

## **Phyllomyza (Diptera: Milichiidae) Newly Found in Tibet with Descriptions of Two New Species**

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Source: Florida Entomologist, 98(2) : 495-498

Published By: Florida Entomological Society

URL: <https://doi.org/10.1653/024.098.0216>

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# Phyllomyza (Diptera: Milichiidae) newly found in Tibet with descriptions of two new species

Yuqiang Xi and Ding Yang\*

## Abstract

The genus *Phyllomyza* Fallén (Diptera: Milichiidae) is recorded from Tibet for the first time. Two species are described as new to science: *Phyllomyza drepanipalpis* sp. nov. and *P. sinensis* sp. nov. A key to the known species of *Phyllomyza* from China is presented.

Key Words: *Phyllomyza drepanipalpis* sp. nov.; *Phyllomyza sinensis* sp. nov.; China; key

## Resumen

Se registra por primera vez el género *Phyllomyza* Fallén (Diptera: Milichiidae) en el Tíbet. Se describen dos especies nuevas para la ciencia: *P. drepanipalpis* sp. nov. y *P. sinensis* sp. nov. Se presenta una clave para las especies conocidas de *Phyllomyza* en la China.

Palabras Clave: *Phyllomyza drepanipalpis* sp. nov.; *Phyllomyza sinensis* sp. nov.; China; clave

*Phyllomyza* Fallén, 1810 (Milichiidae: Phylomyzinae) is characterized by the following features: 3 laterocline orbital setae; occiput not strongly concave in top view; palpus and 1st flagellomere in male usually greatly enlarged, longer than broad; lunule usually with a pair of setae (Brake 2000). There are 38 known species distributed widely in the world except that none has been recorded in the Neotropical Region; another 15 species are distributed in the Palaearctic Region and 18 species in the Oriental Region. The major references dealing with the Palaearctic and Oriental species of the genus *Phyllomyza* are as follows: Brake (2000); Hennig (1937, 1967); Iwasa (2003); Malloch (1913, 1914); Papp (1976, 1984); Papp & Wheeler (1998); Yang (1998), and Xi & Yang 2013.

There are only 9 species of *Phyllomyza* known in China, of which 4 species are distributed in Taiwan (Hendel 1914; Malloch 1914; Yang 1998; Xi & Yang 2013). In the present paper, 2 species of *Phyllomyza* from Tibet are described as new to science. A key to the known species of *Phyllomyza* from China is given.

## Materials and Methods

Genitalia preparations were made by removing and macerating the apical portion of the abdomen in cold saturated NaOH for 6 h. After examination, they were transferred to fresh glycerin and stored in a microvial on the pin below the specimen or moved to an ethanol tube together with the wet specimens. Specimens examined were deposited in the Entomological Museum of China Agricultural University, Beijing (CAU), China. Morphological terminology follows McAlpine (1981) and Brake (2000). The following abbreviations are used: asc = apical scutellar seta(e), bsc = basal scutellar seta(e), dc = dorsocentral seta(e), h = humeral seta(e), ia = intraalar seta(e), kepsts = katepisternal seta(e), npl = notopleural seta(e), pa = postalar seta(e), pos = postsutural seta(e), prs = presutural seta(e), prsc = prescutellar seta(e), sa = supraalar seta(e), S = sternite, T = tergite.

## Results

### Key to Chinese species (males) of *Phyllomyza*

- |  |                               |
|--|-------------------------------|
| 1.— Palpus almost bare, without setulae . . . . .  | 2                             |
| 1'.— Palpus with short setulae at tip and ventral side . . . . .   | 4                             |
| 2.— Palpus yellow, protruding, but not much broadened, 4.5 times as long as wide . . . . .                           | <i>P. luteipalpis</i> Malloch |
| 2'.— Palpus black, much protruding (stretched forward more prominent) and broadened . . . . .                        | 3                             |
| 3.— Palpus very long, 1.5 times as long as height of head, parallel-sided; halter black, yellowish at base . . . . . | <i>P. nudipalpis</i> Malloch  |
| 3'.— Palpus broad, 2 times as long as wide, leaf-shaped, tapering to apex; halter yellow . . . . .                   | <i>P. dilatata</i> Malloch    |
| 4.— Cercus with ventral appendix . . . . .   | 5                             |
| 4'.— Cercus lacking ventral appendix . . . . .   | 6                             |

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- 5.— Halter orange brown; palpus brownish, lanceolate ..... *P. epitacta* Hendel
- 5'.— Halter white; palpus darkish yellow, sickle-shaped ..... *P. drepanipalpis* **sp. nov.**
- 6.— First flagellomere not circular ..... 7
- 6'.— First flagellomere approximately circular ..... 8
- 7.— First flagellomere hammer-shaped; palpus length 0.2 mm, pointed apically ..... *P. claviconis* Yang
- 7'.— First flagellomere irregularly rectangular; palpus greatly lengthened, 0.7 mm, blunted apically ..... *P. sinensis* **sp. nov.**
- 8.—  $M_1$  between r-m and dm-cu as long as dm-cu ..... 9
- 8'.—  $M_1$  between r-m and dm-cu longer than dm-cu ..... 10
- 9.— Palpus curved; gena narrow, approximately one-eleventh of eye height ..... *P. angustigenis* Xi & Yang
- 9'.— Palpus elongate; gena relatively broad, approximately one-seventh of eye height ..... *P. euthyipalpis* Xi & Yang
- 10.— Vibrissal angle relatively flat, approximately rectangular; palpus long oval, 3.2 times as long as wide ..... *P. clavellata* Xi & Yang
- 10'.— Vibrissal angle relatively acute, the tip less than 60 degree angle; palpus long oval, 4.2 times as long as wide ..... *P. cuspidata* Xi & Yang

*Phyllomyza drepanipalpis* **sp. nov.** (Figs. 1–4)

## DIAGNOSIS

Gena very narrow, approximately one-eleventh of eye height. Palpus darkish yellow, slightly sickle-shaped, about 0.3 mm (Fig. 1). Surstylus with upper blade of bifurcated tip swollen and lower one shorter; cercus with ventral appendix, which is directed posterior (Figs. 3 and 4).

## DESCRIPTION

*Male.* Body length 1.6–1.8 mm; wing length 1.6–1.8 mm.

Head black with grayish microtomentum; orbital plates subglossy blackish brown with microtomentum; ocellar triangle darkish brown without microtomentum; lunule strap-shaped, darkish brown with black margin. Posterior eye margin ventrally divergent from head margin; eye 1.3 times as high as long, gena approximately one-eleventh of eye height. Setae and setulae on head black; ocellar triangle with 2 ocellar setae and 3 short setae; frons with 3 orbital and 2 frontal setae on blackish brown orbital stripe without microtomentum, orbital setae laterooculate and frontal setae mediooculate, 3 interfrontal setae; postocellar setae cruciate. Lunule with 2 setae. Vibrissal angle relatively blunt; vibrissa strong, located at level of lower eye margin. Antenna brownish yellow with microtomentum; pedicel with short black setulae at middle and margin, setulae at margin longer than others, longest one about 4 times longer than others; 1st flagellomere irregularly circular, with pubescence; arista 3.5 times as long as 1st flagellomere, brown, distinctly pubescent. Proboscis slightly thick and geniculate, darkish brown, margin with sparse setulae. Palpus slightly sickle-shaped in lateral view, about 0.3 mm, 3.5 times longer than wide; brownish yellow with short dense brownish pubescence, margin with sparse black setulae.

Thorax blackish brown with grey microtomentum, except mesonotum glossy brown with sparse black microtomentum; scutellum brown with gray microtomentum. Setae and setulae on thorax black; 1 h, 2 dc, 1 prsc, 2 npl, 1 prs, 1 pos, 1 sa, 1 ia, 1 pa, 1 kepst (setulae at forward position); scutellum 1.5 times wider than long, with pair of asc and bsc, asc 2.5 times longer than bsc. Legs slender; coxae and femora darkish brown, tibiae yellow except hind tibia darkish brown at middle, tarsi yellowish. Setae and setulae on legs black. Mid tibia with 1 black preapical dorsal seta. Wing hyaline, unspotted; veins brown; Sc strong;  $M_1$  between r-m and dm-cu longer than dm-cu. Calypter yellowish with

dense brownish microtrichae, margin with thin, sparse long setulae. Knob of halter white, stalk yellowish.

Abdomen brown with gray microtomentum. Setae and setulae on abdomen black; T2–T5 with setae, marginal setae longer than others; sternites with sparse black setulae at posterior 3/4. Posteromedial triangular projection of T1 into T2 strong; S2 irregularly widely horse-shoe-shaped, with blunt apex, S3 irregularly vertically trapezoid, S4 horizontally trapezoid, S5 irregularly trapezoid.

Male genitalia (Figs. 3 and 4). Epandrium with 4 strong, long black setae; surstylus with upper blade of bifurcated tip swollen, the lower one slightly swollen and shorter than upper one; cercus arched with ventral appendix.

## FEMALE

Body length 1.7–1.9 mm; wing length 1.6–1.9 mm.

Similar to male, but palpus yellow and shorter. Female terminalia: T8 brownish, margin with setulae. Supra-anal plate irregularly triangular; subanal plate nearly trapezoid. Cercus with long setulae.

## TYPE MATERIAL

HOLOTYPE ♂, CHINA: Tibet, Medog (29°14'30.42"N, 95°10'31.74"E), Beibeng, 1,100 m, 30-VII-2012, W. L. Li (CAU). PARATYPES: 2 ♂, same data as holotype; 2 ♂, Tibet, Medog (29°14'33.46"N, 95°10'29.69"E), Beibeng, 700 m, 30-VII-2012, X. K. Li (CAU); 1 ♂ 1 ♀, Tibet, Medog (29°14'32.06"N, 95°10'30.36"E), Beibeng, 1,100 m, 17-IX-2013, G. Yao (CAU).

## DISTRIBUTION

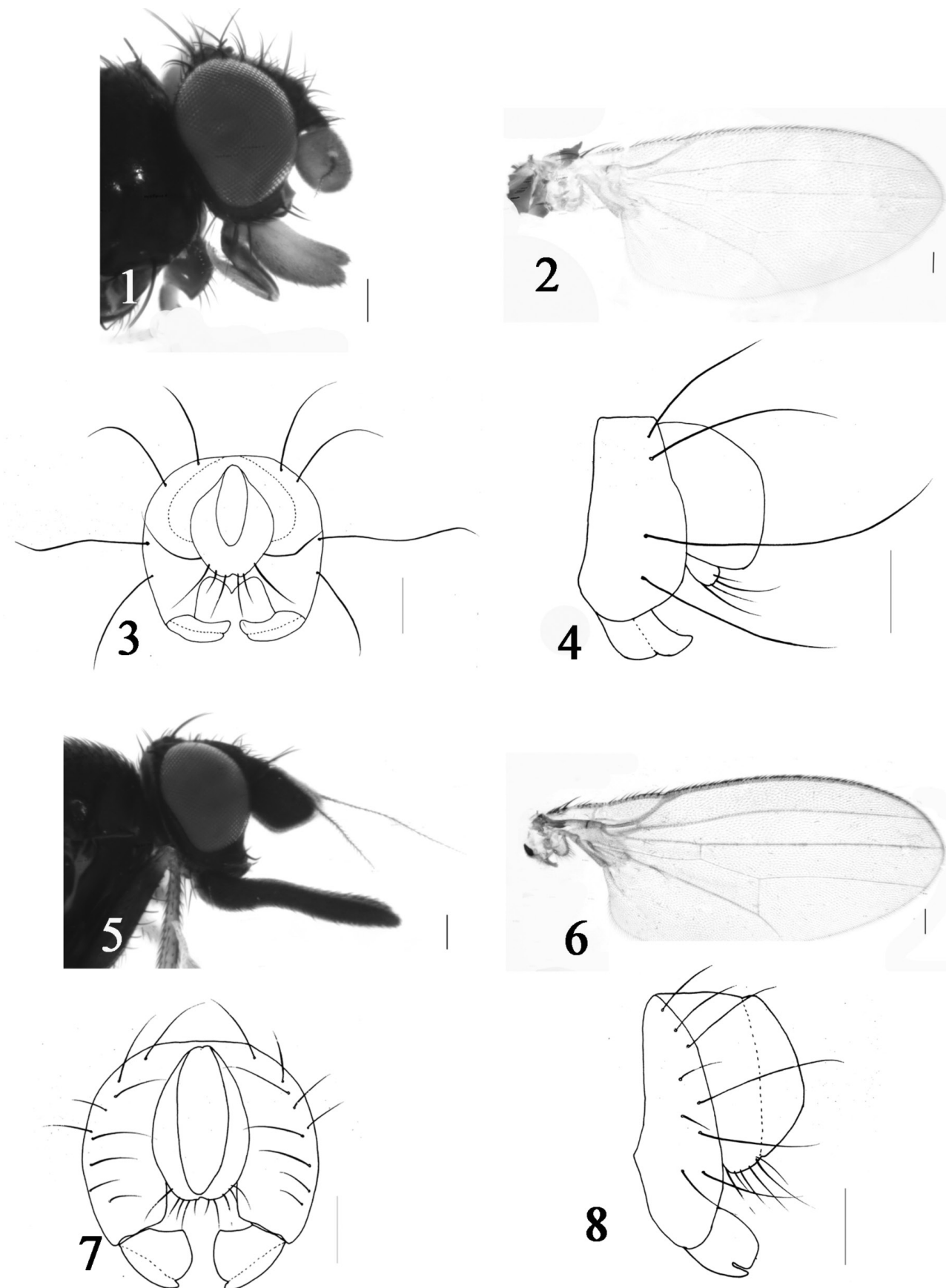
China (Tibet).

## REMARKS

This new species is similar to *P. beckeri* Kramer, but can be separated easily from the latter by the gena approximately one-eleventh of eye height and thorax blackish brown with 2 dc. In *P. beckeri*, the gena is approximately one-sixth of eye height; the thorax is brown with 4 dc (Kramer 1920).

## ETYMOLOGY

The species name refers to the sickle-shaped palpus.



**Figs. 1–4.** *Phyllomyza drepanipalpis* sp. nov. (male), 5–8. *Phyllomyza sinensis* sp. nov. (male). 1,5. Head, lateral view; 2,6. Wing; 3,7. Epandrium, cercus, and surstylus, posterior view; 4,8. Epandrium, cercus, and surstylus, lateral view. Scale bar = 0.1 mm.

*Phyllomyza sinensis* sp. nov. (Figs. 5–8)

## DIAGNOSIS

Gena narrowed, approximately one-tenth of eye height. Palpus very long, about 0.7 mm, longer than head height (Fig. 5). Surstylus with upper blade of bifurcated tip extremely swollen and lower one slightly sharp at tip (Figs. 7 and 8).

## DESCRIPTION

*Male.* Body length 1.5–1.7 mm; wing length 1.6–1.8 mm.

Head blackish brown with grayish microtomentum; orbital plates subglossy blackish brown with microtomentum; ocellar triangle darkish brown without microtomentum; lunule strap-shaped, darkish gray with black margin. Posterior eye margin ventrally divergent from head margin; eye 1.4 times as high as long, gena approximately one-tenth of eye height. Setae and setulae on head black; ocellar triangle with 2 long ocellar setae and 3 short setae; frons with 3 orbital and 2 frontal setae on brown orbital stripe without microtomentum, orbital setae laterocline and frontal setae mediocline, 3 interfrontal setae; post-ocellar setae cruciate. Lunule with 2 setae. Vibrissal angle relatively blunt; vibrissa strong, located at level of lower eye margin. Antenna darkish brown with microtomentum; pedicel with short, black setulae at middle and margin, setulae at margin longer than others, longest one about 2.5 times than others; 1st flagellomere with pubescence, irregularly rectangular; arista 3 times as long as 1st flagellomere, darkish brown, distinctly pubescent. Proboscis very short, folded, blackish brown, margin with sparse black setulae. Palpus very long, slightly curved at basal 1/3, about 0.7 mm, 9 times longer than wide; darkish brown with short, dense black setulae, margin with sparse short setae.

Thorax darkish brown with grey microtomentum, except mesonotum glossy darkish brown with sparse black microtomentum; scutellum darkish brown with gray microtomentum. Setae and setulae on thorax black; 1 h, 2 dc, 1 prsc, 2 npl, 1 prs, 1 pos, 1 sa, 1 ia, 2 pa, 1 kepsts (setulae at forward position); scutellum 1.5 times wider than long, with pair of asc and bsc, asc 2.5 times longer than bsc. Legs slender; coxae and femora darkish brown, tibiae darkish brown except fore tibia darkish yellow, tarsi yellowish. Setae and setulae on legs black. Mid tibia with 1 black preapical dorsal seta. Wing hyaline; veins brown; Sc strong;  $M_1$  between r-m and dm-cu longer than dm-cu. Calypter yellowish with dense darkish brown microtrichae, margin with brownish setulae. Knob of halter darkish brown, stalk brown.

Abdomen darkish brown with gray microtomentum. Setae and setulae on abdomen black; T2–T5 with setae at posterior 3/4, marginal setae longer than others; sternites with sparse black setulae. Posteromedial triangular projection of T1 into T2 weak; S2 generally horseshoe-shaped, apical margin blunt; S3 vertically rectangular; S4 trapezoid, apical margin slightly wider than basal margin; S5 irregularly trapezoid, narrowed, apical margin slightly wider than basal margin.

Male genitalia (Figs. 7 and 8). Epandrium with strong setae at middle; surstylus with upper blade of bifurcated tip extremely swollen and lower one slightly sharp at tip; cercus arched with short sparse setae, without ventral appendix.

*Female.* Unknown.

## TYPE MATERIAL

HOLOTYPE ♂, CHINA: Tibet, Medog (29°14'33.46"N, 95°10'29.69"E), Beibeng, 700 m, 30-VII-2012, W. L. Li (CAU). PARATYPES: 1 ♂, Tibet, Medog (29°14'33.46"N, 95°10'29.69"E), Beibeng, 700 m, 30-VII-2012,

X. K. Li (CAU); 1 ♂, Tibet, Medog (29°14'32.06"N, 95°10'30.36"E), Beibeng, 1,100 m, 17-IX-2013, G. Yao (CAU).

## DISTRIBUTION

China (Tibet).

## REMARKS

This new species is similar to *P. proceripalpis* Iwasa from Japan, but it can be separated from the latter by the palpus approximately 2.5 times longer than the greatest horizontal length of the eye and the surstylus with the upper blade of the bifurcated tip extremely swollen and the lower one slightly sharp at tip. In *P. proceripalpis*, the palpus is approximately 2 times longer than the greatest horizontal length of the eye; the upper blade of the bifurcated tip of the surstylus is prominently swollen and the lower one slender (Iwasa 2003).

## ETYMOLOGY

The species name refers to the type locality China.

## Acknowledgments

The authors express their sincere thanks to Dr. Wenliang Li, Mr. Xunkun Li and Mr. Gang Yao (Beijing) for their kind help and for collecting the specimens. The research was funded by the National "Twelfth Five-Year" Plan for Science & Technology Support (2012BAD19B00) and the Ministry of Science and Technology of the People's Republic of China (2012FY111100, 2005DKA21402).

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