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## Review of the genus *Paracossus* Hampson, 1904 (Lepidoptera: Cossidae, Cossinae) with description of one new species from Thailand

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### Abstract

The article presents the world catalog of the genus *Paracossus* Hampson, 1904 (Lepidoptera: Cossidae, Cossinae), the holotypes of all the species of the genus are illustrated, the new species *Paracossus korshunovi* sp. n. (Type locality: Thailand, Nakhon Ratchasima Province, Nong Bun Mak District, near Nong Bunnak village) is described. For the first time, we give the image and description of the female genitalia of this genus. For the fauna of Laos, *P. indradit* Yakovlev, 2009 is indicated for the first time, for the fauna of India – *P. parva* Hampson, 1904.

**Key words:** Biodiversity, Oriental Region, Carpenter-Moths, taxonomy, species richness.

### Introduction

The genus *Paracossus* Hampson, 1904 (Lepidoptera: Cossidae, Cossinae) was established by Hampson by monotypy (1904: 152, Pl. D: fig. 30) for *Paracossus furcata* Hampson, 1904 (type locality: [Pegu, Myanmar]) without a formal description. In the consequent issue of Supplementary paper to the volumes in “The fauna of British India”, Hampson (1905) gives the description of the genus *Paracossus* and two species: *Paracossus furcata* Hampson, 1904 and *Paracossus parva* Hampson, 1905 (type locality: [Sri Lanka]) (Fletcher & Nye 1982).

Chou and Hua (1988) described the new genus and species *Bifiduncus longispinalis* Chou & Hua, 1988 from southern China (Pingxiang, Jiangxi Province). As an important apomorphy, they indicated an essential morphological character – the forked uncus. Having studied the male genital morphology of *Paracossus parva* Hampson, 1905, we established that *Paracossus* = *Bifiduncus* (Yakovlev 2009). In the same study, we described three new species from South-East Asia: *P. griseatus* Yakovlev, 2009, *P. indradit* Yakovlev, 2009 and *P. hainanicus* Yakovlev, 2009. Later, on the rich materials collected by Vadim Zolotukhin (Ulyanovsk) in Central Vietnam, one more species *P. zyaung* Yakovlev, 2014 was described, and for the first time, findings of *P. griseatus* and *P. indradit* were reported from Vietnam.

In the abundant materials on Coccoidea, collected by Alexey Korshunov (Kemerovo) in Thailand, we found a new species of the genus. Its description and the world catalog of the genus representatives is provided in this article.

#### *Abbreviation list*

- AKK private collection of Alexey Korshunov (Kemerovo, Russia);
- MWM Museum of Thomas Witt (Munich, Germany);
- NHMUK The Natural History Museum (London, U.K.);
- NWAU Northwestern Agricultural University (Yangling, China);
- RYB private collection of Roman Yakovlev (Barnaul, Russia);
- ZISP Zoological Institute of Science Academy of Russian Federation (St. Petersburg, Russia).

#### **Material and methods**

Material deposited in the AKK, MWM, NHMUK, NWAU, RYB and ZISP. Male genitalia were mounted in euparal on slides following Lafontaine and Mikkola (Lafontaine & Mikkola 1987). The adults were photographed using digital camera of iPhone 7. The genitalia preparations were photographed using an Olympus DP74 camera attached to an Olympus SZX16 stereomicroscope. Morphological terminology used in the description follows Kristensen (2003). The map was made using open source software (<https://www.simplemappr.net/>).

#### **Results**

##### **Description of new species**

###### ***Paracossus korshunovi* sp. n.**

<http://zoobank.org/urn:lsid:zoobank.org:act:51DB13F2-8F3F-4BC5-BA23-5A04D5CA35FF>

Figs 1–3, 13–15

**Material.** Holotype (male), Thailand, Nakhon Ratchasima Province, Nong Bun Mak District, near Nong Bunnak village, N 14°40'51.8", E 102°27'08.3", leaf-falling gallery forest, 9–25.iii.2020, leg. A. Korshunov (ZISP). 28 males, 11 females (paratypes), same locality and data (RYB, AKK, ZISP)

**Description.** Male (Figs 1–2). Length of fore wing 9–12 mm. Antenna simple, without setae. Thorax and abdomen light-grey. Fore wing light-grey with special reticulated pattern, round black spot at top of discal cell, thin black band submarginally. Hind wing light-grey with poorly expressed reticulated pattern.

Male genitalia (Fig. 13). Uncus wide, relatively short, with semicircular bifurcation; gnathos arms thick, short; gnathos very robust, covered with tiny spikes; valve with narrow apically membranous tip, robust crest with poorly expressed ribs on inner surface of valve on costal margin; transtilla process thin, slightly narrowing to apex, acute, poorly curved; juxta robust, with semicircular notch on dorsal surface; saccus robust, semicircular; phallus slightly shorter than valve, with apical spade-like extension, vesica without cornuti.

Female (Fig. 3). Bigger than male, length of fore wing 13–16 mm, antenna not pectinate, dark elements of pattern significantly extended.

Female genitalia (Fig. 14). Ovipositor long; papillae anales semicircular, with transverse oblique notching; anterior apophyses twice shorter than posterior ones; ostium aperture slit-like. Ductus and bursa absent on preparation.

**Diagnosis.** The new species differs from all the known species of the genus in the relatively small size, simple antenna, the very narrow apical portion of the valve and the acute tips of the uncus.

**Distribution.** Central Thailand.



**Figures 1–10.** Adult specimens of *Paracossus*: 1. *P. korshunovi* sp. n., male, holotype (ZISP); 2. *P. korshunovi* sp. n., male, paratype (RYB); 3. *P. korshunovi* sp. n., female, paratype (RYB); 4. *P. furcata* Hampson, 1904, female, holotype (NHMUK); 5. *P. griseatus* Yakovlev, 2009, male, holotype (MWM); 6. *P. hainanicus* Yakovlev, 2009, male, holotype (MWM); 7. *P. indradit* Yakovlev, 2009, male, holotype (MWM); 8. *P. indradit* Yakovlev, 2009, male, Laos (MWM); 9. *P. longispinalis* (Chou & Hua, 1988), male, holotype (NWAU); 10. *P. parva* Hampson, 1904, male, holotype (NHMUK).



**Figures 11–12.** 11. *P. parva* Hampson, 1904, female, S. India (MWM); 12. *P. zyaung* Yakovlev, 2014, male, holotype (ZISP).

**Etymology.** The new species is named after the prominent Russian entomologist Alexey Korshunov (Kemerovo, Russia), who has collected this species new to science.

#### Catalogue of the Genus *Paracossus* Hampson, 1904

##### Genus *Paracossus* Hampson, 1904

Hampson, 1904: 152, Pl. D: fig. 30.

Type species (by monotypy) *Paracossus furcata* Hampson, 1904

##### Synonymy (designation by Yakovlev (2009: 353)

= *Bifiduncus* Chou & Hua, 1988

Chou & Hua, 1988: 225, 227.

Type species (by original designation) *Bifiduncus longispinalis* Chou & Hua, 1988.

Composition. Eight species.

Distribution. Southern China, Indochina, India, Sri Lanka.

##### *Paracossus furcata* Hampson, 1904

Figs 15

Hampson, 1904: 152, Pl. D: fig. 30.

Type locality: Pegu, Magane [Pegu, Myanmar].

Type material (holotype, female) in NHMUK, examined.

Material examined. Holotype (female), Pegu, Magane, Moore Coll. 94–106 (NHMUK).

Distribution: Myanmar (Gaede 1933; Arora 1976; Schoorl 1990).

##### *Paracossus griseatus* Yakovlev, 2009

Figs 5, 15

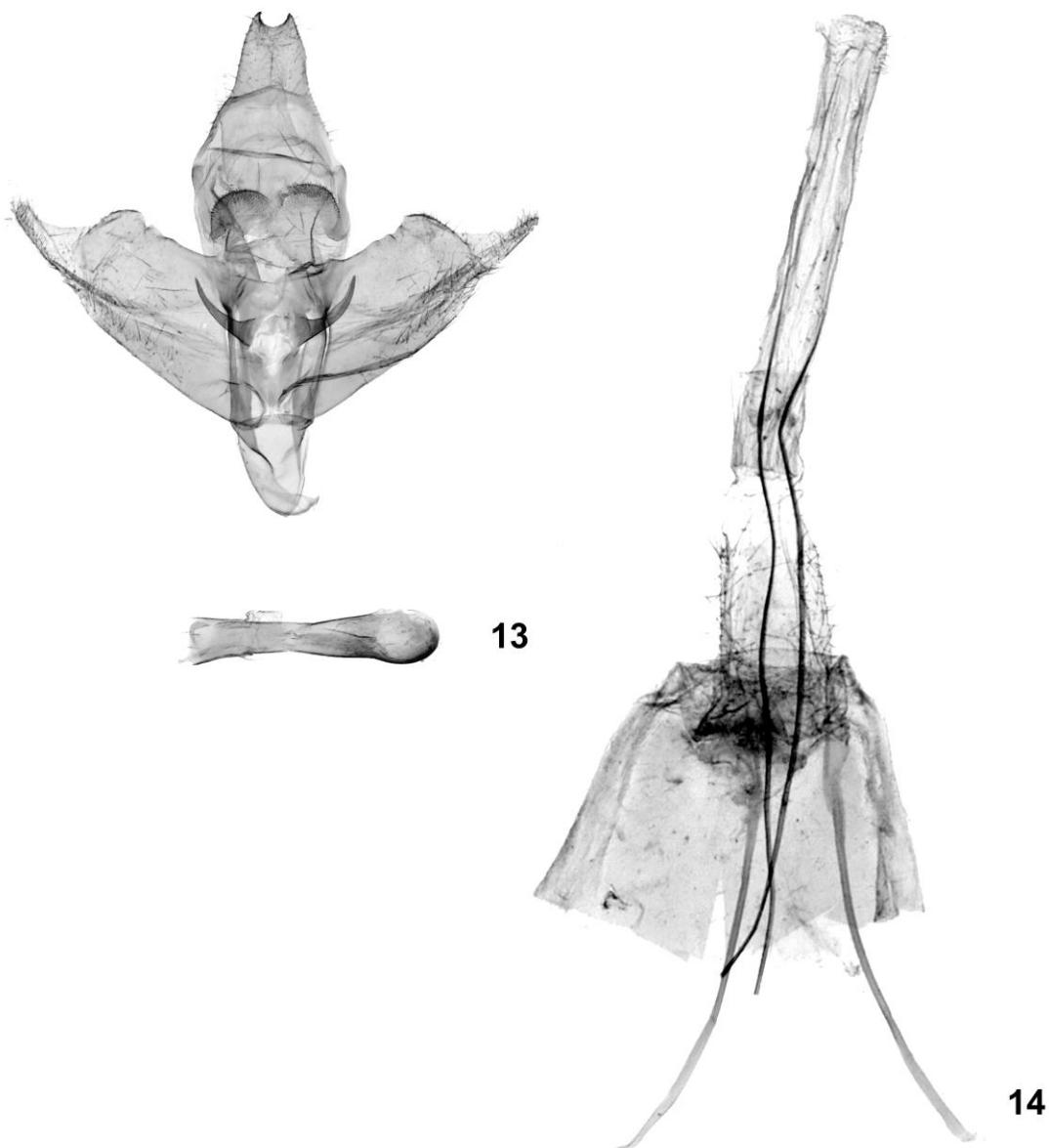
Yakovlev, 2009: 354.

Type locality: S. Cambodia, Sro Kiong env., Kirirom.

Type material (holotype, male) in MWM, examined.

Material examined. 1 male (holotype), S. Cambodia, Sro Kiong env., Kirirom, 720 m, 4–12.i.2001, leg. Chernyshov & Kosov (MWM); 1 male, same locality, 11°21'N 104°04'E, 2–7.i.2000, leg. M. & S. Murzin (MWM); 1 male, Central Vietnam, K'Bang distr., Dak Roong, Kon Loc vill., N 14°42' E 108°39', 14–17.iii.2012, H – 1050 m, leg. V. Zolotuhin (RYB).

Distribution: Cambodia, Central Vietnam (Yakovlev 2009; 2014).  
 Flight period: January–March.



**Figures 13–14.** Genitalia of *Paracossus*: 13. *P. korshunovi* sp. n., male, holotype (ZISP); 14. *P. korshunovi* sp. n., female, paratype (RYB).

***Paracossus hainanicus* Yakovlev, 2009**

Figs 6, 15

Yakovlev, 2009: 354.

Type locality: China, Hainan Isl., Wuzhi-Shan Mts.

Type material (holotype, male) in MWM, examined.

Material examined. 1 male (holotype), China, Hainan Isl., Wuzhi-Shan Mts., 18°53' N 109°43' E, 20.ii.–10.iv.2001, 1500 m, leg. local collector, ex coll. R. Brechlin (MWM); 3 males (paratypes), same locality and data (MWM).

Distribution: Southern China, Hainan Island (Yakovlev 2009).

Flight period: February–April.

***Paracossus indradit* Yakovlev, 2009**

Figs 7–8, 15

Yakovlev, 2009: 354.

Type locality: Thailand, Donglek, Sri Sawat, Kanchanaburi.

Type material (holotype, male) in MWM, examined.

Material examined. Male (holotype), Thailand, Donglek, Sri Sawat, Kanchanaburi, 16.xi.2004 (MWM); 2 males (paratypes), same locality and data (MWM); 1 male (paratype), Thailand, Changwat Chiang Mai, Mt. Doi Phahompok, 16 km NW of Fang, 2000 m, 15.ii.1998, leg. Hreblay & Szaboky (MWM); 2 males (paratypes), Thailand, Changwat Chiang Mai, 15 km SW Wiang Haeng, 1400 m, 3.iii.1998, leg. M. Hreblay & Szaboky (MWM); 4 males (paratypes), Thailand, Changwat Nan, 25 km N Bo Luang, 1150 m, 17.ii.1998, leg. Hreblay & Szaboky (MWM); 4 males (paratypes), China, Yunnan prov., 10 km SW Yunxian Daxing, 120 km S Dali, Linckang Distr., 24°30'N; 100°01'E, 16.iii.–10.iv.2000, 1200 m, leg. Brechlin & local collectors (MWM); 1 male (paratype), China, Yunnan, Mouding, 25°19'N; 101°32'E, 16.iii.–10.iv.2000, leg. Brechlin & local collectors (MWM); 2 males, Central Vietnam, Gia Lai Prov., Kon Ka Kin N.[ational] P.[ark], K'Bang distr., Dak Roong Comm., top of mountain pass, N14°42'8"; E108°36', 16–17.iii.2012, H – 1210 m, leg. V. Zolotuhin (RYB); 1 male, Laos, prov. Luangphrabang, Xiang Ngeun, 20 km S Luangphrabang, 700 m, 18.i.2005, leg. S. Loeffler (MWM).

Distribution: Thailand, SE China (Yunnan Province), Central Vietnam (Yakovlev 2009, 2011, 2014), Laos (new locality).

Flight period: November–April.

***Paracossus korshunovi* Yakovlev sp. n.**

Type locality: Thailand, Nathon Ratchasima Province, Nong Bun Mak District, near Nong Bunnak village.

Type material (holotype, male) in ZISP, examined.

Distribution: Central Thailand.

Flight period: March.

***Paracossus longispinalis* (Chou & Hua, 1988)**

Figs 9, 15

*Bifduncus longispinalis* Chou & Hua, 1988: 225

Type locality: Pingxiang, Jiangxi Province [China, Jiangxi].

Type material (holotype, male) in NWAU, examined.

Material examined. 1 male (holotype), Pingxiang, Jiangxi Province, 15.ix.1980, coll. Zhao Yongxiang (NWAU).

Distribution: China, Jiangxi.

Flight period: September.

***Paracossus parva* Hampson, 1904**

Figs 10–11, 15

Hampson, 1905: 194–195.

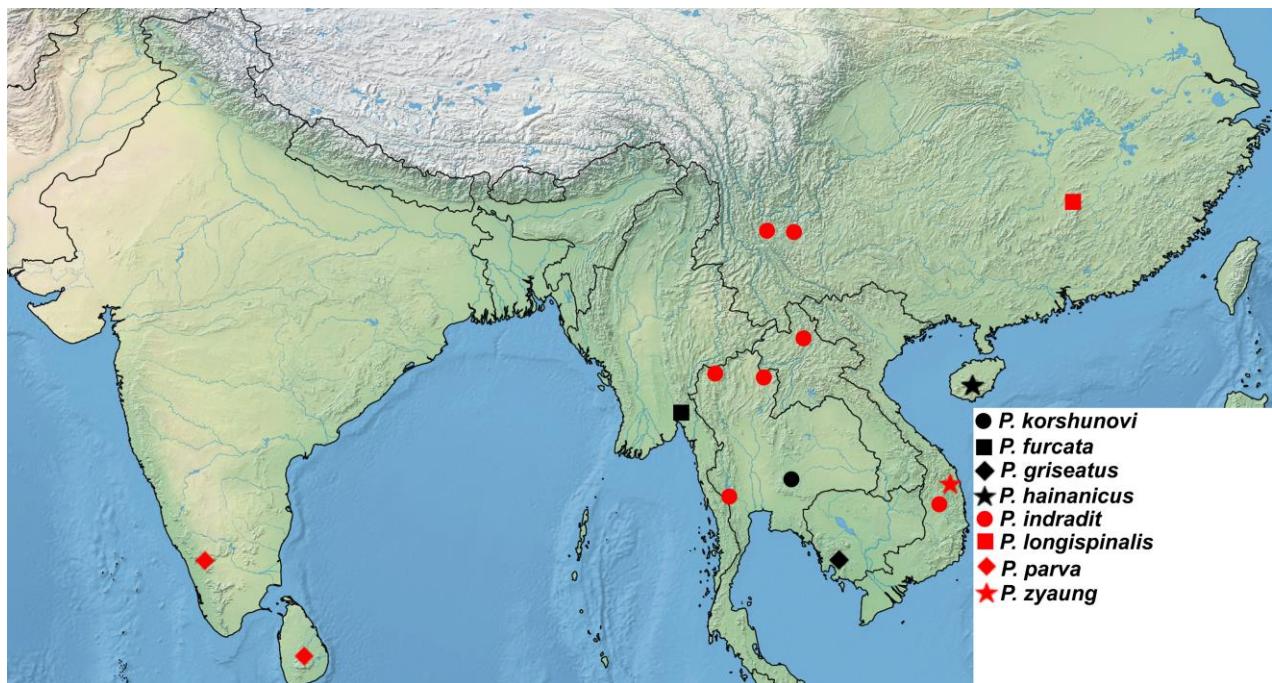
Type locality: Ceylon, Matalé (Pole) [Sri Lanka].

Type material (holotype, male) in NHMUK, examined.

Material examined. 1 male (holotype), Ceylon, Matale (NHMUK); 1 female, S. India, Tamil Nadu, Nilgiri Hills, S-slopes, 15 km W Kotagiri, 900 m, 11°23'N 76°55'E, 16.iv.1997, leg. Sinjaev & Schintlmeister (MWM).

Distribution: Sri Lanka (Gaede 1933; Arora 1976; Schoorl 1990), Southern India (new locality).

Flight period: April.



**Figure 15.** Distributional map of Genus *Paracossus*.

#### *Paracossus zyaung* Yakovlev, 2014

Figs 12, 15

Yakovlev, 2014: 242

Type locality: Central Vietnam, K'Bang distr., Dak Roong, Kon Loc vill.

Type material (holotype, male) in ZISP, examined.

Material examined. Male (holotype), Central Vietnam, K'Bang distr., Dak Roong, Kon Loc vill., N 14°42'; E 108°39', 14–17.iii.2012, H – 1050 m, leg. V. Zolotuhin (ZISP); 2 males (paratypes), same data and locality (RYB).

Distribution: Central Vietnam.

Flight period: March.

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