillary guides; pelta usually with 2 lateral lobes; male S2 setae on tergite IX as long as or longer than S1 setae	Idolothripinae
Maxillary stylets narrower, width in distal half 2–3 (occasionally 3–6) microns in diameter, usually with maxillary guides or bridge; pelta usually narrow, without well-developed lateral lobes; male S2 setae on tergite IX usually short and stout ...	Phlaeothripinae

Subfamily Idolothripinae Bagnall 1908

Diagnosis. Macropterous, brachypterous or apterous; female body size median to large, usually brown or dark brown. Head long or squared, usually prolonged in front of eyes; maxillary stylets broad, width in distal half 5–10 microns in diameter, V-shaped or parallel or close together in head; prosternal basantra present or absent; forewings if present, with

duplicated cilia; pelta broad, usually with lateral lobes, rarely without lateral lobes, surface with sculptured reticles; tergites II–VII with 1–3 pairs of wing retaining setae; male with S2 setae on tergite IX well developed, equal to or longer than S1 setae.

MATERIALS AND METHODS

Specimens studied were mainly from 4 different sources: thrips collected by the authors in Taiwan from year 1993 to 2006, permanent slides were preserved and deposited at Taiwan Agricultural Research Institute (TARI); slides deposited at TARI by R. Takashashi; slides deposited at TARI by L. S. Chen; and slides loaned from Tokyo University of Agriculture, Japan.

Identification keys and character descriptions were made by microscope examination and comparison of these slides.

RESULTS AND DISCUSSION

Key to tribes of subfamily Idolothripinae

- 1 Metasternum without sternopleural sutures, pelta without campaniform sensilla, wing-retaining setae 2 pairs or more (except Hystricothripina with only one pair), tube with or without long setae Idolothripini
- Metasternum with or without sternopleural sutures, pelta with or without campaniform sensilla, a pair of wing-retaining setae, tube without long setae Pygothripini

Key to genera of tribe Idolothripini in Taiwan

- 1 Tube with significant lateral setae *Bactrothrips*
- Tube without significant lateral setae 2
- 2 Tergites III–V each with 3 pairs of wing-retaining setae *Mecynothrips*
- Tergites III–V each with 2 pairs of wing-retaining setae 3
- 3 Ventral side of eye longer than dorsal side ..
..... *Ophthalmothrips*
- Ventral side of eye equal to or shorter than

- dorsal side 4
- 4 Lateral lobes of pelta connected to center ...
..... *Elaphrothrips*
- Lateral lobes of pelta separated from center, forming 3 isolated parts; anteroangle of male mesonotum with spiracular process
..... *Dinothrips*

***Bactrothrips* Karny (Fig. 1)**

Bactrothrips Karny, 1912: 131. Type species: *Bactrothrips longiventris* Karny.

Female. Large, macropterous; head length approximately twice its width, slightly prolonged in front of eyes; setae on head blunt

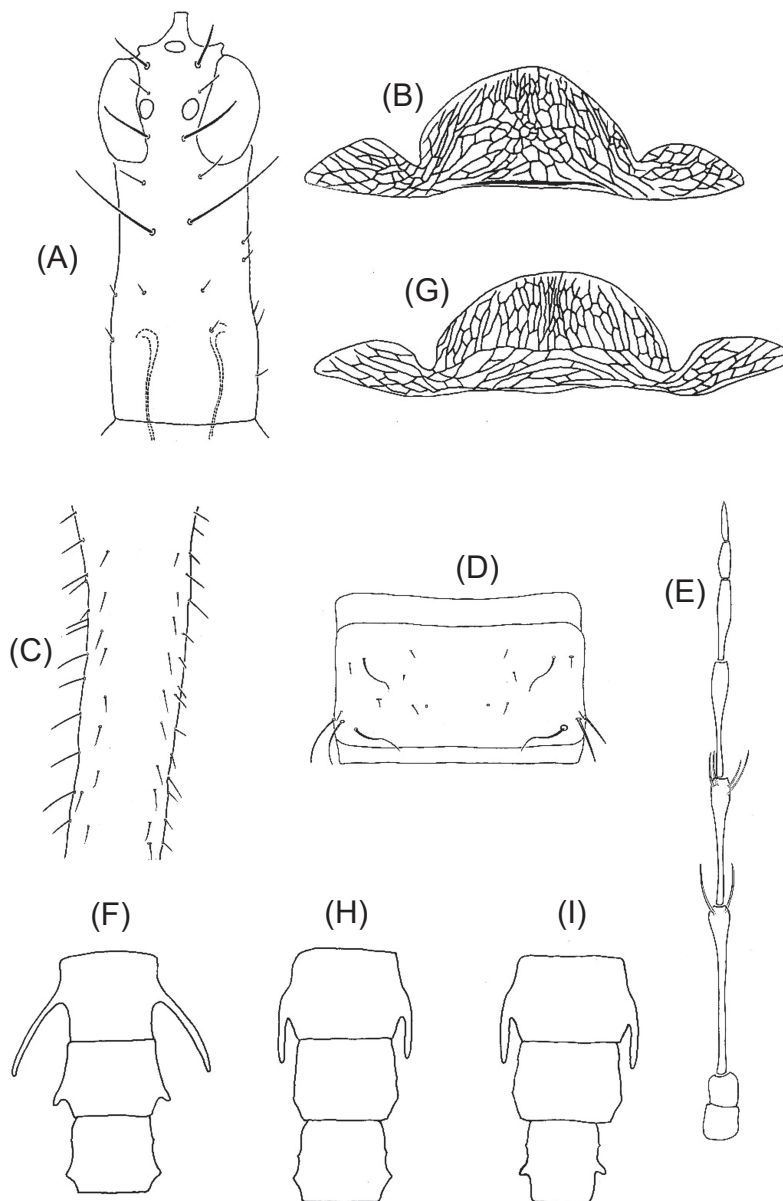


Fig. 1. *Bactrothrips* species: *brevitubus* Takahashi (Type male A–F): (A) head; (B) pelta; (C) tergite X; (D) tergite VII; (E) shape of antenna with sense cones on segments III and IV; (F) male tubercles on abdominal segments VI–VII; (G) pelta of *honoris*; (H) tubercles of *flectoventris*; and (I) tubercles of *pictipes* and *B. honoris* (the same).

or near sharp at apex; maxillary stylets short and V-shaped; antennae slender, 8-segmented, segment III with 2, segment IV with 4 sense cones. Prothoracic basantra weak; metathoracic sternopleural sutures absent; forewing with duplicated cilia. Pelta hat-shaped, depressed between center and lateral lobes; tergites II–VII each with 2 pairs of sigmoid wing-retaining setae, without neighboring short accessory setae; tube with numerous distinct lateral setae.

Male. Macropterous, tergite VI with a pair of lateral tubercles, sometimes VII and VIII either or both with a pair of tubercles, usually smaller.

More than 40 species were recorded in the world (ThripsWiki 2018).

Key to species of *Bactrothrips* in Taiwan (based on male characters)

- 1 Tubercles on tergites VII finger-shaped *brevitubus*
 - Tubercles on tergite VII triangular, not finger-shaped 2
- 2 Tubercles on tergite VIII triangular *flectoventris*
 - Tubercles on tergite VIII finger-shaped 3
- 3 Tubercles on tergite VI brown at basal half and yellow at distal half *pictipes*
 - Tubercles on tergite VI all brown or greyish brown at distal half *honoris*

Key to species of *Bactrothrips* in Taiwan (based on female characters)

- 1 Ventral side of eyes much longer than dorsal side; tergites II–VIII with transparent lateral spots *flectoventris*
 - Ventral side of eyes about equal length as dorsal side; tergites without such transparent spots 2
- 2 Distal ends of antennal segments III–V greyish brown, obviously lighter than I and II *pictipes*
 - Distal ends of antennal segments III–V dark brown, same color as segments I and II 3
- 3 Reticles on center of pelta in same direction

- *brevitubus*
- Reticles on lower 1/3 of pelta in different directions *honoris*

Bactrothrips brevitubus Takahashi (Figs. 1A–1F)

Bactrothrips brevitubus Takahashi, 1935:61–63.

Female. Body length 6–8 mm on slide. Color dark brown; antennal segments I and II same color as head, III and VI mostly yellow with distal ends greyish brown, segment VI basal half yellow and greyish brown distally, rest of segments greyish brown; femora brown, tibiae bicolored with brown and yellow: distal ends of fore tibiae yellow, distal 1/3 of mid tibiae yellow, hind tibiae mostly yellow with basal 1/4 brown; tube brown.

Head length 1.8–2.5 times its maximum width (Fig. 1A); antennae 8-segmented (Fig. 1E); maxillary stylets V-shaped, in posterior 1/4 of head. Forewing with 40–80 duplicated cilia, number of cilia vary depending on size of specimens. Pelta semicircular, concaved deeply between it and lateral lobes (Fig. 1B); tergites II–VII each with 2 pairs of wing-retaining setae (Fig. 1D); without abdominal tubercles; tube 1.6–2.0 times as long as head (Fig. 1C).

Male. Body length 6–8 mm on slide. Color similar to female, head length about 2.5–3 times its width; tergite VI with slender lateral tubercles, tergites VII and VIII with tubercles small and short (Fig. 1F).

Distribution. Taiwan, Japan, common in temperate and semitropical zones.

Specimens examined. Type male. 28.vii.1932; Nisinakama (Amami Oshima, Japan), S. Minowa coll.; 1F, Cingjing Farm (Nantou), dead wood, 5.vi.1993; 1F, Shaxi Forest road (Santimen, Pingtung), (coll. YS Song, 2002); 1M, Pinglin (Taipei), Litchi, 19.xi.1991; 1M, Fushan Botany Garden (Yilan), dead wood, 15.vi.1994.

Bactrothrips flectoventris Haga & Okajima (Fig. 1H)

Bactrothrips flectoventris Haga & Okajima,

1989:8–11.

Female. Body length 4–6 mm on slide. Color dark brown, antennal segments I and II brown, III–VI yellow with distal end of III to distal half of VI greyish brown, VII and VIII greyish brown; tube dark.

Head length about twice its maximum width; maxillary stylets V-shaped, in posterior 1/5 of head. Forewing with 20–43 duplicated cilia, number of cilia varies depending on body size. Center of pelta semicircular, concaved deeply to form 2 lateral lobes; without abdominal tubercles; length of tube about 1.5 times length of head.

Male. Body length 4.0–5.5 mm on slide. Color similar to female; abdominal segment VI with a pair of lateral tubercles; segment VII without tubercle; segment VIII with a pair of short tubercles (Fig. 1H).

Distribution. Taiwan, Japan.

Bactrothrips honoris (Bagnall) (Figs. 1G, 1I)

Megathrips honoris Bagnall, 1921:359.

Bactrothrips honoris (Bagnall): Mound, 1968:136.

Female. Body length 5–7 mm on slide. Color dark brown; antennal segments I and II dark brown, III–V light yellow with distal ends dark brown, VI light yellow with distal half dark brown, rest of segments dark brown; femora brown, base and distal part of fore and mid tibiae yellow, basal and distal 1/4 of hind tibiae yellow.

Head length about 2.3 times as the maximum width; maxillary stylets V-shaped, in bottom 1/4 of head. Forewing with 40–55 duplicated cilia. Center of pelta semicircular, concaved deeply between it and lateral lobes (Fig. 1G); without abdominal tubercles; tube about 1.5 times as long as head.

Male. Body length 5–7 mm on slide. Color similar to female, head length about 2.1–2.7 times the width; tergite VI with a pair of lateral tubercles, tergite VII without lateral tubercles, tergite VIII with a pair of small thumb-

like tubercles (Fig. 1I)

Distribution. Taiwan, Japan.

Specimens examined. 2F, Shenkeng (Taipei), *Ehretia longiflora*, 10.v.1978; 2F, Nan Shih Creek (Taipei), grasses, 23.iii.1995; 1F, Biyun temple (Tainan), dead leaves, 5.v.1993; 1F, Maopu (Taipei), Bamboo, 16.xii.1993; 1M, Lanhuschi (Nantou), Fern, vii.1993.

Bactrothrips pictipes Haga & Okajima (Fig. 1I)

Bactrothrips pictipes Haga & Okajima, 1989:15–18.

Female. Body length 4.8–6.3 mm on slide. Color dark brown; distal ends of hind femora yellow, tibiae bicolored with yellow bases; antennal segments I and II brown, bases of III–VI yellow but brown distally, obviously lighter than I or II.

Head length about twice its maximum width; interocellar setae longest on dorsum; maxillary stylets V-shaped, in posterior 1/3 of head; forewing with 29–47 duplicated cilia. Center of pelta semicircular, concaved deeply between it and lateral lobes; without abdominal tubercle; tube about 1.5 times as long as head.

Male. Body length 4–6 mm on slide. Color similar to male; tergite VI with a pair of lateral tubercles, tergite VII without lateral tubercles, tergite VIII with a pair of small thumblike tubercles (Fig. 1I).

Distribution. Taiwan, Japan.

Specimens examined. 1F, Wufeng (Taichung), Mongo, 21.i.1991; 1F, 99 Peaks (Nantou), Litchi, 19.xi.1991.

Dinothrips Bagnall (new record)

Dinothrips Bagnall, 1908b:190. Type species: *Dinothrips sumatrensis* Bagnall.

Paxillothrips Ananthakrishnan, 1961:250; Palmer & Mound, 1978:166.

Female. Large, macropterous, dark in color; head length about twice its width, prolonged in front of eyes, cheeks with strong setae; antennae 8-segmented, segments III and IV with 2 and 4 sense cones, respectively;

maxillary stylets V-shaped. Prothoracic basantra weak; metathoracic sternopleural sutures absent; forewing with duplicated cilia; femora with numerous setae, tarsal tooth present on both male and female. Lateral lobes of pelta separated from center to form 3 isolated parts; 2 pairs of wing-retaining setae on each of tergites II–VII, several pairs of smaller accessory setae; tube straight-sided, without conspicuous lateral setae.

Male. Fore femora enlarged, with numerous setae; foretarsal tooth larger than female;

mesothorax with spiracular processes, reduced or absent in some species.

Five species were recorded in the world.

***Dinothrips spinosus* (Schmutz) (Fig. 2)**

Ischyrothrips spinosus Schmutz, 1913:1078.

Female. Body length 6–8 mm on slide. Color dark brown; antennae dark brown, except segment III mainly yellow with both ends brown; forewings hyaline, veins brown; tube brown with posterior end yellow.

Head length about 1.8–2.0 times of its

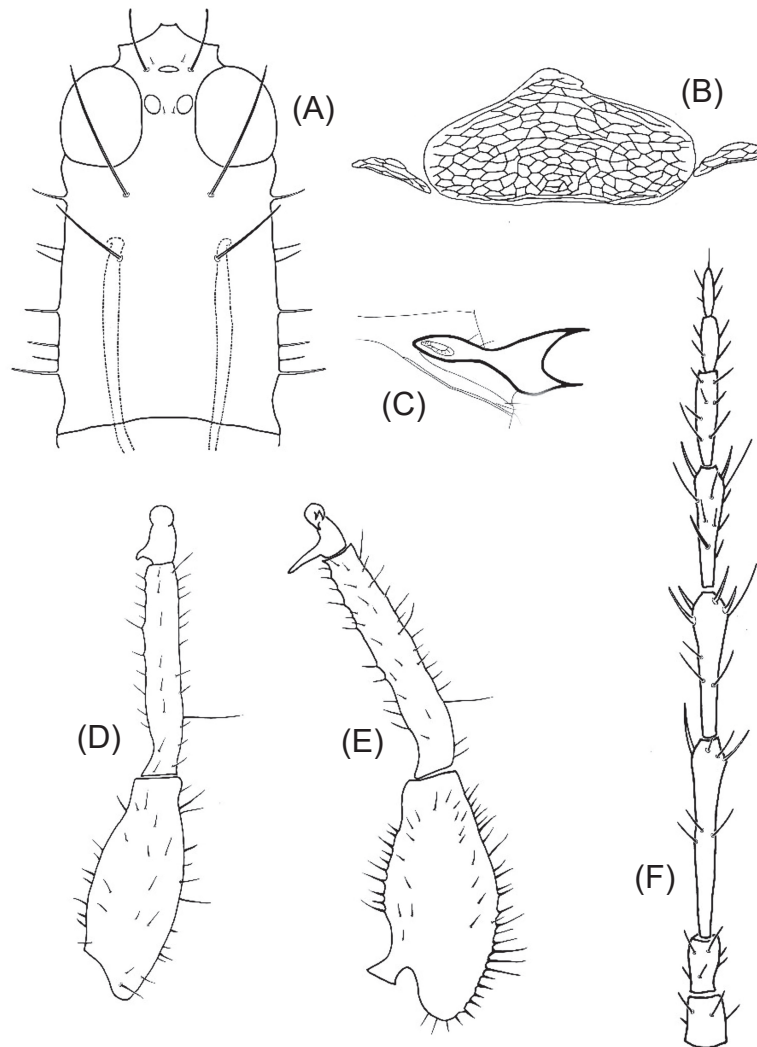


Fig. 2. *Dinothrips spinosus* (Schmutz) (female except C & E): (A) head; (B) pelta; (C) anterolateral folk process on male mesonotum; (D) fore leg of female; (E) fore leg of male; and (F) antenna.

width (Fig. 2A), cheeks with 7–8 strong setae; interocellar setae lateral to fore ocellus; postocular setae I longest on dorsum, postocular setae II second longest; antennae 8-segmented (Fig. 2F); maxillary stylets retracted to middle of head; one vertical seta on middle of fore femur, and one on basal 1/3 of tibia; foretarsal tooth hook-shaped (Fig. 2D). Pelta anterior margin irregular, lateral lobes separated completely from center (Fig. 2B); tube as long as head.

Male. Anteroangle of mesothorax with spiracular process (Fig. 2C), it may be small or lacking on some specimens; fore femora enlarged, with numerous strong setae on granular bases; fore tarsi with slender tooth (Fig. 2E).

Distribution. Taiwan, Mainland China, Myanmar, India, Sri Lanka, Indonesia.

Specimens examined. 2F3M, Wufeng (Taichung), dead *Phoenix*, 23.vii.1993.

Elaphrothrips Buffa (Fig. 3)

Elaphrothrips Buffa, 1909:162–163. Type spe-

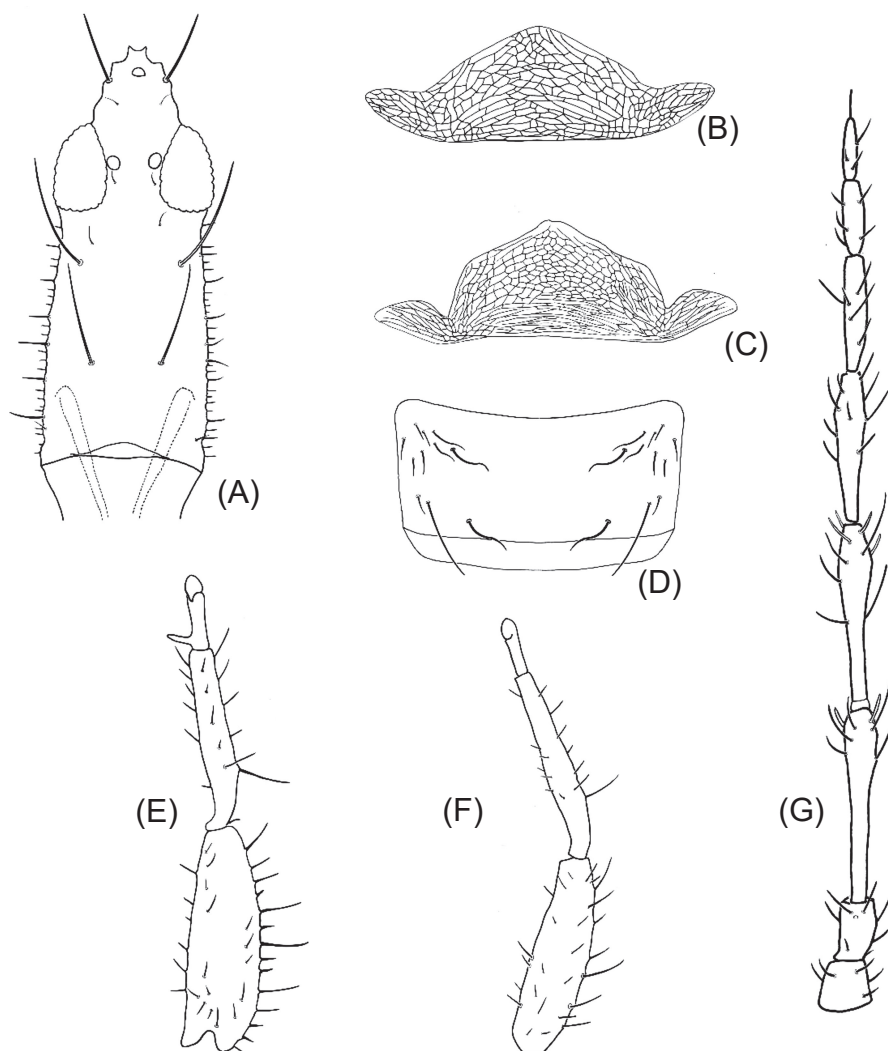


Fig. 3. *Elaphrothrips* species: *spiniceps* Bagnall (A, B, D–G; female except E): (A) head; (B) pelta; (D) tergite III; (E) fore leg of male; (F) fore leg of female; and (G) antenna; *denticollis* Bagnall: (C) pelta.

cies: *Idolothrips coniferarum* Pergande.

Female. Large, macropterous, head long, distinctly prolonged in front of eyes; ventral side of eyes rarely longer than dorsal side; posterior ocelli situated on inner sides of eyes, close or connected to eyes; interocellar setae long, situated posterolateral to anterior ocellus, postocular setae long; antennae 8-segmented, segments III and IV with 2 and 4 sense cones, respectively; maxillary stylets V-shaped. Prosternal basantra present, metathoracic sternopleural sutures absent; forewing with numerous duplicated cilia; foretarsal tooth present or absent. Pelta with 2 lateral lobes; tergites II–VI each with 2 pairs of wing-retaining setae and several pairs of short accessory setae; tube straight-sided, without conspicuous lateral setae.

Male. Fore femur larger than that of female, often with a sickle-shaped seta on outer of apical margin; fore tibia without distal spur, foretarsal tooth present.

About 120 species in the world.

Key to species of *Elaphrothrips* in Taiwan

- 1 Antennae brown, except segment III yellow; female foretarsal tooth small; male fore femur enlarged *denticollis*
- 2 Antennae brown, segment III yellow, basal 1/3–1/2 of both segments IV and V yellow; female foretarsal tooth lacking; male fore femur normal *spiniceps*

Elaphrothrips denticollis Bagnall (Fig. 3C)

Elaphrothrips denticollis Bagnall, 1909:527.

Elaphrothrips mucronatus Priesner, 1935a:167; Mound & Palmer, 1983:66

Elaphrothrips sumbanus Priesner, 1935a:169; Mound & Palmer, 1983:66

Elaphrothrips productus Priesner, 1935a:170; Mound & Palmer, 1983:66

Female. Body length 6 mm on slide. Color dark brown; antennae dark brown, except segment III yellow with distal end brown; major setae grayish.

Head length about 1.8 times its width, eyes bulged, cheeks with about 8 strong setae; postocular setae I longest on dorsum, postocular setae II long; maxillary stylets in posterior 1/5 of head. Prosternal basantra large; forewing with 45 duplicated cilia; fore femur with numerous setae, tarsal tooth small and triangular. Pelta concaved between center and lateral lobes (Fig. 3C); tergites II–VI each with 2 pairs of wing-retaining setae, and surrounded by 2–5 pairs of accessory setae; tube length about 0.85 times of head.

Male. Dark brown, similar to female; antennal segments III–V with 2–3 brown, stout and straight setae; fore femur enlarged, with numerous stout setae, often with a sickle-shaped seta on outer apical margin; fore tarsus with slender tooth.

Distribution. Taiwan, Mainland China, India, Burma, Indonesia, Malaysia.

Specimens examined. 3F, Fenggu (Wufeng, Taichung), dead leaves of *Dimocarpus longan*, 23.vii.1993; 1M, same data as above but on dead leaves of *Vernicia* sp., 23.vii.1993; 1F1M, Lianhuachi (Nantou), *Vernicia* sp., 9.vii.1993; 1F1M, Loanong (Kaohsiung), grasses, 22.vii.1992; 1F, Kuantzung (Tainan), *Cerasus* sp., 1.iv.1993; 1M, TARI (Taichung), *Hibiscus mutabilis*, 22.viii.1990.

Elaphrothrips spiniceps Bagnall (Figs. 3A, 3B, 3D–3G)

Elaphrothrips spiniceps Bagnall, 1932:514–515.

Elaphrothrips graveleyi Bagnall, 1934:628–630; Mound & Palmer, 1983:68

Elaphrothrips clarispinis Priesner, 1935a:247–249; Mound & Palmer, 1983:68

Female. Body length 6 mm on slide. Color dark brown; antennae brown, segment III yellow except distal end grayish brown; basal 1/3–1/2 of segment IV and V yellow; legs dark brown, except fore tibiae yellowish brown; mid and hind tibiae distal end yellowish; major setae light.

Head length about 2.7 times of its width

(Fig. 3A), eyes bulged, cheeks with about 8 strong setae; postocular setae I longest on dorsum, postocular setae II long; antennae 8-segmented (Fig. 3G); maxillary stylets in posterior part of head. Prosternal basantra large; forewing with 35–40 duplicated cilia; fore femur with numerous setae, tarsus without tooth (Fig. 3F). Pelta triangular, lateral lobes well connected with center (Fig. 3B); tergites II–VI each with 2 pairs of wing-retaining setae, and surrounded by 2–5 pairs of accessory setae (Fig. 3D); tube length about 0.85 times of head.

Male. Dark brown, similar to female; antennal segments III–V with 2–3 brown stout setae; fore femur not enlarged, with numerous stout setae, a sickle-shaped seta on outer apical margin; fore tarsus with slender tooth (Fig. 3E).

Specimens examined. 1F, *E. falcatus* Karny, Formosa: Shinten, on *Psidium*, 13.vi.1931; 1M, *E. falcatus*, on *Artocarpus*, i.1926; 2F, *E. falcatus*, on *Artocarpus integrifolia*, i.1928. 3F8M, Guanziling (Tainan), dried leaves, 4.v.1999; 5F2M, Wuxi Bridge (Nantou), dried leaves of Mongo, 25.v.1999; 3M, Guanziling (Tainan), Peach, 4.v.1999; 1F3M, Guanziling (Tainan), *Ficus Harlandii* Benth., 4.v.1999; 1F, Wutai (Pingtung), Willow, 9.v.2002; 1M, Wutai (Pingtung), *Areca catechu*, 9.v.2002; 1F, Kending (Pingtung), *Phragmites communis*, 20.xii.2000; 1M, Fenggu (Wufeng, Taichung), Tung oil tree (dead wood), 23.vii.1993; 1M, TARI (Taichung), *Hibiscus mutabilis*, 22.viii.1990; 1M, Laonung (Pingtung), grasses, 22.iv.1992; 1M, Lianhuachi (Nantou), *Macaranga tanarius*, 9.vii.1993.

Distribution. Taiwan, India, Nepal, Burma, Indonesia.

Remark. All specimens in TARI (6 females and 2 males) labeled as *Elaphrothrips falcatus* Karny by Takahashi were identified as *E. spiniceps* by Chen (1982).

Mecynothrips Bagnall (Fig. 4)

Mecynothrips Bagnall, 1908a: 356. Type species: *Mecynothrips wallacei* Bagnall.

Phoxothrips Karny; Haga & Okajima, 1974:375–384.

Female. Large, macropterous; head length more than twice its width, prolonged in front of eyes; ventral surface of eyes no longer than dorsal surface; posterior ocelli very close to eyes; maxillary stylets short, V-shaped, low in head; antennae 8-segmented, segments III and IV with 2 and 4 sense cones, respectively. Prosternal basantra present; metathoracic sternopleural sutures absent; fore tarsus without tooth, forewing with multiple duplicated cilia. Pelta with 2 lateral lobes; abdominal tergite II with 2 pairs of wing-retaining setae, and several pairs of accessory setae; tergites III–V each with 3 pairs of wing-retaining setae and several pairs of accessory setae; tube straight-sided, without conspicuous lateral setae.

Male. Fore femur enlarged, inner side with 1 or 2 teeth; fore tibia often with a distal spur, foretarsal tooth present. Fourteen species were recorded in the world.

Mecynothrips pugilator (Karny) (Figs. 4B–4H)

Phoxothrips pugilator Karny, 1913a: 132–134; Haga & Okajima, 1974:379–382.

Elaphrothrips takahashii Priesner, 1935b:372–373; Mound & Palmer, 1983:70.

Mecynothrips pugilator (Karny); Palmer & Mound, 1978, 207.

Female. Body length 6.4–8.5 mm on slide. Color dark brown; antennal segments dark brown, except bases of III–V and distal end of VI yellow, VII and VIII in lighter brown than I and II; forewings hyaline with apical ends greyish brown; femora and tibiae brown; except distal ends greyish, tarsi yellow.

Head length about 2.5 times its maximum width (Fig. 4B), distinctly prolonged in front of eyes, anterior ocellus situated on this protrusion; antennae 8-segmented (Fig. 4H); maxillary stylets V-shaped, reaching posterior 1/6 of head. Prosternal basantra present (Fig. 4D), notol setae blunt; metathoracic sternopleural sutures absent; forewing with near 50 dupli-

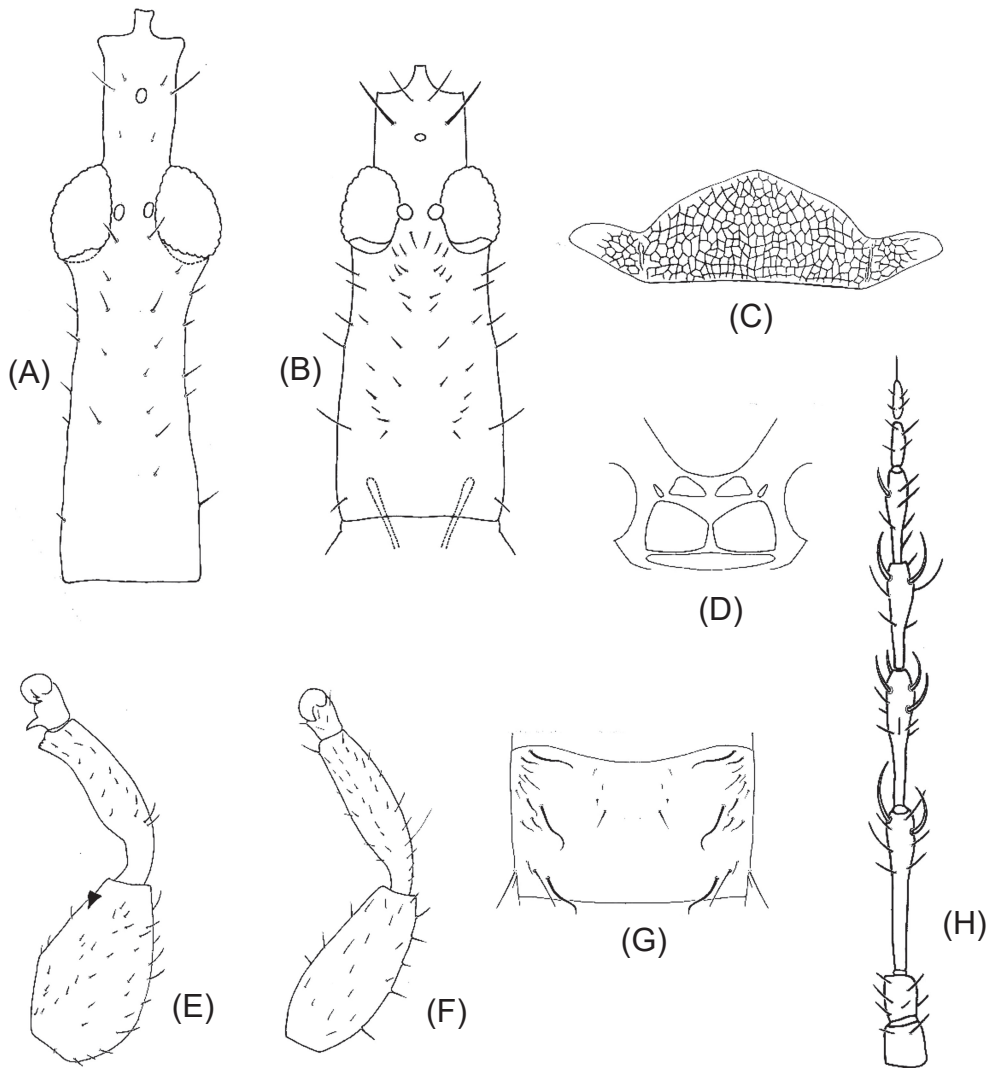


Fig. 4. *Mecynothrips* species: *taiwanus* Okajima: (A) head; *pugilator* Haga & Okajima: (B) head; (C) pelta; (D) prothoracic prepectal plates; (E) male fore leg; (F) female fore leg; (G) tergite III; and (H) antenna.

cated cilia; fore femur always narrower than head; foretarsal tooth absent (Fig. 4F). Lateral lobes of pelta well connected with center (Fig. 4C); tergite II with 2 pairs of wing-retaining setae, and several pairs of short accessory setae; tergites III–V each with 3 pairs of wing-retaining setae and several pairs of short accessory setae; tube straight-sided, without conspicuous lateral setae, about 0.8 times the length of head.

Male. Body length 5.7–11.5 mm, color similar to female, femur enlarged especially

on large males, with a dark spur on inner distal portion, tibia with a distal spur, tarsal tooth present (Fig. 4E).

Distribution. Taiwan, Japan.

Specimens examined. 1M, *M. pugilator* (K.), Tapu (Chiayi Hsien), on Cassava (dead twig), 10.ii.1980, coll. Y. H. Tseng; 1F4M, Wanfeng (Taichung), dead branches, iii.2006; 1F, Cing-jing Farm (Nantou), Banana, 5.vi.1996; 1M, Kending (Pingtung), *Cunninghamia lanceolate*, 13.i.1993.

***Mecynothrips taiwanus* Okajima (Fig. 4A)**

Mecynothrips taiwanus Okajima, 1979:127–130.

Male. Body length 13–17 mm. Color dark brown; antennal segments dark brown, except bases of III–V pale yellow; forewings hyaline with apical ends greyish brown; femora and tibiae brown at base, yellow at distal ends.

Head length about 3.3–4.0 times its maximum width (Fig. 4A), clearly prolonged in front of eyes, anterior ocellus situated on this protrusion; maxillary stylets V-shaped, in posterior part of head. Prosternal basantra present, pronotal setae blunt; metathoracic stenopleural sutures absent; fore femur always narrower than head, foretarsal tooth absent. Lateral lobes of pelta well connected with center; tergite II with 2 pairs of wing-retaining setae, and several pairs of short accessory setae; tergites III–V each with 3 pairs of wing-retaining setae and several pairs of short accessory setae (Fig. 4G); tube straight-sided, without conspicuous lateral setae; shorter than head (with preocular projection), length about 0.8 times its of head.

Female. Unknown.

Distribution. Taiwan.

Remarks. This species is similar to *M. pugilator* in having a hump medially on inner margin of fore femur and seta bearing subapical projection of fore tibia. However, *taiwanus* can be distinguished from the latter by: preocular projection longer; cheeks distinctly constricted behind eyes; eyes larger; pronotal setae shorter; foretarsal tooth curved posteriorly; pronotum slightly projected anterolaterally (Okajima 1979).

Specimen examined: 1 male paratype, lienhuachi (Nantou), dead leaves, 6.v.1977 (Okajima).

***Ophthalthrips* Hood**

Ophthalthrips Hood, 1919:67. Type species: *Ophthalthrips pomeroyi* Hood.

Pyrgothrips Karny, 1924:35; Mound, 1974:89.

Female. Medium to large, macropterous

or brachypterous. Head long, prolonged in front of eyes, ventral side of eyes obviously longer than dorsal side; antennae 8-segmented, segments III and IV with 2 and 4 sense cones, respectively; maxillary stylets V-shaped. Prosternal basantra present, metathoracic stenopleural sutures absent; fore femora normal, foretarsal tooth absent; forewing with duplicated cilia. Pelta triangular; tergites II–VI each with 2 pairs of wing-retaining setae, and several pairs of small accessory setae; tube straight-sided, no conspicuous lateral setae.

Male. Shape similar to female, fore femur not enlarged, foretarsal tooth absent.

Ten species were recorded in the world.

***Ophthalthrips formosanus* (Karny)**

Idolothrips formosanus Karny, 1913b:130–131.

Pyrgothrips formosanus (Karny); Haga, 1975:270.

Elaphrothrips formosanus (Karny); Priesner, 1935a:64–66

Ophthalthrips formosanus (Karny); Mound & Palmer, 1983:71.

Female. Body length 2.4 mm on slide. Black colored; head length about 2.3 times of its width, preocular part short, square; ventral extension of eyes developed, posterolateral corner of eyes not produced; postocular setae long; cheeks somewhat swollen; foretarsal tooth lacking, forewing with 12 duplicated cilia; tube length about 0.8 times of head.

Male. Unknown.

Distribution. Taiwan.

***Ophthalthrips longiceps* (Haga) (Fig. 5)**

Pyrgothrips longiceps Haga, 1975:270–273.

Ophthalthrips longiceps (Haga); Mound & Palmer, 1983:71.

Female. Body length 4.0–4.5 mm on slide. Color dark brown; antennae segments I and II dark brown; III–V yellow, except both ends of III, distal 1/2 of IV, and distal 1/3 of V brown; VI–VIII dark brown; forewings hyaline; margins of fore tibiae yellow.

Head length about 2.5 times its maximum width (Fig. 5A), prolonged in front of

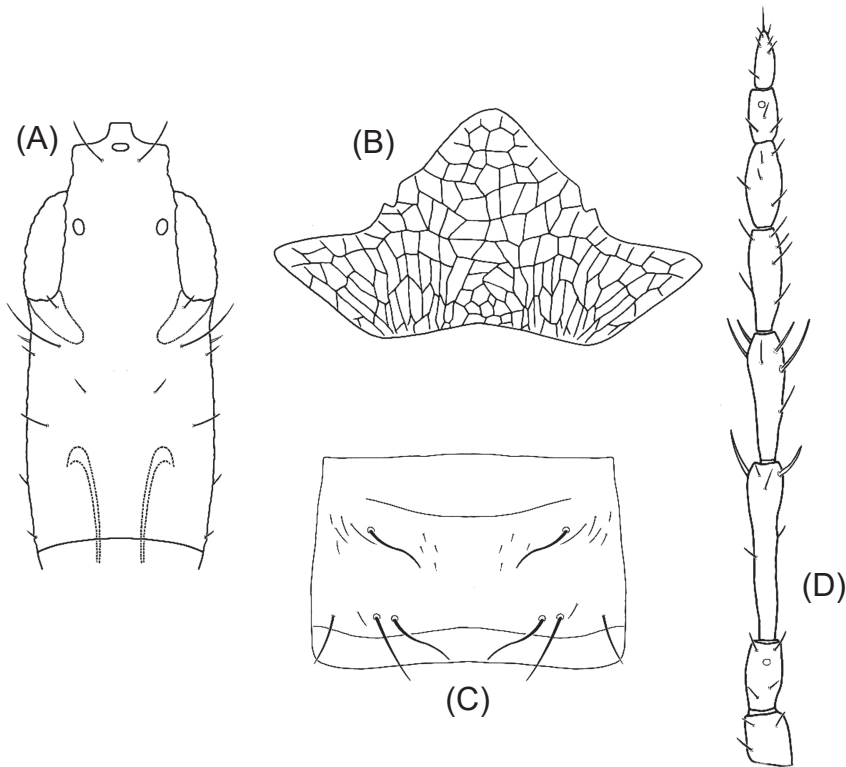


Fig. 5. *Ophthalmothrips longiceps* (Haga) (female): (A) head; (B) pelta; (C) tergite III; and (D) antenna.

eyes; postocelli located between anterior half of eyes; antennae 8-segmented (Fig. 5D); maxillary stylets extend to about 1/3 of head. Pronotal setae sharp or blunt, foretarsal tooth absent; forewing with 13–15 duplicated cilia. Two lateral lobes of pelta well connected with main lobe (Fig. 5B); tergites II–VI each with 2 pairs of wing-retaining setae, and several pairs of small accessory setae (Fig. 5C); tube straight-sided, about 1.5 times as long as head, no conspicuous lateral setae. Ten species were recorded in the world.

Male. Body length 3–4 mm on slide. Color similar to females; intercellular setae on posterolateral of anterior ocellus; foretarsal tooth absent; forewing with 12 duplicated cilia.

Distribution. Taiwan, Japan.

Specimens examined. 1M, *P. longiceps*

Haga, Pali (New Taipei City), *Psychotria rubra*, 7.x.1978; 1M, Houli (Taichung), Grass, 25.xi.1978; 1F2M, NanJan Mt. (Kending, Pingtung), wood, 22.xi.2001; 4F6M, Chishan (Kaohsiung), grasses, 21.x.1992; 1M, Kungziling (Tainan), dead wood, iii.1993.

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台灣寬薊馬亞科 (纓翅目：管尾亞目：管尾薊馬科) 之 分類描述 I 雙毛族

王清玲¹ 陳怡如² 林鳳琪^{3*}

摘要

王清玲、陳怡如、林鳳琪。2018。台灣寬薊馬亞科 (纓翅目：管尾亞目：管尾薊馬科) 之分類描述 I 雙毛族。台灣農業研究 67(4):323–336。

本文記錄與描述台灣寬薊馬亞科 (Idolothripinae) 雙毛族 (Idolothripini) 5 屬 11 種之分類特徵，族內每屬與同屬內之每種均製作檢索表，其中胸叉薊馬 *Dinothrips spinosus* (Schmutz) 為台灣新紀錄屬與種。

關鍵詞：分類、纓翅目、管薊馬科、寬薊馬亞科、台灣。

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* 通訊作者：fclin@tari.gov.tw

¹ 農委會農業試驗所應用動物組前研究員。台灣 台中市。

² 農委會農業試驗所應用動物組助理研究員。台灣 台中市。

³ 農委會農業試驗所應用動物組副研究員。台灣 台中市。