

A review of the genus *Napomyza* Westwood in China (Diptera: Agromyzidae)

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Abstract: Six species including two new species of the genus *Napomyza* Westwood are recognized: *N. annulipes* (Meigen), *N. hirticornis* (Hendel), *N. lateralis* (Fallen), *N. paratripolii* sp. nov., *N. plumea* Spencer and *N. xizangensis* sp. nov. Descriptions and illustrations of new species are given; diagnoses and a key to the known Chinese species are also provided.

Key words: Diptera; Agromyzidae; *Napomyza* Westwood; new species; China

The genus *Napomyza* was erected by Westwood (1840) as a subgenus for those species having the essential characteristics of *Phytomyza* but having in addition a second crossvein. Hendel (1920) gave *Napomyza* full generic status but later (1931) again considered it as a subgenus of *Phytomyza*. Frick (1952) treated *Napomyza* as an independent genus. Spencer (1966) accepted *Napomyza* as a distinct genus based on a result of his studies of the male genitalia of 46 specimens in 20 species, and clarified the European species. Up to now, a total of about 50 species of the genus have been reported worldwide, mainly occurring in the Nearctic and Palaearctic Regions. However, *Napomyza* is largely absent from the Southern Hemisphere, only several species have been recorded in the Afrotropical Region.

In this paper, six Chinese species of the genus are recognized, of which two species are described as new to science. Morphological terminology generally follows Spencer (1973) and Spencer & Steyskal (1986). Wing length was measured in millimeters. Type specimens are deposited in the Institute of Zoology, Chinese Academy of Sciences (IZCAS).

Napomyza Westwood, 1840

Napomyza Westwood, 1840: 192. Type species: *Phytomyza elegans* Meigen, 1830 (= *P. festiva* Meigen, 1830)

Dineura Liroy, 1864: 1315. Type species: *Phytomyza festiva* Meigen.

Diagnosis: This genus is very closely related to *Phytomyza* Fallen because of the orbital setulae proclinate, costa extending only to vein R_{4+5} ; but is differentiated from the latter by the presence of a second crossvein (outer crossvein), and the discal cell being small. Other three general characteristics of *Napomyza* are the yellow, projecting frons; the short second costal section in the wing; normally ash-gray mesonotum and generally gray scutellum. In addition, in the male genitalia the distal section of the aedeagus is usually bifid.

Remarks: Typical *Napomyza* species feed and pupate internally in stems, root or flowerheads. Several species are exclusively leaf miners in South Africa, Australia and New Zealand. Larvae generally feed on Magnoliaceae, Hamamelidaceae, Rosaceae, Compositae and Liliaceae (Spencer, 1990).

Key to Chinese species of *Napomyza* Westwood

1. Gena at most 0.5 times height of eye; squamal fringe dark, brown to black 2
Gena deep, equal in height to eye; squamal fringe pale
..... *N. annulipes* (Meigen)
2. Third antennal segment distinctly pubescent 3
Third antennal segment entirely bare, at most with fringe of very short hairs 4

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3. Wing with second costal section short, either equal in length to fourth or slightly longer *N. plumea* Spencer
Wing with second costal section long, more than twice length of fourth costal section *N. hirticornis* (Hendel)
4. Three lower orbital bristles *N. paratripolii* sp. nov.
Two lower orbital bristles 5
5. Abdomen largely yellow; wing length 3.0 mm in female
..... *N. lateralis* (Fallen)
Abdomen largely brownish black; wing length 4.0 mm in female
..... *N. xizangensis* sp. nov.

Napomyza annulipes (Meigen, 1830)

Phytomyza annulipes Meigen, 1830: 190.

Napomyza annulipes (Meigen): Hendel, 1920: 149; Spencer, 1966: 36.

Phytomyza (*Napomyza*) *annulipes* Meigen: Hendel, 1932: 307.

Diagnosis: This species is differentiated from other known species of *Napomyza* by having squamal fringe pale; gena unusually deep, equal in height to eye.

Material examined: 1 ♂, 1 ♀, China: Tomortei, Nei Mongol, 29. V. 1971; 1 ♀, same locality, 2. VI. 1971 (IZCAS).

Biology: It has been reported that larvae form root galls on *Artemisia campestris* L. and *A. scoparia* Waldst. & Kit. in Europe (Spencer, 1966).

Distribution: China (Nei Mongol); Japan (Hokkaido), Europe.

Napomyza hirticornis (Hendel, 1932)

Phytomyza (*Napomyza*) *hirticornis* Hendel, 1932: 315.

Napomyza hirticornis (Hendel): Spencer, 1966: 37.

Diagnosis: This species is very similar to *N. plumea* Hendel in having a long, whitish pubescence on the third antennal segment, but differs from the latter primarily in the wing having a long second costal section that is more than twice the length of the fourth.

Biology: It has been bred on the stems of *Jasione montana* L. in Denmark (Spencer, 1966).

Material examined: 1 ♀, China: Qinghe, Xinjiang, 13. VIII. 1956, YANG Wei-Yi (IZCAS).

Distribution: China (Xinjiang); Europe.

Napomyza lateralis (Fallen, 1823)

Phytomyza lateralis Fallen, 1823: 3.

Napomyza lateralis (Fallen): Hendel, 1920: 149; Spencer, 1966: 31.

Phytomyza (*Napomyza*) *lateralis* Fallen: Hendel, 1932: 315.

Diagnosis: This species can be distinguished by its relatively small size, wing length 2.5 mm in male and 3.0 mm in female; frons twice width of eye, with only 2 pairs of lower orbital bristles; gena half height of eye; the third antennal segment elongate, bare; wing with second crossvein normally in direct continuation of first; squamal fringe brown; and by the characteristic curvature of the aedeagus.

Material examined: 1 ♂, 1 ♀, China: Tomortei, Nei Mongol, 1 - 2. V. 1971; 2 ♀ ♀, China: Urumqi, Xinjiang, V - VIII. 1956 - 1958; 1 ♂, China: Chongan, Fujian, 380 - 650 m, 24. V. 1960, MA Cheng-Li; 1 ♀, China: Fenyi, Yunnan, 2 000 m, 1. VI. 1955 (IZCAS). 1 ♂, 1 ♀, Germany: Kunnersdorf, bei Gorlitz, 5 - 24. V. 1954, Hering (IZCAS).

Biology: It has been bred from *Anthemis* sp., *Bidens cernuus* L., *Calendula* spp., *Carduus pycnocephalus* L., *Centaurea solstitialis* L., *Helichrysum arenarium* (L.), *Inula britannica* L., *Lactuca* sp., *Linum usitatissimum* L., *Matricaria* spp. and *Silybum marianum* (L.) in Europe (Spencer, 1966).

Distribution: China (Nei Mongol, Xinjiang, Fujian, Yunnan); Europe.

Napomyza paratripolii sp. nov. (Figs. 1, 5)

Head: Frons reddish brown, 2.7 times width of eye, strongly projecting above eye in profile (Fig. 1); orbits yellow, about 0.25 times width of frons; 2 pairs of reclinate upper orbital bristles and 3 pairs of incurved lower orbital bristles; orbital setulae numerous, proclinate. Antennae, ocellar triangle and eye brown; face and genae entirely yellow. Gena deep at rear, 0.5 times height of eye, cheeks forming broad ring below eye, about 2/3 height of gena. Third antennal segment round.

Thorax: Scutum and scutellum brownish black except for center of scutellum which is slightly pale. Pleura largely brownish black, mesopleura with yellow area along upper, lower and hind margins. Halteres yellow. Squamae yellow, fringe brownish black. Dorsocentral

bristles 3 + 1, acrostichals in 2 rows and 2 pairs of scutellar bristles. Legs entirely brownish black, but all knees yellow. Wing length 4.2 mm in female; costa extending to vein R_{4+5} ; vein M_{1+2} close to the tip of wing; discal cell small, last section of M_{3+4} 6 times length of penultimate; first crossvein well beyond mid-point of discal cell; costa ratio 32:8:10 (Fig. 5).

Abdomen: Predominantly brownish black with lateral and hind margins of tergites narrowly yellow.

Male: Unknown.

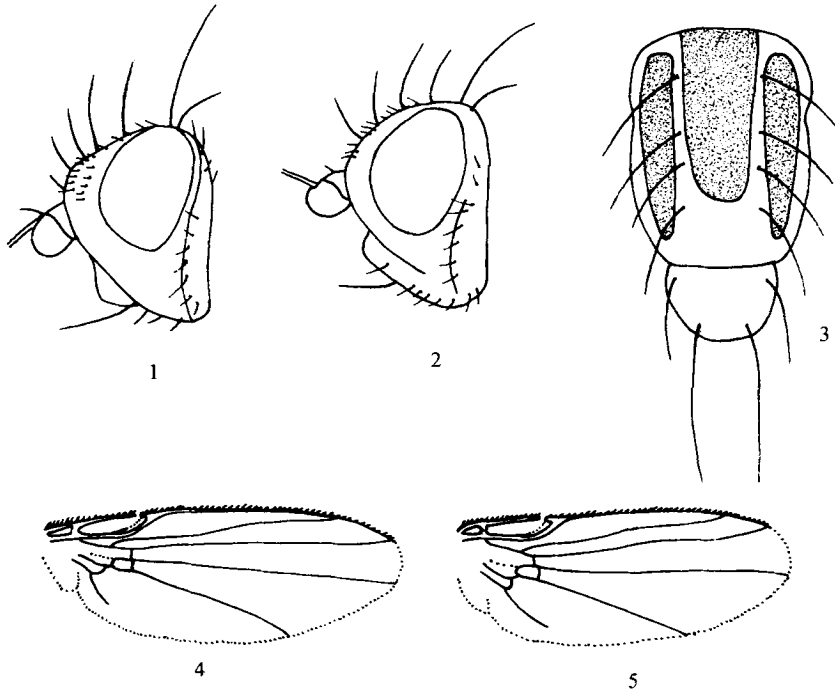
Etymology: The specific epithet combines the Greek word *para* (= beside or near) with *tripolii*, and refers to the close relationship of this new species with

N. tripolii.

Material examined: Holotype ♀, China: Zayagutang, Xizang, 7. VII. 1976, collected by HAN Yin-Heng (IZCAS).

Distribution: China (Xizang).

Remarks: This species appears to be related to *N. tripolii* Spencer from England in having 3 pairs of lower orbital bristles, frons broad, gena half height of eye; differing primarily by the wing with the fourth costal section very short, costa ratio 32:8:10; rather than the fourth costal section unusually long, costa ratio 38:14:33.



Figs. 1–5 Head, thorax and wing of *Napomyza* spp.

1–2. Head profile: 1. *Napomyza paratripolii* sp. nov.; 2. *N. xizangensis* sp. nov.

3. Thorax in dorsal view, *N. xizangensis* sp. nov. 4–5. Wing: 4. *N. xizangensis* sp. nov.; 5. *N. paratripolii* sp. nov.

Napomyza plumea Spencer, 1969

Napomyza plumea Spencer, 1969: 217.

Diagnosis: This species is characterized by the third antennal segment small but with distinct pubescence; gena deep at rear, up to 1/3 height of eye; wing length from 2.5–3.0 mm, second costal section short, equal in length to or slightly longer than the fourth; and the aedeagus with distinctive distiphallus, in the form of a dark, elongated cylindrical processes.

Material examined: 4 ♂♂, 1 ♀, China:

Songgeke, Xinjiang, 1–9. VIII. 1955, collected by YANG Wei-Yi (IZCAS).

Biology: Larvae feeding and pupating in stem of *Achillea* spp.

Distribution: China (Xinjiang); Europe, North America.

Napomyza xizangensis sp. nov. (Figs. 2, 3, 4)

Head: Entirely brownish yellow except the third antennal segment brownish black. Frons broad, 2.6

times width of eye, strongly projecting above eye in profile (Fig. 2); 2 pairs of lower orbital bristles, reclinate and incurved (upper orbital bristles were broken); orbital setulae numerous, proclinate. Gena deep at rear, half height of eye, cheeks forming broad ring below eye, about 0.5 times height of gena. Third antennal segment round, slightly longer than wide.

Thorax: Scutum yellow in ground color, with 3 broad, longitudinal brownish black bands, middle one broad, the others narrow (Fig. 3). Scutellum brownish yellow. Pleura largely brownish yellow, but the lower 3/4 of sternopleura brownish black. Halteres yellow. Squamae yellow, fringe brownish black. Dorsocentral bristles 3 + 1; acrostichals in 2 rows and 2 pairs of scutellar bristles. Wing length 4.0 mm in female; costa extending to vein R_{4+5} , vein M_{1+2} close to the tip of wing; discal cell small, second crossvein slightly beyond the first; costa ratio 39:10:9.5 (Fig. 4). Legs largely brownish yellow, tibiae and tarsi brown to brownish black.

Abdomen: Predominantly brownish black, tergites narrowly yellow in hind-margins.

Male: Unknown.

Material examined: Holotype ♀, 52 Daoban, Changdu, Xizang, 9. VII. 1976, collected by HAN Yin-Heng (IZCAS).

Etymology: This species is named for the type locality.

Distribution: China (Xizang).

Remarks: This species is differentiated from all other species of the genus by the distinctive thoracic pattern: scutum yellow, with 3 longitudinal brownish

black bands; frons broad, 2.6 times width of eye; cheeks forming broad ring below eye; wing with second crossvein situated slightly beyond the first.

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References

- Papp L, 1984. Family Agromyzidae. In: Soos A, Papp L eds. Catalogue of Palaearctic Diptera. Vol. 9. Budapest. 263 – 343.
- Sasakawa M, 1961. A study of the Japanese Agromyzidae (Diptera). *Pacific Insects*, 3 (2 – 3): 307 – 472.
- Sasakawa M, 1986. Chinese Agromyzidae (Diptera) in Institute of Zoology, Academia Sinica. *Entomotaxonomia*, 8 (3): 163 – 171.
- Sasakawa M, Fan Z D, 1986. Preliminary list of Chinese Agromyzidae (Diptera) with descriptions of four new species. *Contr. Shanghai Inst. Entomol.*, 5: 275 – 294.
- Spencer K A, 1966. A clarification of the genus *Napomyza* Westwood (Diptera: Agromyzidae). *Proc. R. Ent. Soc. Lond*, 35 (3 – 4): 29 – 40.
- Spencer K A, 1973. Agromyzidae (Diptera) of Economic Importance. Series Ent. 9. Dr. W. Junk. The Hague. 1 – 405.
- Spencer K A, 1976. The Agromyzidae (Diptera) of Fennoscandia and Denmark. *Fauna Ent. Scand.* Vol. 5, Part 1: 1 – 304; Part 2: 305 – 606.
- Spencer K A, Steyskal G C, 1986. Manual of the Agromyzidae (Diptera) of the United States. U. S. Dep. Agric. Handbook, No. 638. 1 – 478.
- Spencer K A, 1990. Host Specialization in the World Agromyzidae (Diptera). Kluwer Academic Publishers. 1 – 444.

中国萝潜蝇属分类研究

(双翅目: 潜蝇科)

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摘要: 研究了我国萝潜蝇属 *Napomyza* Westwood, 确认该属在我国现知下列 6 种: 环萝潜蝇 *Napomyza annulipes* (Meigen), 角萝潜蝇 *N. hirticornis* (Hendel), 菊茎萝潜蝇 *N. lateralis* (Fallen), 拟土萝潜蝇 *N. paratripolii* sp. nov., 毛萝潜蝇 *N. plumea* Spencer 和西藏萝潜蝇 *N. xizangensis* sp. nov.。除描述二新种并附特征图外, 还提供中国已知种类的鉴别特征和分种检索表。

关键词: 双翅目; 潜蝇科; 萝潜蝇属; 新种; 中国

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