

# First report of *Ophiomyia lantanae* (Froggatt) (Diptera: Agromyzidae) on the Chinese mainland, with a checklist of known species of *Ophiomyia* in China

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**Abstract:** The species *Ophiomyia lantanae* (Froggatt, 1919) was newly recorded in Yunnan Province with figures of characteristics and male genitalia. A key to 24 Chinese species and a checklist with host plants and distributions are presented.

**Key words:** Cyclorrhapha; Opomyzoidea; taxonomy; key

马缨丹蛇潜蝇在中国大陆首报及中国蛇潜蝇属分布名录（双翅目：潜叶蝇科）

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**摘要：**马缨丹蛇潜蝇 *Ophiomyia lantanae* (Froggatt, 1919) 首次在云南报道，对其形态特征和外生殖器特征进行了重新拍照、描述，编制了中国蛇潜蝇属分种检索表，列出了 24 种蛇潜蝇的寄主植物和分布。

**关键词：**环裂亚目；禾蝇总科；分类；检索表

## Introduction

The genus *Ophiomyia* Braschnikov, 1897 (Diptera: Agromyzidae: Agromyzinae) contains more than 370 species worldwide, with 24 occurring in China. They are spread widely across the six zoogeographical regions. Most larvae feed on the surface of soft stems and pupate at the end of mines with the anterior spiracle extending outside of the body. The species *O. coniceps* (Malloch, 1915) causes damage to *Cichorium endivia* L. and *O. simplex* (Loew 1869) causes damage to *Asparagus officinalis* L. A few of larvae feed on leaves: *O. camarae* Spencer 1963 feeds on *Lantana camara* L. and *O. nasuta* (Melander, 1913) feeds on *Taraxacum mongolicum* Hand.-Mazz. A few of species, such as *O. lantanae* (Froggatt, 1919), feed on seeds or cause galls that causes damage to *Lantana camara* L. and *O. tiliae* (Couden, 1908) that bores into the roots of *Boehmeria nivea* (L.).

Compared to other genera of the subfamily Agromyzinae, the genus *Ophiomyia* is distinguished by the following characters: male has vibrissal angle, with a vibrissal fasciculus or a strong vibrissa; most females have vibrissal angle except a few species (sexual dimorphism distinctly exists); the facial keel is narrow or broad, elevated and dividing the

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antennal bases and/or forming a bulbous process and furrow (except for several species of the *Ophiomyia jacintensis* group with a very narrow facial keel, as in certain species of the genus *Melanagromyza* Hendel); the mesonotum is black or brown or occasionally shiny greenish or also with a shiny greenish abdomen in a few of species. The mesonotum has 0+2 dc (except for *O. nasuta*, which has 0+3 dc), the prescutellar setae absent; the halter is black (except for *O. maculata* having knob with white spots); the wing has the costa extending to  $M_{1+2}$  (except for *O. simplex* and *O. conspicua* extending between  $R_{2+3}$  and  $M_{1+2}$ ), the crossvein r-m is beyond middle of discal cell; in the male genitalia, the basiphallus is elongate, U- or V-shaped (except for *O. simplex* becoming O-shaped) and asymmetrical, and the distiphallus is usually asymmetrical (symmetrical in a few species of the *Ophiomyia jacintensis* group). Their biology is as stem-miners (rarely as seeds-feeder, leaf-miners or gall-inducers) (Spencer 1981). The posterior spiracles of the pupae are on the slender stalks (Spencer & Steyskal 1986).

Study of the genus *Ophiomyia* has made slow progress in China and other countries. The main reason is that most species are difficult to find; they are collected when feeding on soft stems. Sasakawa and Fan (1985) made a preliminary list of Chinese Agromyzidae (Diptera) with records of 14 species in the genus *Ophiomyia* based on Sino-Japanese cooperative work on the Agromyzidae. There has been no new information on *Ophiomyia* in China since 2003. In present paper, the species *Ophiomyia lantanae* (Froggatt, 1919) is reported for the first time on the Chinese mainland. A checklist and key are presented to 24 Chinese species.

## Material and methods

General terminology follows McAlpine (1981), Spencer & Steyskal (1986), Cumming & Wood (2009) and Lonsdale (2011). Genitalia preparations were made by removing and macerating the abdomen in hot (10% solution) for 5–10 min, then washing in glacial acetic acid and deionized water. For examination, they were transferred to glycerin. After examination, they were transferred to fresh glycerin and stored in a microvial on the pin below the specimen. The specimens were examined or deposited in the following collections: the Entomological Museum, China Agricultural University (CAU), Xishuangbanna Tropical Botanical Garden, Chinese Academy of Sciences (XTBG, CAS), California State Collection of Arthropods, California Department of Food and Agriculture, Sacramento (CSCA), and National Museum of Natural History, Washington, D. C. (USNM).

The following abbreviations for setae or setulae are used: anepst — anepisternal, acr — acrostichal, dc — dorsocentral, kepst — katepisternal, oc — ocellar, ori — inferior orbital, ors — superior orbital.

All specimens were measured under Nikon 1500 Stereo-microscope and Nikon E200 Microscope, and photos were taken under the Nikon DS-Fi2.

## Taxonomy

A checklist of the known species in the Genus *Ophiomyia* in China

1. *Ophiomyia anguliceps* (Malloch, 1914)

Host plant. Unknown.

Distribution. China (Taiwan); Japan (Ryukyu Islands).

2. *Ophiomyia asparagi* Spencer, 1964  
Host plant. *Asparagus officinalis* L. and *Asparagus* spp. Larvae feed on stems.  
Distribution. China (Hong Kong); Japan; Italy; Spain; Croatia; Slovenia.
3. *Ophiomyia bispina* Gu, Fan & Sasakawa, 1991  
Host plant. Unknown.  
Distribution. China (Zhejiang).
4. *Ophiomyia bivibrissa* Gu, Fan & Sasakawa, 1991  
Host plant. Unknown.  
Distribution. China (Zhejiang).
5. *Ophiomyia centrosematis* (Meijere, 1940)  
Host plant. *Glycine soja* Sterol, *Centrosema pubescens* Benth., *Vernonia cinerea* (L.), *Phaseolus* sp., *Vicia* sp., *Pisium* sp., *Tephrosia* sp. Larvae feed on stems and roots.  
Distribution. China (Hubei, Fujian, Taiwan); Japan; India; Malaysia; Indonesia; Australia; Kenya; Tanzania; Uganda.
6. *Ophiomyia chinensis* Sasakawa, 1988  
Host plant. Unknown.  
Distribution. China (Hubei, Hong Kong).
7. *Ophiomyia cicerivora* Spencer, 1961  
Host plant. *Cicer* sp. Larvae feed on stems.  
Distribution. China (Shandong); Pakistan.
8. *Ophiomyia conspicua* (Spencer, 1961)  
Host plant. *Eclipta alba* and *Sigesbeckia orientalis* (India); *Bidens* sp. (New Guinea).  
Larvae feed on stems.  
Distribution. China (Hong Kong, Taiwan); Sri Lanka; Singapore; India; Malaysia; Philippines; Japan (Ryukyu Islands); Australia; New Guinea; New Caledonia (French); New Hebrides.
9. *Ophiomyia cornuta* (Meijere, 1910)  
Host plant. *Scaevola koenigii* Vahl, *Goodenia* sp. Larvae feed on leaves.  
Distribution. China (Anhui); Indonesia; Malaysia; Palau; Fiji; Australia; Polynesia (French); Hawaii; Kiribati; Tuvalu; Micronesia.
10. *Ophiomyia fici* Spencer & Hill, 1977  
Host plant. *Ficus microcarpa* Linn. Larvae feed on leaves and cause leaf galls.  
Distribution. China (Guangdong, Fujian, Hong Kong).
11. *Ophiomyia imparispina* Sasakawa, 2006  
Host plant. Unknown.  
Distribution. China (Hong Kong).
12. *Ophiomyia kwansonis* Sasakawa, 1961  
Host plant. *Hemerocallis fulva kwanso* Regel. Larvae feed on leaves.  
Distribution. China (Taiwan); Japan; the United States. (Data from Animal and Plant Office of Shandong Bureau. 2012)
13. *Ophiomyia lantanae* (Froggatt, 1919)  
Host plant. *Lantana* spp.  
Distribution. China (Yunnan, Taiwan); the United States; Mexico; Puerto Rico; Cuba; Panama; Honduras; Costa Rica; Trinidad and Tobago; Australia; Hawaii; India; Vietnam;

Singapore; Sri Lanka; Kenya; South Africa.

14. *Ophiomyia maura* (Meigen, 1838)

Host plant. *Aster* sp., *Erigeron* sp., *Solidago* sp., *Eupatorium* sp.

Distribution. China (Zhejiang); Germany; Canada.

15. *Ophiomyia oviformis* Sasakawa & Fan, 1985

Host plant. Unknown.

Distribution. China (Heilongjiang).

16. *Ophiomyia phaseoli* (Tryon, 1895)

Host plant. *Phaseolus* spp., *Glycine max* Merr, *Vigna* spp. Larvae feed on stems and roots.

Distribution. China (Fujian, Taiwan); Israel; Japan (Ryukyu Islands); Burma; Vietnam; India; Nepal; Sri Lanka; Philippines; Malaysia; Thailand; Indonesia; Australia; Fiji; Guam; Melanesia; Micronesia; Hawaii; Hebrides; Papua New Guinea; Burundi; Egypt; Ethiopia; Kenya; Libya; Malawi; Mali; Mauritius; Nigeria; Rwanda; Republic of Senegal; South Africa; Sudan; Tanzania; Uganda; Zaire; Zambia; Zimbabwe.

17. *Ophiomyia pulicaria* (Meigen, 1830)

Host plant. *Taraxacum officinale* Weber, *Lactuca debilis* Maxim, *L. denticulata* (Houtt.), *Helianthus tuberosus* L., *Sonchus oleraceus* L., *Hypochoeris* sp., *Leontodon* sp., *Picris* sp.

Distribution. China (Heilongjiang); Canada; Australia; Britain; France; Germany; Hungary and widespread in Europe.

18. *Ophiomyia ricini* (Meijere, 1922)

Host plant. *Ricinus communis* L. Larvae feed on stems.

Distribution. China (Taiwan); Burma; Indonesia; Philippines; Japan (Ryukyu Islands).

19. *Ophiomyia scaevolana* Shiao & Wu, 1996

Host plant. *Scaevola sericea* Vahl.

Distribution. China (Taiwan).

20. *Ophiomyia setituberosa* Sasakawa, 1972

Host plant. Unknown.

Distribution. China (Taiwan).

21. *Ophiomyia shibatsuji* (Kato, 1961)

Host plant. *Glycine* spp. Larvae feed on roots.

Distribution. China (Heilongjiang, Jilin, Liaoning, Inner Mongolia, Shandong, Hebei); Japan (Hokkaido, Kyushu).

22. *Ophiomyia spinicauda* Sasakawa, 1972

Host plant. Unknown.

Distribution. China (Taiwan).

23. *Ophiomyia vasta* Sasakawa, 2006

Host plant. Unknown.

Distribution. China (Hong Kong).

24. *Ophiomyia vockerothi* Spencer & Steyskal, 1986

Host plant. Unknown.

Distribution. China (Fujian); the United States. (Data from Chen & Wang, 2003)

***Ophiomyia lantanae* (Froggatt, 1919) (Figs. 1–3)**

*Agromyza lantanae* Froggatt, 1919: 665. Type locality: Hawaii (Wahu, Waianae). Holotype in USNM.

*Agromyza longicauda* Curran, 1928: 65.

*Ophiomyia lantanae*: Meijere, 1925: 253. Frick, 1957: 201; 1959: 370. Sasakawa, 1963: 38; Spencer, 1959: 298; 1961: 80; 1973: 358. Spencer & Stegamier, 1973: 60; Singh & Ipe, 1973: 71; Spencer & Steyskal, 1986: 52; Shiao & Wu, 1999: 344.



Figure 1. *Ophiomyia lantanae* (Froggatt, 1919). ♂, holotype. A. Habitus, lateral view; B, C. Head, lateral and anterior view; D. Thorax, dorsal view; E. Abdomen, dorsal view.

**Diagnosis.** Frons with equal distance between 2 ori, ori and ors, but smaller than distance between 2 ors. Facial keel wide and distinctly raised. Gena as long as 1/5 height of eye, truncate on ventral margin. Male vibrissal fasciculus long, narrow basally and curved upward apically, vibrissal angle beyond 60°; female only with a strong vibrissa. Vibrissal fasciculus

long, narrow basally and curved upward apically. Mesonotum dark, with brown pruinosity. Mid tibia with 2 strong posterior seta. Wing with ultimate and penultimate sections of CuA<sub>1</sub> in proportion of 1 : 1.



Figure 2. *Ophiomyia lantanae* (Froggatt, 1919). ♀. A. Habitus, lateral view; B. Head, lateral view; C. Symptoms of *Lantana camara* Linn.

Redescription. Male. Body length 1.6–2.0 mm, wing length 2.1–2.2 mm.

Head (Figs. 1B, C) brown. Frons 1.4 times as long as wide and nearly as wide as eye; 2–3 ori inclinate (1st ori shorter than 2nd and 3rd ori) and 2 ors reclinate, ors longer than ori; equal distance between 2 ori, ori and ors, but smaller than distance between 2 ors; orbital plate moderate shining, narrow, as long as 1/5 width of frons; orbital setulae reclinate in single row; ocellar triangle broad, moderate shining, extending between 3rd ori and 1st ors; oc nearly as long as ors, postocellar setae strong, divergent. Facial keel wide and distinctly raised. Lunule semicircular, brownish gray, 0.1 mm high and 2.2 times wider than long. Gena nearly 1/5 height of eye, truncate on ventral margin. Eye 1.8 times higher than wide, bare. Vibrissal fasciculus long, narrow basally and curved upward apically, vibrissal angle beyond 60°. Antenna black, 1st flagellomere oval, arista brown, bare. Proboscis yellowish gray and palpus

black.

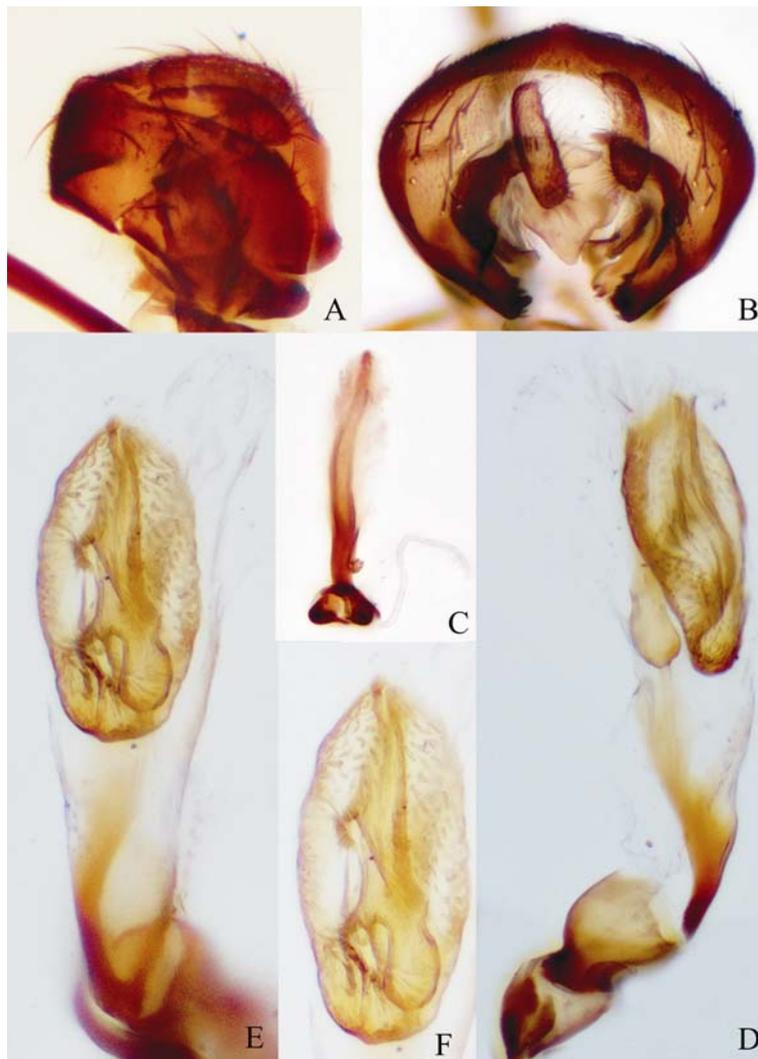


Figure 3. *Ophiomyia lantanae* (Froggatt, 1919). Male genitalia. A, B. Epandrium, lateral and dorsal view; C. Ejaculatory apodeme, dorsal view; D, E. Phallus, ventral and lateral view; F. Enlargement of distiphallus, ventral view.

Thorax (Fig. 1D) brown. Mesonotum dark, with brown pruinosity; 0+2 dc, acr in irregular 8 rows. 1 strong anepst with 2 weak setulae and 1 strong kepst with 1 weak setula. Calypter gray, margin and fringe brownish black. Mid tibia with 2 strong posterior seta. Wing with costa extending to  $M_{1+2}$ ; costa with 2nd (between  $R_1$  and  $R_{2+3}$ ), 3rd (between  $R_{2+3}$  and  $R_{4+5}$ ) and 4th (between  $R_{4+5}$  and  $M_{1+2}$ ) sections in proportion of 5.5 : 5.5 : 1; r-m distinctly beyond middle of discal cell; ultimate and penultimate sections of  $M_{1+2}$  in proportion of 2 : 1; ultimate and penultimate sections of  $CuA_1$  in proportion of 1 : 1. Halter brown.



Figure 4. *Lantana camara* Linn. Host plant. A. Habitus; B. Flower head; C. Fruit.

Abdomen (Fig. 1E) brown, moderate shining. Male genitalia (Fig. 3). Epandrium broad with strong setae near median section and posterior margin; surstylus with a row of tooth-like processes (only median one bigger) and sparse short setulae on apical margin; hypandrium Y-shaped; basiphallus long, asymmetrical with membranous section extending to apico-ventral side of distiphallus; base of mesophallus not extending out of basal margin of distiphallus; distiphallus with many tiny processes scattered unevenly and slender apical tube-like process at middle.

Female. Body length 1.7–2.0 mm, wing length 2.1–2.2 mm. Only with a strong vibrissa (Figs. 2A, B). Other characters same as male.

**Specimens examined. Type material.** Type male (USNM, No. 25202), **USA**, Hawaiian Islands, Oahu, Leg. O. H. Swezey, ex: *Lantana berries*, 24-XI-1921, *Agromyza lantanae* Ald. [last label].

**Other specimens.** 1♂ (CSCA, 43L20–46), USA, California, Orange Co., 33°43'02.90"N 117°49'52.11"W (33.7175, -117.8311), 13-XII-1943, ex. *Lantana* (in stem base of flower head), D. H. Byers; 2♀ (CSCA, 43L20-46), California, Orange Co., Yorba Linda, 33°53'19.05"N 117°48'47.20"W (33.8886, -117.8131), 12-XII-1943, ex. *Lantana* (in stem base of flower head), D. H. Byers; 1♂ (CSCA), California, Implement. Co., Winterhaven, 32°44'22.17"N 114°38'04.83"W (32.7395, -114.6347), ex. Citrus leaf (host plant), S. E. Dewhirst; 16♂12♀ (IMAU), China, Yunnan, Menglu, Xishuangbanna Tropical Botanical Garden, Chinese Academy of Sciences, host plant *Lantana camara* Linn. (pupae in seed bulbs), 20-III-2013, Lai HAN.

Host plant. *Lantana* spp.

Distribution. China (Yunnan, Taiwan); USA (California, Texas, Florida); Mexico; Puerto Rico; Cuba; Honduras; Costa Rica; Panama; Trinidad; Australia; Hawaii; India; Kenya; South Africa.

#### A key to known species in the genus *Ophiomyia* in China

1. Calypter and fringe white..... 2
- Calypter white or grayish white, fringe dark..... 3
2. Wing with ultimate and penultimate sections of CuA<sub>1</sub> in proportion of 1 : 1.7; male genitalia: distiphallus with a few tooth-like processes, but no long setulae (Spencer, 1990: Fig. 877)..... *O. cornuta* (Meijere)
- Wing with ultimate and penultimate sections of CuA<sub>1</sub> in proportion of 1 : 1.5; male genitalia: distiphallus with many short tooth-like processes and long setulae (Shiao & Wu, 1996: Figs. 6, 7).....  
..... *O. scaevolana* Shiao & Wu
3. Wing with costa extending between R<sub>4+5</sub> and M<sub>1+2</sub>, r-m beyond middle of discal cell, but not extending to apical 1/3; anterior margin of gena not extending forward, no vibrissal angle; male genitalia: distiphallus with many short tooth-like processes (Shiao & Wu, 1999: Figs. 43, 44)..... *O. conspicua* (Spencer)
- Wing with costa extending to M<sub>1+2</sub>, r-m at apical 1/3 or 1/4; anterior margin of gena extending forwards and having vibrissal angle, only a few species without vibrissal angle; male genitalia: distiphallus not as above.....4
4. Facial keel narrow and string-like, almost not raised between base of antennae, if slightly raised, median section of facial keel not becoming a bulbous process..... 5
- Facial keel broad and spindle-shaped, median section raised with a bulbous process..... 15
5. Ocellar triangle long, at least extending between 1st ori and 2nd ori..... 6
- Ocellar triangle short, at most extending between 2nd ori and 1st ors..... 7
6. Ocellar triangle extending to dorsal margin of lunule; male vibrissal angle about 70° with vibrissal fasciculus; gena about 1/5 height of eye; male genitalia: basal half of distiphallus with a pair of lateral hairy processes, a tube-like inner process at apex; basal section of mesophallus slender in lateral view; sperm pump broad (Sasakawa, 1972: Figs. 12, 13)..... *O. setituberosa* Sasakawa
- Ocellar triangle extending between 1st ori and 2nd ori; male only with a vibrissa; gena about 1/7 height of eye; male genitalia: distiphallus without lateral hairy processes, blunt apically without tube-like inner processes; male genitalia: basal section of mesophallus broad in lateral view; sperm bump slender (Spencer 1973: Figs. 50, 51)..... *O. phaseoli* (Tryon)
7. Gena about 1/12 height of eye (Spencer, 1973: 107); mid tibia with two posterior setae (Meijere 1922).....  
..... *O. ricini* (Meijere)
- Gena about 1/4–1/7 height of eye; mid tibia with a posterior seta or absent..... 8
8. Male with vibrissal angle..... 9
- Male without vibrissal angle..... 10

9. Gena about 1/6 height of eye; ultimate and penultimate sections of CuA<sub>1</sub> in same length; male genitalia: distiphallus with a pair of short claviform processes in lateral view, narrow apically (Spencer, 1964: Figs. 9, 10)..... *O. asparagi* Spencer
- Gena about 1/4 height of eye; ultimate section of CuA<sub>1</sub> shorter than penultimate section; male genitalia: distiphallus without claviform processes at middle, broad apically (Spencer, 1973: Fig. 54)..... *O. cicerivora* Spencer
10. Male with two long vibrissae; male genitalia: surstylus with 23 tooth-like apical processes in 3–4 rows; distiphallus rounded apically in lateral view, sperm bump broad at apical half (Gu *et al.*, 1991: Fig. 4)..... *O. bivibrissa* Gu, Fan & Sasakawa
- Male with a vibrissa; male genitalia: surstylus, distiphallus and sperm bump not as above..... 11
11. Wing with r-m at apical 1/4–1/3 of discal cell; male genitalia: distiphallus symmetrical..... 12
- Wing with r-m beyond middle or at apical 1/3 of discal cell; male genitalia: distiphallus asymmetrical..... 13
12. Male genitalia: basiphallus consisting of two sclerites in different length connected to each other by membranous section, becoming a circle in ventral view; distiphallus longer than wide, with median concavity at apex (Spencer & Hill, 1977: Figs. 1, 2)..... *O. fici* Spencer & Hill
- Male genitalia: basiphallus broad and irregular in shape; distiphallus wider than long, transversely broad at middle (Spencer, 1973: Figs. 50, 51)..... *O. centrosematis* (Meijere)
13. Mesonotum with acr in 8 rows; male genitalia: distiphallus with a distinct basal sclerite projecting outside and extending upward, narrow apically in lateral view (Spencer, 1973: Fig. 67)..... *O. shibatsuji* (Kato)
- Mesonotum with acr in 6 rows; male genitalia: distiphallus without extra basal sclerite..... 14
14. Lunule with median furrow near base of antennae; wing with ultimate section of CuA<sub>1</sub> slightly longer than half of penultimate section; male genitalia: distiphallus slender with a pair of long lobates apically in ventral view (Sasakawa, 2006: Fig. 12)..... *O. vasta* Sasakawa
- Lunule without median furrow near base of antennae; wing with ultimate section of CuA<sub>1</sub> slightly shorter than penultimate section; male genitalia: distiphallus short and broad, with tube-like median process at apex (Spencer, 1964: Fig. 72)..... *O. pulicaria* (Meigen)
15. Facial keel with median furrow; both male and female only with a vibrissa; male genitalia: basiphallus with an acute subbasal process in lateral view; distiphallus with an acute subapical process on inner membranous section, furcated apically (Sasakawa, 1972: Fig. 15)..... *O. spinicauda* Sasakawa
- Facial keel without median furrow; at least male with vibrissal angle and fasciculus, female variable; male genitalia: basiphallus and distiphallus not as above..... 16
16. Mesonotum with acr in 6 rows..... 17
- Mesonotum with acr in 8 rows..... 19
17. Orbital plate with orbital setulae in 2–3 rows near eye's margin; vibrissal angle about 80°; male genitalia: surstylus with 19 bud-like apical spines; distiphallus oval with tiny spines (Sasakawa & Fan, 1985: Figs. 12–15)..... *O. oviformis* Sasakawa & Fan
- Orbital plate with orbital setulae in a row near eye's margin; vibrissal angle less than 80°; male genitalia: surstylus and distiphallus not as above..... 18
18. Male vibrissal angle about 70°; gena about 1/5 height of eye; wing with r-m at apical 1/3 of discal cell, ultimate section of CuA<sub>1</sub> about 5/6 length of penultimate section; male genitalia: surstylus with two large tooth-like processes and many small tooth-like processes; top margin of pregonite with tiny spines; distiphallus membranous except sclerotized at base, but slender tube-like apically (Gu *et al.*, 1991: Fig. 3)..... *O. bispina* Gu, Fan & Sasakawa
- Male vibrissal angle about 45°; gena about 1/3 height of eye; wing with r-m beyond middle of discal cell, ultimate section of CuA<sub>1</sub> slightly shorter than penultimate section; male genitalia: surstylus with small tooth-like processes; top margin of pregonite without tiny spines; distiphallus sclerotized, with basal

- section wider than apical section in ventral view (Spencer & Steyskal, 1986: Figs. 263, 264).....  
 .....*O. vockerothi* Spencer
19. Mid tibia with two posterior setae..... 20  
 -. Mid tibia with one posterior setae or absent..... 21
20. Gena about 1/8 height of eye (Malloch 1914); acr rows of mesonotum extending to post-sutural 1st dc; male genitalia unknown..... *O. anguliceps* (Malloch)  
 -. Gena about 1/5 height of eye; acr rows of mesonotum extending to post-sutural 2nd dc, and acr reducing to 3–4 in a row; male genitalia: distiphallus with many small processes scattered unevenly and slender apical tube at middle (Fig. 3)..... *O. lantanae* (Froggatt)
21. Male vibrissal angle about 45° and vibrissa short and curved upward strongly; wing with ultimate section of CuA<sub>1</sub> about 2/3 length of penultimate section; male genitalia: distiphallus surrounded by broad membrane, truncate apically in ventral view..... *O. chinensis* Sasakawa  
 -. Male vibrissal angle about 80° and vibrissa long and slightly curved upward; wing and male genitalia not as above..... 22
22. Facial keel with middle furrow; gena about 1/6–1/8 height of eye; male genitalia: distiphallus with tube-like apical process and broad membrane in lateral view (Sasakawa, 1961: Fig. 38).....  
 .....*O. maura* (Meigen)  
 -. Facial keel without furrow; gena about 1/4–1/5 height of eye; male genitalia not as above..... 23
23. Male with vibrissal angle and fasciculus, female only with a vibrissa, no vibrissal angle; male genitalia: surstylus with 16–22 small tooth-like apical processes; distiphallus without tube-like process at apex, but with inner spines at middle (Sasakawa, 1961: Fig. 37)..... *O. kwansonis* Sasakawa  
 -. Both male and female with vibrissal angle and fasciculus; male genitalia: surstylus with a big tooth-like process and 6–7 small tooth-like processes at apical corner; distiphallus with tube-like process, basal half and membrane with small spines (Sasakawa, 2006: Figs. 8–10)..... *O. imparispina* Sasakawa

## Discussion

The host plant *Lantana camara* Linn. (Fig. 4) originated from the Neotropical region such as Brazil, Peru and Uruguay. It was introduced into Taiwan at the end of Ming Dynasty. It is cultivated as ornamental plants in several provinces such as Guangdong, Hainan, Fujian, Guangxi, Taiwan, and has escaped into the field. It is also an invasive species due to its high reproduction. The species *Ophiomyia lantanae* was used to control invasion of the plant *Lantana camara* (Spencer 1961; Spencer & Steyskal 1986). Xiao *et al.* (1999) proposed its distribution in Taiwan only according to literature, without finding of the specimens. We collected specimens of *Ophiomyia lantanae* from Yunnan Province for the first time and two parasitoids were reared from the abdomen of the species.

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