

# First Record of the Genus *Setihercostomus* (Diptera: Dolichopodidae) from Korea with Checklist and Key to Species

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## ABSTRACT

The genus *Setihercostomus* Zhang & Yang, 2005 is reported for the first time in Korean fauna, with one unrecorded species, *S. setifacies* (Stackelberg, 1934). This genus can be easily classified alongside other genera in the subfamily Dolichopodinae by the presence of strong setae on the clypeus in both sexes. This genus is a small taxon comprising five species found in the Afrotropical, Oriental, and Palearctic regions. Newly recorded Korean names of genus and species, detailed morphological characteristics, and photographs of the first recorded species in Korea, along with a checklist and key to the species of this genus, are provided herein.

**Keywords:** Dolichopodinae, Dolichopodini, Palearctic region

## INTRODUCTION

The genus *Setihercostomus* Zhang & Yang, 2005 is a very small genus, with only five species recorded worldwide: one Afrotropical, two Oriental and one Palearctic species, and one species found in both Oriental and Palearctic regions (Zhang and Yang, 2005; Yang et al., 2011; Grichanov et al., 2014). This genus is distinguished from the related genus *Hercostomus* Loew, 1857 by the following characteristics: a short and narrow clypeus that does not reach the lower margin of the compound eyes; one pair of strong setae in both sexes; an anepimeron with a cluster of fine setulae in front of the posterior spiracle; a large, thick male cercus nearly as long as the epandrium (Zhang and Yang, 2005).

In this paper, the genus *Setihercostomus* Zhang & Yang, 2005 is reported for the first time in the Korean fauna, along with one nominate species, *S. setifacies* (Stackelberg, 1934). The re-description and illustrations of the external features, including the male genitalia of this species, are provided here. Additionally, a checklist and key to the species of the world are included.

## MATERIALS AND METHODS

External features including male genitalia were photographed by using Olympus SZX 16 stereo microscope (Olympus, Tokyo, Japan), Olympus BX50 compound microscope (Olympus), and Michrome 16 CMOS camera (Tucsen, Fujian, China). For observation, dissected male terminalia was heated by 10% potassium hydroxide (KOH) solution at about 80°C for 20–25 min. A series of images were montaged using Helicon Focus (HeliconSoft, Kharkiv, Ukraine). All images were further processed using Adobe Photoshop 25.11.0 (Adobe, San Francisco, CA, USA). All specimens examined in the present study were deposited in the collection of the Department of Plant Medicine at Kyungpook National University, Daegu, Korea.

Morphological terms followed Cumming and Wood (2017). Abbreviations are as follows: AF, Afrotropical region; C, costal vein; CuA + CuP, anterior branch of cubital vein + posterior branch of cubital vein; dm-m, discal median crossvein; M, median vein; OR, Oriental region; PA, Palearctic region; R, radial vein; Sc, subcostal vein.

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## SYSTEMATIC ACCOUNTS

Order Diptera Linnaeus, 1758  
Superfamily Empidoidea Latreille, 1809  
Family Dolichopodidae Latreille, 1809

### <sup>1</sup>\**Setihercostomus* Zhang & Yang, 2005

*Setihercostomus* Zhang & Yang, 2005: 183. Type species:  
*Hercostomus zonalis* Yang, Yang & Li, 1998.

### <sup>2</sup>\**Setihercostomus setifacies* (Stackelberg, 1934)

(Figs. 1, 2)

*Hercostomus setifacies* Stackelberg, 1934: 173. Type locality: Russia: Ussuri Gebiet, Station Sitza, Dirst. Sutshan; Station Sedanka, bei Wldiwostok.

**Material examined.** Korea: ♂, Gyeongsangbuk-do: Pohang-si, Nam-gu, Guryongpo-eup, Gupyeong-ri, 10 Oct 2015, SJ Suh Coll.; ♂, Gumi-si, Dogae-myeon, Singok-ri, Mt. Mangyeongsan, 27 May 2016, SJ Suh Coll.; 2♂ 2♀, Gangwon-do: Jeongseon-gun, Jeongseon-eup, Buksil-ri, Mt. Giusan, 10 Jun 2016, SJ Suh Coll.; 2♀, Gyeongsangnam-do: Yangsan-si, Sangbuk-myeon, Daeseok-ri, Mt. Wonhyosan, 23 Aug 2016, SJ Suh Coll.; 1♂ 1♀, Chungcheongbuk-do, Jincheon-gun, Chopyeong-myeon, Yongjeong-ri, Mt. Dutasan, 28 Apr 2023, SJ Suh Coll.

**Re-description. Male.** Body length: 3.1–3.7 mm. Wing length: 2.7–3.0 mm. Head: metallic bluish green with mainly black setae and setulae, and covered with white tomentum; one long ocellar seta reclinate and divergent; 1–2 short postocellar setae proclinate and convergent; one vertical seta 3/5 as long as ocellar seta, and proclinate and convergent, and positioned right behind of ocellar setae line; one postvertical seta 3/4 as long as vertical seta, and convergent and proclinate; postocular setae in a single row; face and clypeus with one pair of setae between them and covered with thick white tomentum; compound eye with tiny white setulae between facets; upper occiput bare; lower occiput with several long setae; antenna black; scape dorsally setulose; pedicel with apical ring of setae; postpedicel pubescent and two times as long as basal width, and apically pointed; arista-like stylus short pubescent and slightly longer than postpedicel, and risen at dorsal half of postpedicel; palpus dark brown with several setulae and covered with white tomentum; proboscis brown with dark brown setulae.

Thorax: metallic bluish green with mainly black setae, and covered with white tomentum and dorsum less covered, more shiny; 7–8 acrostichial setae biseriate; six dorsocentral setae and 5th protrude medially; one each of long, short

and tiny postpronotal setae; one presutural and one postsutural intra-alar setae; one presutural and two postsutural supra-alar setae; two notopleural setae; one postalar seta; two latero-marginal scutellar setae, median seta much longer than lateral seta; proepisternum with several fine setulae; anepimeron with fine setulae in front of post spiracle.

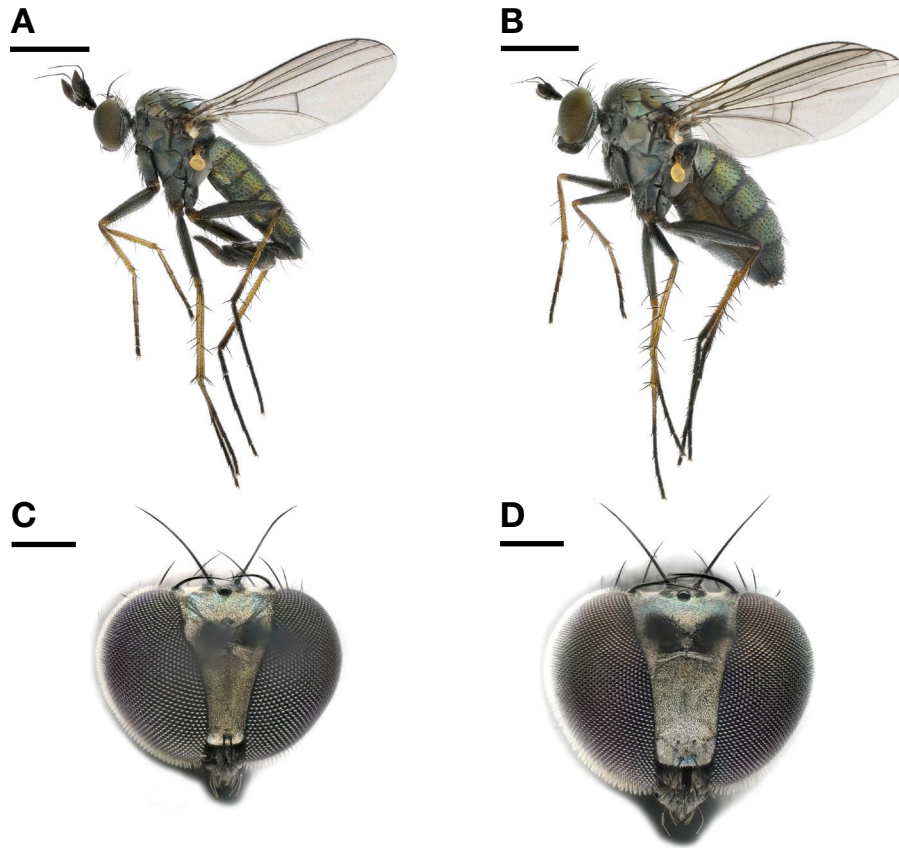
Legs: with mainly black setae and setulae; all coxae and femora metallic dark blue, except pale yellow apical tip of femora; all tibiae mainly pale yellow except brown apical tip of hind tibia; fore and mid tarsi basally pale yellow and gradually darkened toward apex; hind tarsus dark brown; fore coxa with setae and setulae; fore femur without strong setae and lateral setulae slightly longer; fore tibia with two dorsal, one anterodorsal and apical ring of setae; fore tarsus without strong setae except one basoventral seta at fore tarsomere 5; relative ratio of fore femur, tibia and tarsomere 1–5 : 5.6 : 5.2 : 2.7 : 1.6 : 1.1 : 1.9 : 1.0; mid coxa with setae and setulae; mid femur with one anterior preapical, one posterior preapical and one ventral subbasal setae; mid tibia with three anterodorsal, two posterodorsal, one anteroventral and apical ring of setae; mid tarsus without strong setae; relative ratio of mid femur, tibia, tarsomere 1–5 : 6.8 : 8.3 : 1.7 : 2.1 : 1.6 : 1.3 : 1.0; hind coxa with one strong seta and one tiny setula; hind femur with one anterodorsal preapical and 3–4 ventral setae; hind tibia with three anterodorsal and 3–4 posterodorsal, one ventral and apical ring of setae; hind tarsus without strong setae; relative ratio of hind femur, tibia, tarsomere 1–5 : 7.3 : 8.0 : 2.1 : 2.7 : 1.7 : 1.2 : 1.0.

Wing: hyaline; veins mainly dark brown; C ended at M1; Sc fused to R1 at half; R1 slightly curved to posterior; R2+3 almost straight; R4+5 slightly curved to posterior; M1 almost straight; R4+5 and M1 almost parallel; M4 slightly curved to posterior; crossvein dm-m straight; relative ratio of apical M4 to dm-m: 1.0 : 0.6; CuA + CuP fold-like and not reaching the wing margin; calypter pale yellow with black setae on fringe; halter pale yellow.

Abdomen: metallic bluish green with mainly black setae and setulae, and covered with white tomentum and dorsum less covered, more shiny; posterior margin of tergites with relatively long setae; 7th tergite long, slightly shorter than epandrium; epandrium black and three times as long as width; hypandrium fused to epandrium with pointed apex; epandrial lobe finger-like, with three setae; surstylus bifurcated to dorsal lobe and ventral lobe; cercus with pointed apex, and long and thick, about four times as long as width, and covered by short setae with a line of dorsal long and strong setae.

**Female.** Body length: 3.0–4.0 mm. Wing length: 2.7–3.2 mm. Almost same to male except some characteristics: face

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**Fig. 1.** *Setihercostomus setifacies* (Stackelberg, 1934): A, Male, lateral view; B, Female, ditto; C, Male head, frontal view; D, Female head, ditto. Scale bars: A, B=1.0 mm, C, D=0.25 mm.

and clypeus broader than male with one pair of strong and 1–2 pairs of weak setae between them; postpedicel short, slightly longer than width; arista-like stylus about three times longer than postpedicel.

**Distribution.** Korea (new record), Russia (Grichanov and Selivanova, 2021).

#### Checklist of the genus *Setihercostomus* of the world

##### *Setihercostomus huangi* (Zhang, Yang et Masunaga, 2004)

*Hercostomus* (*Gymnopternus*) *huangi* Zhang, Yang & Masunaga, 2004: 36. Type locality: China: Yunnan, Xishuangbanna.

*Setihercostomus huangi*: Zhang & Yang, 2005: 184.

**Distribution.** OR: China (Yang et al., 2011).

##### *Setihercostomus scharffi* (Grichanov, 1999)

*Hercostomus scharffi* Grichanov, 1999: 36. Type locality: Tanzania: Uzungwe Mts., Mwanihana.

**Distribution.** AF: Tanzania (Grichanov et al., 2014).

##### *Setihercostomus setifacies* (Stackelberg, 1934)

*Hercostomus setifacies* Stackelberg, 1934: 173. Type locality: Russia: Ussuri Gebiet Station Sitza, Dirstr. Sutshan; Station Sedanka, bei Wldiwostok.

**Distribution.** PA: Korea (new record), Russia (Grichanov & Selivanova, 2021).

##### *Setihercostomus taiwanensis* Zhang & Yang, 2011

*Setihercostomus taiwanensis* Zhang & Yang, 2011: 1045. Type locality: Taiwan: Taizhong.

**Distribution.** OR: Taiwan (Yang et al., 2011).

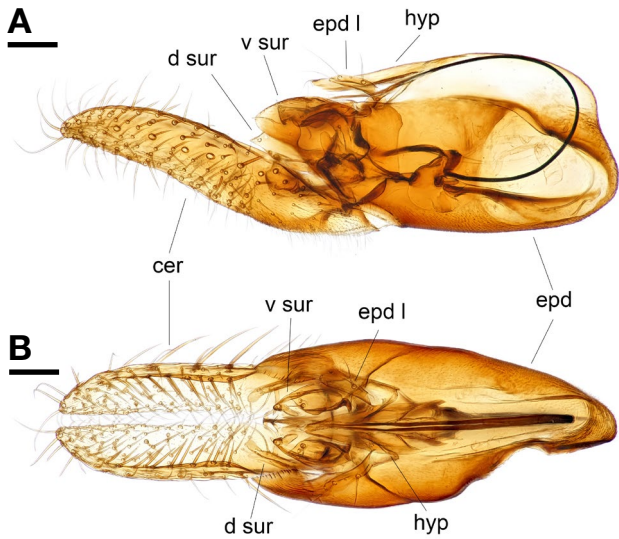
##### *Setihercostomus wuyangensis* (Wei, 1997)

*Hercostomus* (*Gymnopternus*) *wuyangensis* Wei, 1997: 40. Type locality: China: Guizhou, Wuyanghe.

*Hercostomus zonalis* Yang, Yang & Li, 1998: 82. Type locality: China: Henan, Luanchuan.

*Setihercostomus zonalis*: Zhang & Yang, 2005: 184.

*Setihercostomus wuyangensis*: Zhang & Yang, 2005: 184.



**Fig. 2.** *Setihercostomus setifacies* (Stackelberg, 1934), male: A, Genitalia, lateral view; B, Ditto, ventral view. Scale bars: A, B=0.1 mm. cer, cercus; d sur, dorsal surstylus; epd, epandrium; epd I, epandrial lobe; hyp, hypandrium; v sur, ventral surstylus.

**Distribution.** OR: China; PA: China (Yang et al., 2011).

**Key to species of the world *Setihercostomus***

(based on Yang et al., 2011 and Grichanov et al., 2014)

- 1. Femora mostly yellow..... 2
- Femora mostly black..... 4
- 2. Middle and lower postocular setae yellow.....
- ..... *S. taiwanensis* Zhang & Yang, 2011
- Postocular setae wholly black..... 3
- 3. Abdomen entirely dark metallic green; hind coxa mainly dark; hind femur with black apex.....
- ..... *S. huangi* (Zhang, Yang & Masunaga, 2004)
- Abdomen with entirely yellow segment 1, and partly yellow segment 2 and 3; hind coxa entirely yellow; hind femur entirely yellow..... *S. scharffi* (Grichanov, 1999)
- 4. Male cercus with pointed apex.....
- ..... *S. setifacies* (Stackelberg, 1934)
- Male cercus with round apex..... *S. wuyangensis* (Wei, 1997)

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**CONFLICTS OF INTEREST**

No potential conflict of interest relevant to this article was reported.

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