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# Notes on fungus gnats of the subfamily Mycomyinae and their geographical distribution in China

(Diptera: Mycetophilidae)

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**Abstract:** Species of the subfamily Mycomyinae from China are reviewed in the present paper. Totally 68 species belonging to 3 genera are listed. Two species are reported for the first time from China. Keys to known Chinese genera and species are given, respectively. The geographical distribution, fauna of the subfamily and its origin are also preliminarily discussed. 1 table, 29 references

**Key words:** Mycetophilidae; Mycomyinae; geographical distribution

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Mycomyinae is one of the most important pest groups of macrofungi. Larvae feed on fungus tissues, spores and so on, and adults spread miscellaneous microbes, acarids and nematodes, which seriously influence the quality and quantity of edible fungi. More than 400 known species belonging to 10 genera have been described in the world<sup>[1,2]</sup>. China is abundant in species of Mycomyinae, although the study of their taxonomy began quite late. Before 1980s, only 2 northeastern China species viz. *Neoempheria ferruginea* (Brunetti) and *N. omata* Okada were recorded by Okada (1938)<sup>[3]</sup>. In the last decade, the taxonomy of the subfamily has made great progress, because of the rapid development in cultivation of the edible fungi in China<sup>[4]</sup>. In this paper, 68 species under 3 genera of the subfamily from China are reported, including 2 newly recorded species (indicated with asterisk in the text). Keys to known Chinese genera and species are given, respectively. The geographical distribution, fauna of the subfamily and its origin are also discussed.

Mycomyinae diagnosis: Ocelli 2, placed close together. Fine tibial setae arranged in regular longitudinal rows. Empodia absent. Wings without macrotrichia on membrane. Sc reaching at least base of R<sub>5</sub>. R<sub>1</sub> long, several times as long as r-m, which is oblique.

## 1 Key to genera of Mycomyinae from China

1 Costa ending rather abruptly at the tip of R<sub>5</sub>, which usually reaches the extreme tip of the wing; eyes slightly

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Biography: WU Hong (1960-), male, born in Dongyang of Zhejiang, professor, Ph. D., specializing in systematic entomology and control of harmful living things in forests.

- emarginate above antennae ..... *Mycomya* Rondani
- Coxa usually continued at least a short distance beyond the tip of R<sub>5</sub>, which does not quite reach the wing-tip; eyes not or scarcely emarginate ..... 2
- 2 Wings usually with conspicuous markings; usually a more or less distinct, often vein-like fold between R<sub>5</sub> and M<sub>1+2</sub>, R<sub>4</sub> present ..... *Necoempheria* O. -S.
- Wings without conspicuous markings; no fold between R<sub>5</sub> and M<sub>1+2</sub>, R<sub>4</sub> absent ..... *Vecella* Wu et Yang

## 2 Keys to species of these genera

### 2 1 *Mycomya* Rondani, 1856

Key to species of the genus *Mycomya* from China<sup>[5-21]</sup>

- 1 Coxa 2 with a spur ..... 2
- Coxa 2 without a spur ..... 15
- 2 Abdominal tergites entirely dark or light, or dark with paler posterior margins; abdominal tergite 8 with setae; tergite 9 without such structures (Subg. *Mycomya*) ..... 3
- Abdominal tergite 8 bare; tergite 9 with a fork-like medial structure and a specialized inner structure including a pair of strong dark spurs (Subg. *Calomycomya*) ..... 14
- 3 Tergite 9 without distinct lateral appendages ..... *M. shennongana* Yang et Wu  
Distribution: Hubei of China.
- Tergite 9 with distinct lateral appendages ..... 4
- 4 Processus divided into 2 entirely separate long narrow cones; tegal lateral appendages bending towards each other, with many long setae, partially hiding processus ..... *M. danielae* Matile  
Distribution: Hebei and Shanxi of China; East of Siberia, Europe, North America.
- Processus different; tegal lateral appendages different ..... 5
- 5 Processus long, slender, about 4 times of more as long as wide ..... 6
- Processus variable in shape ..... 8
- 6 In front of processus two groups of setae on prominences ..... *M. occultans* (Winnertz)  
Distribution: Shanxi, Henan, Zhejiang and Guizhou of China; Japan, Russia, India, Europe.
- Base of processus usually bare ..... 7
- 7 Apical of sternal lateral appendages rounded ..... *M. guizhouana* Yang et Wu  
Distribution: Zhejiang, Fujian, Guangxi and Guizhou of China.
- Apical of sternal lateral appendages tapered ..... *M. lateriranata* Yang et Wu  
Distribution: Gansu and Henan of China.
- 8 Sternal lateral appendages long and slender ..... 9
- Sternal lateral appendages short or missing ..... 10
- 9 Apical of sternal lateral appendages very broad; apical of processus rounded ... *M. guandiana* Wu et Yang  
Distribution: Shanxi of China.
- Apical of sternal lateral appendages slender, processus retuse ..... *M. longdeana* Wu et Yang  
Distribution: Ningxia of China.
- 10 Base part of processus narrower than its subapical, at least 2 times as long as lateral appendages .....  
..... *M. heydeni* Plassmann  
Distribution: Hebei of China; Russia, Mongolia, Kazakhstan, Europe.
- Base of processus not distinctly narrower than its subapical, base part usually wide and apical tapering, less than 2 times as long as lateral appendages ..... 11
- 11 Processus wide, with blunt wide apex ..... *M. changbaiana* Yang et Wu

- Distribution: Jilin of China.
- Processus not very wide, more or less triangular, apical part distinctly tapered ..... 12
- 12 Tergal lateral appendages comparatively small, basal part narrow, apical part not distinctly rounded .....  
..... *M. alpina* Matile
- Distribution: Zhejiang of China; Saghalien, Europe.
- Tergal lateral appendages large, basal part wide, apical part rounded ..... 13
- 13 Tergal lateral appendages short than processus; sternal submedian appendages short and broad .....  
..... *M. shemani* Garrett
- Distribution: Zhejiang of China; Russia, Kazakhstan, Europe, North America.
- Tergal lateral appendages longer than processus; sternal submedian appendages long and basal part narrow  
..... *M. shermatoda* Yang et Wu
- Distribution: Jilin and Zhejiang of China.
- 14 Tergal fork with short apical setae, with large lateral lobes apical rounded ..... *M. wuorentausi* Vaisanen
- Distribution: Zhejiang and Fujian of China; Russia.
- Tergal fork without setae, with large lateral lobes apical tapered ..... *M. lintanana* Wu et Yang
- Distribution: Gansu of China.
- 15 Mediotergite with small setae or bare; coxa 1 with or without a dense patch of short, seldom longer, setae on  
anteromedial surface; tergite 9 usually with 2 groups of dark cones; often with lateral sabre-like spines;  
sternal synsclerite not medially deeply emarginate, with setose lobe-like submedian appendages (Subg.  
*Mycomya*) ..... 16
- Mediotergite bare; coxa 1 without specialized setae; tergite 9 without such cones and spines; sternal  
synsclerite medially deeply emarginate or divided into two parts; without such appendages ..... 21
- 16 Processus absent ..... 17
- Processus present ..... 18
- 17 Tergal lateral appendages with extreme long strong setae ..... *M. edentata* Wu
- Distribution: Zhejiang of China.
- Tergal lateral appendages absent ..... *M. aureola* Wu
- Distribution: Zhejiang of China.
- 18 Tergal lateral appendages large, broad; sternal lateral appendages absent; parameres extreme long, with  
apical rounded ..... *M. terana* Wu et Yang
- Distribution: Gansu of China.
- Tergal lateral appendages normal; sternal lateral appendages present; parameres different, at most very long  
..... 19
- 19 Parameres very long almost straight, longer than sternal submedian appendages .....  
..... *M. neimongana* Wu et Yang
- Distribution: Inner Monggolia of China.
- Parameres short or long and strongly curved ..... 20
- 20 Sc bare; sternal submedian appendages very long, strongly curved ..... *M. procurva* Yang et Wu
- Distribution: Zhejiang and Guizhou of China.
- Sc with several macrotrichia; sternal submedian appendages short ..... *M. simulans* Vaisanen
- Distribution: Jilin of China; East Siberia.
- 21 Sternal synsclerite with long wide lateral appendages; tergite 9 without lateral appendages ..... 22
- Sternal synsclerite without large lateral appendages; tergite 9 with lateral appendages ..... 23
- 22 Setae of the comb short, spine-like (Subg. *Cymomya*) ..... *M. wuyishana* Yang et Wu

- Distribution: Zhejiang and Fujian of China.
- Setae of the comb with 2 groups medium strong (Subg. *Tlingitmyiopsis*) ..... *M. magna* Wu et Yang  
Distribution: Fujian of China.
- 23 Tergite 9 with a wide apical comb (Subg. *Lycomya*) ..... *M. sinica* Yang et Wu  
Distribution: Jilin and Inner Mongolia of China.
- Tergite 9 with two submedial apical combs (Subg. *Mycomyopsis*) ..... 24
- 24 Tergal lateral appendages with a long slender apical part ..... 25
- Tergal lateral appendages without a long slender apical part ..... 27
- 25 Sternal submedial filament short and straight ..... *M. vaisanenii* Wu et Yang  
Distribution: Henan and Zhejiang of China.
- Sternal submedial filament long curved ..... 26
- 26 Apex of gonostyli with 3 teeth and 1 long seta ..... *M. byersi* Vaisanen  
Distribution: Zhejiang of China; North America.
- Apex of gonostyli with 4 teeth and 2 long setae ..... *M. gansuana* Wu et Yang  
Distribution: Gansu and Guangxi of China.
- 27 Tergal lateral appendages with a distinct, relatively long and dense comb-like brush of setae subapically on medial side ..... 28
- Tergal lateral appendages without such a comb ..... 34
- 28 Gonostyli with 2 widely separate groups of dark teeth ..... 29
- Gonostyli with 1 apical-subapical group of dark teeth ..... 31
- 29 Gonostyli with 3 branches, medial one with 2 apical dark teeth, ventral one with 5 apical dark teeth and dorsal one with 2 broad setae; sternal submedial filament short and straight ... *M. tricamata* Wu et Yang  
Distribution: Beijing of China.
- Gonostyli at most with 2 branches; sternal submedial filament moderate long curved ..... 30
- 30 Gonostyli with 5 apical dark teeth and a basal gemmiform branch ..... *M. odontoda* Yang et Wu  
Distribution: Zhejiang, Fujian and Guizhou of China.
- Gonostyli with 2 apical dark teeth and 2 subapical dark teeth, without branch ..... *M. recurvata* Wu  
Distribution: Zhejiang of China.
- 31 Gonostyli with 6 apical dark teeth ..... *M. paradisa* Wu  
Distribution: Zhejiang of China.
- Gonostyli at most with 3 apical dark teeth ..... 32
- 32 Gonostyli strong twisted ..... *M. copicusa* Wu  
Distribution: Zhejiang of China.
- Gonostyli not twisted ..... 33
- 33 Tergite 9 with short pointed appendages laterally to apical submedial combs ..... *M. dentata* Fisher\*  
Distribution: Zhejiang of China; Finland, Canada, USA. New record in China.
- Tergite 9 without such appendages ..... *M. macershana* Wu et Yang  
Distribution: Guangxi of China.
- 34 Tergal lateral appendages with straight flattened apical setae ..... 35
- Tergal lateral appendages without such setae ..... 36
- 35 Tergal lateral appendages broad apically, with moderate apical setae; sternal submedial filament long .....  
..... *M. confusa* Vaisanen  
Distribution: Zhejiang of China; Europe.

- Tergal lateral appendages tapered apically, with very long apical setae; sternal submedial filament short ...  
..... *M. rivalisa* Wu  
Distribution: Zhejiang of China.
- 36 Tergal lateral appendages with strong flattened setae along medial side ..... 37
- Tergal lateral appendages without such setae ..... 41
- 37 Gonostyli with 2 widely separate groups of dark teeth ..... 38
- Gonostyli with 1 apical-subapical group of dark teeth ..... 39
- 38 Gonostyli with 5 apical dark teeth; sternal submedial filament short, straight .....  
..... *M. elegantula* Wu et Yang  
Distribution: Zhejiang of China.
- Gonostyli with 7 apical dark teeth; sternal submedial filament long curved .....  
..... *M. qingchengana* Wu et Yang  
Distribution: Sichuan of China.
- 39 Gonostyli with 5 apical dark teeth and a basal gemmiform branch, without long setae .....  
..... *M. fanjingana* Yang et Wu  
Distribution: Guizhou of China.
- Gonostyli with 3~5 apical dark teeth and long setae, basal part with a large branch ..... 40
- 40 Base of comb with lateral extensions; apical part of tergal lateral appendages strong inflated .....  
..... *M. hengshana* Wu et Yang  
Distribution: Shanxi of China.
- Base of comb without lateral extensions; apical part of tergal lateral appendages slightly enlarged .....  
..... *M. pemixta* Vaisanen  
Distribution: Inner Mongolia and Henan of China; Russia, Europe, North America.
- 41 Tergal lateral appendages very broad short; gonostyli not strong twisted, with 5 apical dark teeth, without  
long setae ..... *M. dentalosa* Yang et Wu  
Distribution: Helongjiang, Hunan and Guizhou of China.
- Tergal lateral appendages slender and moderate long; gonostyli strong twisted, with 3 apical and 1 long seta  
..... *M. strombuliforma* Wu et Yang  
Distribution: Zhejiang and Fujian of China.

2.2 *Vecella* Wu et Yang, 1996

This genus has only 1 known species in the world, that is *V. guadunana* Wu et Yang, 1996, distributed in a narrow area between Zhejiang and Fujian Provinces, Eastern China<sup>[22, 23]</sup>.

2.3 *Neoempheria* Osten-Sacken, 1878

Key to species of the genus *Neoempheria* from China<sup>[5, 6, 20, 23~27]</sup>

- 1 Cell R<sub>1</sub> at most 1.5 times as long as wide ..... 2
- Cell R<sub>1</sub> at least 2 times as long as wide ..... 11
- 2 Mesoscutum with several dark longitudinal stripes ..... 3
- Mesoscutum without such stripes ..... 9
- 3 Part of Costa extending beyond R<sub>5</sub> at least subequal to length of R<sub>4</sub> ..... 4
- Part of Costa extending beyond R<sub>5</sub> for about shorter of length of R<sub>4</sub> ..... 5
- 4 Tergal lateral appendages without teeth; sternal lateral appendages slightly straight .....  
..... *N. jilinana* Wu et Yang

Distribution: Jilin and Henan of China.

- Tergal lateral appendages with 3 apical teeth; sternal lateral appendages slender and inner curved .....  
..... *N. fujian* Yang et Wu  
Distribution: Fujian of China.
- 5 Wing length at least 5.8 mm; Costa hardly produced beyond the tip of R<sub>5</sub>; tergal lateral appendages with dark stout apical seta; sternal lateral appendages broad and short ..... *N. magna* Wu et Yang  
Distribution: Ningxia and Hubei of China.
- Wing length at most 4.0 mm; Costa produced well beyond tip of R<sub>5</sub>; tergal lateral appendages and sternal lateral appendages not as above ..... 6
- 6 Middle of r-m interrupted; tergal lateral appendages shoe shaped ..... 7
- Middle of r-m normal; tergal lateral appendages not as above ..... *N. pervulgata* Wu  
Distribution: Zhejiang of China.
- 7 Part of Costa extending beyond R<sub>5</sub> slightly shorter than the length of R<sub>4</sub>; sternal lateral appendages without branch and densely covered long setae ..... *N. cyphia* Wu et Yang  
Distribution: Zhejiang of China.
- Part of Costa extending beyond R<sub>5</sub> about half the length of R<sub>4</sub>; sternal lateral appendages with branches ... 8
- 8 Basal part of R<sub>4</sub> absent; sternal lateral appendages with 2 branches ..... *N. merogena* Yang et Wu  
Distribution: Zhejiang and Fujian of China.
- R<sub>4</sub> complete; sternal lateral appendages with 3 branches ..... *N. triloba* Wu et Yang  
Distribution: Henan and Zhejiang of China.
- 9 Tergal lateral appendages stout and long, bare, with a black large blunt tooth .....  
..... *N. subulata* Wu et Yang  
Distribution: Zhejiang of China.
- Tergal lateral appendages shoe shaped and not as above ..... 10
- 10 Sternal lateral appendages slender and bare, apical part curved to forward, with one extreme stout long apical seta ..... *N. acracanthia* Wu et Yang  
Distribution: Zhejiang of China.
- Sternal lateral appendages covered setae and not as above ..... *N. setulosa* Wu et Yang  
Distribution: Zhejiang of China.
- 11 Cell R<sub>1</sub> 2 times as long as wide ..... 12
- Cell R<sub>1</sub> at least 3 times as long as wide ..... 15
- 12 Wing with distinct out bands; Sc ending in C before middle of cell R<sub>1</sub>; mesoscutum without dark longitudinal stripe ..... 13
- Wing and mesoscutum not as above ..... 14
- 13 Tergal lateral appendages stout and long, inner margins densely covered with short stout setae; sternal lateral appendages indistinct ..... *N. echinata* Wu et Yang  
Distribution: Zhejiang of China.
- Tergal lateral appendages not as above; sternal lateral appendages with 3 apical branches .....  
..... *N. bimaculata* (Roser)  
Distribution: Zhejiang of China; Europe.
- 14 Sc<sub>2</sub> ending above or before base of R<sub>5</sub>; band through middle of wing not interrupted; out wing band generally narrow and outwardly concave ..... *N. pictipennis* (Haliday)  
Distribution: Beijing and Zhejiang of China; Russia, Japan, Europe.
- Sc<sub>2</sub> ending beyond base of R<sub>5</sub>, opposite middle of cell R<sub>1</sub>; band through middle of wing interrupted between veins of median and posterior fork; outer band broad and straight ..... *N. winnertzi* (Edwards)

- Distribution: Zhejiang of China; Iraq, Europe.
- 15 Mesoscutum without dark longitudinal stripe; body length 7mm ..... *N. proxima* (Winnertz)  
Distribution: Hebei of China; Europe.
- Mesoscutum with dark longitudinal stripes; body length shorter than 7 mm ..... 16
- 16 Outer band of with present ..... 17
- Outer band of wing absent ..... 20
- 17 Costa hardly produced beyond the tip of R<sub>5</sub> ..... 18
- Costa produced well beyond tip of R<sub>5</sub> ..... 19
- 18 Sc ending in C at base of cell R<sub>1</sub>; cell R<sub>1</sub> about 3.5 times as long as wide; tergal and sternal lateral appendages slender and bare ..... *N. beijingana* Wu et Yang  
Distribution: Beijing and Zhejiang of China.
- Sc ending in C beyond meddle of cell R<sub>1</sub>; cell R<sub>1</sub> about 4 times as long as wide; tergal and sternal lateral appendages not as above ..... *N. ferruginea* (Brunetti)  
Distribution: Jilin of China; Japan, India.
- 19 Tergal lateral appendages with black long stout apical setae; sternal lateral appendages with branches .....  
..... *N. monticola* Wu  
Distribution: Zhejiang of China.
- Tergal lateral appendages without distinct long setae; sternal lateral appendages not branched .....  
..... *N. platycera* Wu  
Distribution: Zhejiang of China.
- 20 Cell R<sub>1</sub> about 5 times as long as wide; wing clear ..... *N. tianmuana* Wu et Yang  
Distribution: Zhejiang of China.
- Cell R<sub>1</sub> at most 4 times as long as wide; wing with dark markings ..... 21
- 21 Tergal lateral appendages long to extremely long ..... 22
- Tergal lateral appendages broad and short or absent ..... 24
- 22 Cell R<sub>1</sub> about 4 times as long as wide; tergal lateral appendages long and inner curved, covered with long setae, middle parts of inner margins dense covered with stout dark setae; sternal lateral appendages slender, middle parts curved towards dorsal ..... *N. sinica* Wu et Yang  
Distribution: Beijing, Hebei, Shanxi, Henan, Shanghai, Zhejiang, Guangxi and Guizhou of China.
- Cell R<sub>1</sub> about 3 times as long as wide; tergal lateral appendages slender, inner margins without stout dark seta; sternal lateral appendages not as above ..... 23
- 23 Tergal and sternal lateral appendages extremely slender and tapered ..... *N. pleurotivora* Sasakawa\*  
Distribution: Henan and Zhejiang of China; Thailand. New record in China.
- Tergal lateral appendages slender and clavate; sternal lateral appendages extremely slender .....  
..... *N. ornata* Okada  
Distribution: Jilin of China; Japan.
- 24 Part of Costa extending beyond R<sub>5</sub> slightly longer than the half length of R<sub>4</sub>; tergal lateral appendages absent; sternal lateral appendages slender and covered with extremely stout long setae ..... *N. Wangi* Yang et Wu  
Distribution: Zhejiang and Fujian of China.
- Part of Costa extending beyond R<sub>5</sub> slightly shorter than the half length of R<sub>4</sub>; tergal lateral appendages broad and short; sternal lateral appendages short and small, covered with long setae .....  
..... *N. mirabila* Wu et Yang  
Distribution: Zhejiang of China.

### 3 Geographical distribution

#### 3.1 Distribution characters of genera

There are 10 known genera of the subfamily Mycomyinae in the world, which can be divided into two groups by the extramorphs, the first group consisting of the genera *Echinopodium* Freeman, *Mycomya* Rondani and *Mycoleia* Vaisanen and the second group composed of *Neoempheria* Osten-Sacken, *Paraempheriella* Matile, *Syndocosia* Speiser, *Mycomyiella* Matile, *Moriniola* Matile and *Viridivora* Matile. *Vecella* Wu et Yang discovered in the eastern China, has intermediate morphs of the two groups. In 10 known genera, only *Mycomya* and *Neoempheria* are discovered throughout the whole world, but the rest are confined to a certain zoogeographical region. *Echinopodium* can be found in the Neotropical region, *Viridivora*, *Paraempheriella*, *Mycomyiella*, *Moriniola* and *Syndocosia* in the African region, *Vecella* in the Oriental region and *Mycoleia* in the Nearctic region<sup>[1, 2]</sup>. There are 3 known genera of the subfamily in China, of which *Mycomya* and *Neoempheria* can be found in several zoological regions, while *Vecella* is the endemic genus of China<sup>[4, 22]</sup>.

In the Upper Triassic fauna (about 200 million years back) the fungus gnats were already represented by 2 families viz. Plecofungivoridae and Palaeopleciidae, both of which have been extinct now (Rohdendorf 1974). Fairly abundant materials were available from the Middle Jurassic and by the Tertiary all the early groups had been replaced by currently recognized groups (Hutson et al. 1980). Mycomyinae is one of the oldest groups of the family, while the earliest fossil material of the subfamily, which were species of the genera *Mycomya* and *Neoempheria*, was found in Oligocene (3.5 million years back)<sup>[1]</sup>. Hence, we could regard the subfamily as a group of tropical origin, because 7 genera out of the total 10 genera were only found in tropical and subtropical regions. Simultaneously, *Mycomya* and *Neoempheria* are exceptionally prosperous and about 80% of the known species can be found in these regions. The Pangea of the globe was divided into two parts, viz. Gondwanland and Laurasia in the early Jurassic. From the distribution pattern of Mycomyinae, also the small and weak body of fungus gnats and their feeble flying ability, we can assume that the 2 genera *Mycomya* and *Neoempheria* had existed before the event of the Pangea division, while the differentiation of the other genera happened in a late geographical period<sup>[28, 29]</sup>.

#### 3.2 Distribution characters of species

From Table 1 we can see that the east Asia components constitute the main part of the subfamily Mycomyinae from China.

Table 1 Species components in Mycomyinae from China

Genus	Number of species	Oriental species		Holarctic species		Eurytopic species		East Asia species			
								China distr		China-Japan distr	
		Number	%	Number	%	Number	%	Number	%	Number	%
<i>Mycomya</i>	42			9	21.4	2	4.8	31	73.8		
<i>Vecella</i>	1							1	100		
<i>Neoempheria</i>	25	1	4.0	4	16.0	1	4.0	18	72.0	1	4.0
Total	68	1	1.5	13	19.1	3	4.4	50	73.5	1	1.5

There are 42 known species of *Mycomya* and 25 known species of *Neoempheria* from China, most of which are endemic species. In the genus *Neoempheria sinica* Wu et Yang has a wide distribution, i. e. in Beijing, Hebei, Henan, Shanxi, Shanghai, Zhejiang, Guangxi and Guizhou of China.

The genus *Vecella* is a special group, which has intermediate characters between *Mycomya* and *Neoempheria*. *Vecella* can be distinguished from *Mycomya* by following characters: the ocellar prominence well developed, eyes only indistinctly emarginated above antennal bases, male middle coxa without spur, C extending beyond apex of

R<sub>5</sub>, and R<sub>4</sub> absent. It differs from *Neoempheria* in the antenna being apically pointed, wing without marking, R<sub>4</sub> absent, and without an false vein between R<sub>5</sub> and M<sub>1</sub>. The genus is so far only found in Mt. Wuyishan of Fujian Province and Mt. Gutianshan of Zhejiang Province, Eastern China<sup>[22]</sup>.

The species of Mycomyinae known to us from China have following characters in geographic distribution.

3.2.1 Some European species have invaded into coastal areas of southeast China. For example, *Mycomya shermani* Garrett distributes widely in Europe, but has reached Mt. Mogan of Zhejiang Province in China. *M. alpina* Matile disperses in the Alps, and now has reached Mt. Gutianshan of Zhejiang Province in China. *M. byersi* Vaisanen has a wide distribution area in Canada and USA, but can be found at Baishanzu of Zhejiang Province in China. Similarities have been found in *Neoempheria bimaculata* (Roser), *N. pictipennis* (Haliday) and *N. winnertzi* (Edwards).

3.2.2 There are abundant stenoky species. Examples are *Mycomya fanjingana* Yang et Wu, *M. shematoda* Yang et Wu, *M. magna* Wu et Yang, *M. aureola* Wu, *Neoempheria platycera* Wu and *N. triloba* Wu et Yang and so on, which explains that the differentiation of Mycomyinae is very fierce in China, especially in Eastern China.

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## 中国真菌蚊亚科种类记述及地理分布

(双翅目: 菌蚊科)

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**摘要:** 记述了我国双翅目菌蚊科真菌蚊亚科 3 属 68 种, 其中有 2 种中国新记录种; 列出了属种检索表, 同时对该亚科的地理分布和区系起源作了初步的探讨。新记录种的名录及分布如下: ①尖齿真菌蚊 *Mycomya dentata* Fisher, 1937 中国新记录。分布: 中国浙江; 芬兰, 加拿大, 美国。②侧生新菌蚊 *Neoempheria pleurotivora* Sasakawa, 1979 中国新记录。分布: 中国河南、浙江; 泰国。表 1 参 29

**关键词:** 菌蚊科; 真菌蚊亚科; 地理分布

**中图分类号:** Q969.44      **文献标识码:** A