

## Pygmy grasshoppers (Orthoptera: Tetrigidae) of Vietnam: genus *Austrohancockia* Günther, 1938

## Прыгунчики (Orthoptera: Tetrigidae) Вьетнама: род *Austrohancockia* Günther, 1938

S.YU. STOROZHENKO

С.Ю. СТОРОЖЕНКО

*S.Yu. Storozhenko, Institute of Biology and Soil Science, Far Eastern Branch of the Russian Academy of Sciences, Vladivostok 690022, Russia. E-mail: storozhenko@ibss.dvo.ru*

Two species of the genus *Austrohancockia* are found in Vietnam. *A. orlovi* **sp. nov.** is described from northern and central parts of this country. A key to Vietnamese species of *Austrohancockia* is provided.

Для Вьетнама приводятся два вида рода *Austrohancockia*. Из северных и центральных районов страны описан *A. orlovi* **sp. nov.** Дана определительная таблица видов *Austrohancockia* фауны Вьетнама.

**Key words:** pygmy grasshoppers, taxonomy, fauna, Vietnam, Orthoptera, Tetrigidae, Cladonotinae, *Austrohancockia*, new species

**Ключевые слова:** прыгунчики, таксономия, фауна, Вьетнам, Orthoptera, Tetrigidae, Cladonotinae, *Austrohancockia*, новый вид

## INTRODUCTION

Up to now 39 species in 26 genera and six subfamilies of pygmy grasshoppers (Orthoptera: Tetrigidae) are known from Vietnam (Kim & Pham, 2014; Storozhenko, 2015; Storozhenko & Pushkar, 2015; Eades et al., 2016). Previously one species of the genus *Austrohancockia* has been recorded from this country (Günther, 1938). A new species of *Austrohancockia* is found in Vietnam and described below.

The present paper is based on the specimens collected in Vietnam by Russian entomologists N.L. Orlov, A.V. Gorochoy, O.N. Kabakov, and V.A. Triapitzin in 1963–1999. All photographs were made using a Canon EOS D6 digital camera with EF 100 mm f/2.8L Macro IS USM macro lens, Falcon Eyes Slk-2400S flash, and Combine ZM imaging software. The morphological terminology follows Storozhenko and Paik (2007), except for the detailed terminology of the carinae that follows Devriese (1999).

Length of body is measured from the frontal ridge to the apex of subgenital plate; all the other measurements are standardized for Tetrigidae (Tumbrinck, 2014). The holotype and paratypes of a new species are deposited in the Zoological Institute of the Russian Academy of Sciences, St Petersburg (ZIN).

## SYSTEMATICS

Family **TETRIGIDAE** Rambur, 1838

Subfamily **CLADONOTINAE** Bolívar, 1887

Genus *Austrohancockia* Günther, 1938

*Austrohancockia* Günther, 1938: 349; Blackith, 1992: 6; Yamasaki, 1994: 458; Otte, 1997: 12; Liang & Zheng, 1998: 37, 236; Zheng, 2005: 35, 445; Zha et al., 2014: 85.

*Pseudohancockia* Zheng & Liang, 1987: 243 (type species *Hancockia kwangtungensis* Tinkham, 1936, by original designation); synonymized by Blackith (1992).

Type species *Austrohancockia kwangtungensis* (Tinkham, 1936), by original designation.

**Differential diagnosis.** In the original description of the genus *Austrohancockia*, it was compared with the genera *Tondanotettix* Willemse, 1928 and *Hancockia* Kirby, 1914 (Günther, 1938). Although *Austrohancockia* is not included in the key to Oriental genera of Cladonotinae (Tumbrinck, 2014), but in this key, this genus gets into the paragraphs for the genera *Cladonotella* Hancock, 1909 (4 species from Java and New Guinea) and *Gestroana* Berg, 1898 (15 species from New Guinea). *Tondanotettix* (with two species from Sulawesi) differs from *Austrohancockia* in a distinctly curved lower side of the pronotal process (in the latter genus, this side is almost straight). In other hand, *Austrohancockia* is also similar to the monotypic genus *Hancockella* Uvarov, 1940 (= *Hancockia* Kirby, 1914) from India, but differs from the latter in the absence of setae on fore and middle legs, and in the presence of 5–7 outer and 4–6 small inner teeth on the dorsal side of hind tibiae (in *Hancockella*, fore and middle legs are with numerous bundles of long setae, and dorsal side of the hind tibiae with only two inner apical teeth). The bases of antennae in *Gestroana* are inserted distinctly (more than the diameter of an antennal socket) below the lower margin of eyes, while in *Austrohancockia* and *Cladonotella*, antennae are situated slightly below the lower margin of eyes (less than a half of the diameter of an antennal socket). Thus, *Austrohancockia* is most closely related to *Cladonotella*, but differs from the latter in a laterally broadened pronotum (Tumbrinck, 2014).

**Composition.** The genus consists of 17 species distributed in Oriental region, namely: *Austrohancockia fengyangshanensis* Zheng et Zhao, 2009 from China (Zhejiang); *A. gibba* Liang et Zheng, 1991 from China (Guangdong); *A. gressitti* (Zheng et Liang, 1987) from Taiwan; *A. guangxiensis* Zheng et Jiang, 1998 from China (Guangxi); *A. gutianshanensis* Zheng, 1995 from China

(Zhejiang); *A. hubeiensis* Zheng, 1992 from China (Hubei, Guangxi); *A. jiugongshanensis* Zheng et Zhong, 2005 from China (Hubei); *A. kwangtungensis* (Tinkham, 1936) from China (Guangdong, Guangxi, Jiangxi) and Vietnam; *A. longidorsalis* Zheng, 2008 from China (Guangxi); *A. okinawensis* Yamasaki, 1994 from Japan (Okinawa); *A. platynota* (Karny, 1915) with two subspecies, *A. p. platynota* (Karny, 1915) from China (Guangdong), Taiwan and Japan (Okinawa) and *A. p. amamiensis* Yamasaki, 1994 from Japan (Ryukyu); *A. qiyunshanensis* Zheng, 1998 from China (Anhui); *A. tuberfemora* Deng, Zheng et Wei, 2008 from China (Guizhou); *A. undatimarginis* Deng et Zheng, 2012 from China (Guangxi); *A. wuyishanensis* Zheng et Zhao, 2009 from China (Fujian); and *A. yuexiensis* Zha, Deng et Zheng, 2014 from China (Anhui) (Karny, 1915; Tinkham, 1936; Zheng & Liang, 1987; Liang & Zheng, 1991; Zheng, 1992; Yamasaki, 1994; Zheng, 1995; Jiang & Zheng, 1998; Zheng & Zhong, 2005; Deng et al., 2008; Zheng, 2008; Zheng & Zhao, 2009; Deng et al., 2012; Zha et al., 2014; Eades et al., 2016). Two species of *Austrohancockia* are found in Vietnam, one of which is new.

#### Key to Vietnamese species

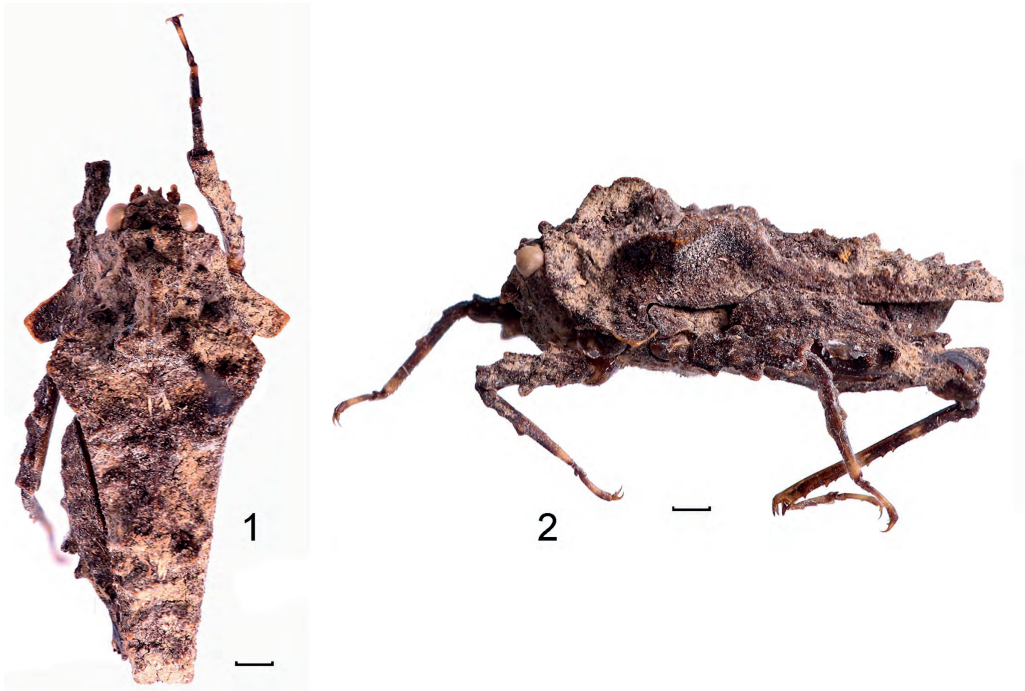
1. Lateral sides of shoulders angular and distinctly dentate; external lateral carinae weakly excised behind shoulders (Fig. 1). Posterior process of pronotum with a few large tubercles in lateral view (Fig. 2) . . . . . *A. kwangtungensis* (Tinkham, 1936)
- Lateral sides of shoulders obtusely rounded and gently dentate; external lateral carinae behind shoulders straight (Figs 3, 6). Posterior process of pronotum with a few small tubercles (Figs 6, 7) . . . . . *A. orlovi* sp. nov.

#### *Austrohancockia kwangtungensis*

(Tinkham, 1936)

(Figs 1, 2)

*Hancockia kwangtungensis* Tinkham, 1936: 402, Pl. 17, fig. 3, Pl. 18, fig. 5 (type locality: China, Kwangtung, Lo Fau Shan, Big Pool).



**Figs 1, 2.** *Austrohancockia kwangtungensis*, body of male: 1, dorsal view; 2, lateral view. Scale bar: 1 mm.

*Austrohancockia kwangtungensis*: Günther, 1938: 350; Blackith, 1992: 6; Otte, 1997: 12; Liang & Zheng, 1998: 39, fig. 23; Zheng, 2005: 36, figs 75–77; Zha et al., 2014: 86.

**Material examined. Northwestern Vietnam:** 1 male, Lao Cai Prov., Sa Pa District, Fan Si Pan Mt., 22°18'59"N, 103°49'16"E, 1200 m, 12–25 May 1999, N. Orlov (ZIN).

**Measurements** (length in mm). Body: male 8.0–12.3, female 11.2–13.8; pronotum: male 7.0–12.7, female 12.1–13.0; hind femur: male 5.0–7.3, female 7.2–8.0; ovipositor 2.1.

**Distribution.** Southern China, Northern Vietnam.

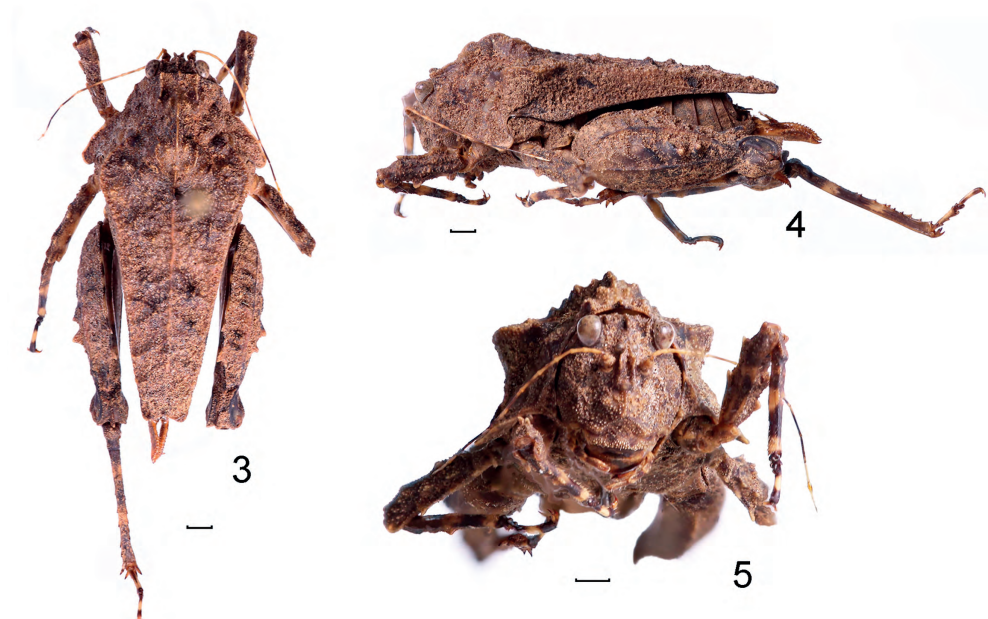
**Remark.** This species was recorded by Günther (1938) from “Chien-Hoa in Central Tonkin” (= Thieu Hoa District in Thanh Hoa Prov., Northern Vietnam).

***Austrohancockia orlovi* Storozhenko, sp. nov.**  
(Figs 3–11)

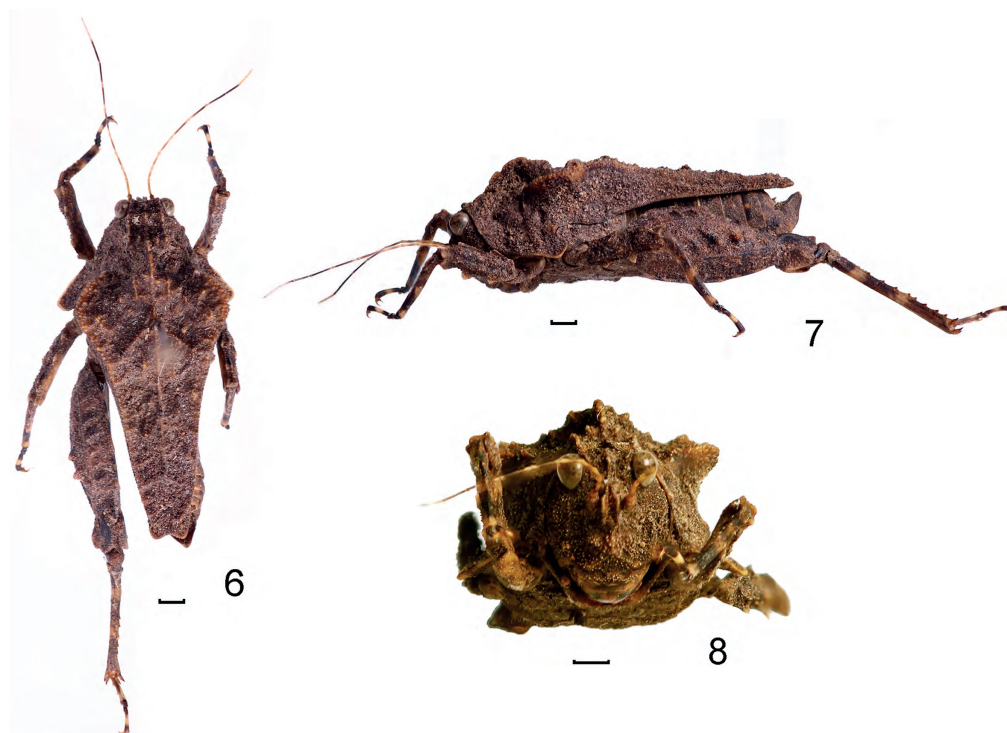
**Holotype.** Female, Northern Vietnam, Hai Duong Prov., Chi Linh District, vicinity of Chi Linh vill., October 1997, N. Orlov (ZIN).

**Paratypes. Northern Vietnam:** 5 males and 2 females, same data as for holotype (ZIN); male and female, Vinh Phuc Prov., Tham Dao National Park, 600–900 m, 17–31 May 1995, A. Gorochov (ZIN); 2 males and female, same locality, 1–11 June 1995, A. Gorochov (ZIN); 1 female, Than Ca, 6 March 1963, O. Kabakov (ZIN); male, same locality, 29 July 1963, O. Kabakov (ZIN); female, Cao Bang Prov., Nguen Binh District, Quang Thanh Vill., 4–13 May 1998, N. Orlov (ZIN); male and female, Thai Nguyen Prov., Phu Luong Distr., Khuan Chu Vill., 15–23 April 1986, A. Gorochov (ZIN); male, same locality, 16 April 1986, V. Triapitzin (ZIN). **Central Vietnam:** male, Gia Lai Prov., Ka Bang District, Krong Pa Vill., 1500 m, 13–30 September 1997, N. Orlov (ZIN).

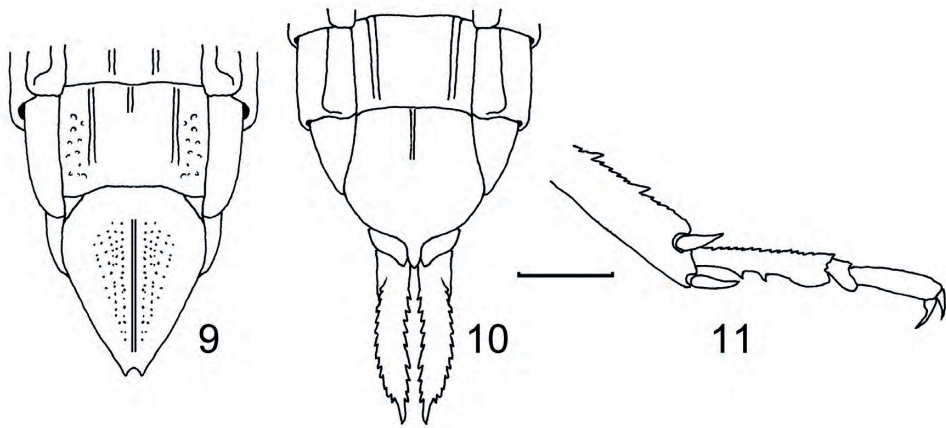
**Description.** Female. Body of moderately large for this genus, robust. Antennae filiform, 14–15-segmented, 2.4–2.5 times as long as fore femur; middle antennal segments (7–10th) 10–11.5 times as long as wide. Antennal sockets situated distinctly below lower margins of eyes. Fastigium of vertex 2.5–2.6 times wider than one eye seen from above; anterior margin of ver-



**Figs 3–5.** *Austrohancockia orlovi* sp. nov., body of female: 3, dorsal view; 4, lateral view; 5, frontal view. Scale bar: 1 mm.



**Figs 6–8.** *Austrohancockia orlovi* sp. nov., body of male: 6, dorsal view; 7, lateral view; 8, frontal view. Scale bar: 1 mm.



**Figs 9–11.** *Austrohancockia orlovi* sp. nov.: 9, male abdominal apex, ventral view; 10, female abdominal apex, ventral view; 11, female hind tarsus, lateral view. Scale bar: 1 mm.

tex excised, not protruding beyond eyes; median carina of fastigium and supraocular lobes distinct; transverse carina absent. Eyes not elevated above pronotum in lateral view. Lateral ocelli situated between lower margins of eyes. Frontal ridge in lateral view excised above lateral ocelli, broadly rounded between antennal sockets and again weakly excised below median ocellus; in frontal view, this ridge is distinctly widened between lateral ocelli and median ocellus. Median carina of frontal ridge 2–2.4 times as long as width of first antennal segment. Frontal ridge near base of antennae 1.1–1.3 times as wide as first antennal segment. Pronotum in dorsal view with truncated anterior margin; posterior process of the pronotum reaching apex of hind femora. Disc of pronotum with two short interhumeral carinae; posterior process of pronotum with a few irregular small tubercles; apex of posterior process deeply excised. Lateral sides of shoulders (humeral angles) obtusely rounded and gently dentate in dorsal view. Median carina of pronotum sinuate in profile, gently raised near anterior margin, deeply excised in the prozona, forming high crest between prozona and shoulders, and low and almost straight in posterior process. Hind margin of lateral lobes of pronotum with lower sinus only;

lower side of lateral lobes of pronotum in dorsal view forming obliquely truncate lobe; lower side of pronotal process almost straight. Tegmina and hind wing absent. Fore femur 2.6–2.7 times, mid femur 2.5–2.6 times as long as wide; upper and lower side of fore and middle femora with two lobules. Upper side of hind femur with three lobules, lower side gently sinuate; pregeniculate tooth large, short and triangular; median external area of hind femur with two large tubercles. Hind femur 2.5–2.6 times as long as wide. Upper side of the hind tibia in basal part with margins finely serrated, in apical part with 5–6 outer and 4–5 small inner teeth. First tarsal segment of hind leg 1.1–1.2 times as long as third one (without claws); ventral side of this first segment with three pads (two basal pads short and pointed; apical pad rounded, distinctly longer than the other pads); third segment not swollen. Epiproct triangular, with pointed apex. Subgenital plate subsquare; posterior margin of this plate distinctly triangular near middle. Cerci conical, with pointed apices, 1.9–2.0 times as long as wide near base. Valves of ovipositor narrow, dentate; length of upper valve 3.5–3.6 times as great as its maximum width; length of the lower valve 4.5–4.6 times as great as its maximum width.

General coloration of body brown. Antennae: basal segments light brown with blackish rings; 8–11th segments black with light rings near basal and apical parts; apical segments light brown. Eyes light brown. Femora brown with light brown lobules. Fore and middle tibia blackish brown with three light brown rings. Hind femora black with two whitish rings. Tarsi black with broad white ring near middle of apical segment; claws brown. Subgenital plate brown. Ovipositor shining, brown.

Male. Similar to female. Antennae 13–14-segmented. Fastigium of vertex 2.5–2.6 times as wide as eye seen from above; carina of fastigium as in female. Median carina of frontal ridge 1.7–2.1 times as long as width of first antennal segment. Frontal ridge near base of antennae 1.1–1.3 times as wide as first antennal segment. Pronotum as in female. Fore and middle femora similar to those of female but 3.3–3.5 times as long as wide. Hind femur 2.4–2.8 times as long as wide. Hind tibia and tarsi also as in female. Epiproct triangular, with pointed apex. Subgenital plate 1.2 times as long as wide; apex of this plate with small excision. Cerci as in female also.

General coloration of body similar to that of female, but subgenital plate blackish brown.

*Measurements* (length in mm). Body: male 15.1–15.3, female 14.5–15.5; pronotum: male 12.7–14.3, female 14.9–15.6; antenna male 7.1–8.3, female 8.2–8.6; fore femur: male 3.2–3.6, female 3.4–3.4; middle femur: male 3.3–3.6, female 3.4–3.7; hind femur: male 7.3–8.1, female 8.4–9.2; ovipositor 2.6–2.9.

*Distribution*. Northern and Central Vietnam.

*Comparison*. The new species is most similar to *A. platynotum* but distinguished from the latter by the pronotal crest narrower and with an excision (in *A. platynotus*, this crest is broadly rounded and without excision). From *A. gressiti* and *A. okinawaensis*, this new species differs in a shorter pronotum (in the latter congeners,

posterior process of pronotum is protruding behind the apex of hind femora); from *A. gibba* and *A. guangxiensis*, in a longer pronotum (in these congeners, posterior pronotal process reaches the base of distal quarter of hind femur only); from *A. kwantungensis* and *A. gutianshanensis*, in broadly rounded lateral sides of the shoulders; from *A. longidorsalis* and *A. jiugongshanensis*, in a narrower fastigium of the vertex (in both the latter species, this fastigium is 3–3.6 times as wide as one eye seen from above); and from the other congeners, in the shape of median carina of pronotum.

*Etymology*. This species is named after the herpetologist N.L. Orlov, who collected the holotype and part of paratypes.

#### ACKNOWLEDGEMENTS

The author would like to express gratitude to Dr. A.V. Gorochov (Zoological Institute, St Petersburg, Russia) for the possibility to examine the specimens deposited in ZIN. This research was supported by the Russian Foundation for Basic Research (project No. 14-04-00649).

#### REFERENCES

- Blackith R.E.** 1992. *Tetrigidae (Insecta: Orthoptera) of South-East Asia: Annotated catalogue with partial translated keys and bibliography*. Ashford Co., Ireland: JAPAGA, Rockbottom. 248 p.
- Deng W.A., Zheng Z.M. & Wei S.Z.** 2007. *Fauna of the Tetrigoidea from Yunnan and Guangxi*. Nanning: Guangxi Science & Technology Press. 458 p. (In Chinese with English summary).
- Deng W.A., Zheng Z.M. & Wei S.Z.** 2008. A taxonomic study of the genus *Austrohancockia* Günther (Orthoptera: Tetrigoidea: Tetrigidae). *Zootaxa*, 1896: 63–68.
- Deng W.A., Zheng Z.M., Zhou P.N. & Zhou S.Y.** 2012. A new species in the genus *Austrohancockia* Günther (Orthoptera: Tetrigoidea: Cladonotidae) from Guangxi, China. *Entomotaxonomia*, 34(2): 137–140.
- Devriese H.** 1999. Revision des Xerophyllini d'Afrique (Orthoptera, Tetrigidae). *Belgian Journal of Entomology*, 1(1): 21–99.

- Eades D.C., Otte D., Cigliano M.M. & Braun H.** 2016. *Orthoptera Species File Online. Version 5.0/5.0* Available from: <http://Orthoptera.SpeciesFile.org>. [visited 15 April 2016].
- Günther K.** 1938. Revision der Acrydiinae, I. Sectiones Tripetalocerae, Discotettigiae, Lophotettigiae, Cleostratae, Bufonidae, Cladonotae, Scelimenae verae. *Mitteilungen aus dem Zoologischen Museum in Berlin*, **23**(2): 299–437.
- Jiang G.F. & Zheng Z.M.** 1998. *Grasshoppers and locusts from Guangxi*. Guilin: Guangxi Normal University Press. 394 p. (In Chinese with English summary).
- Karny H.H.** 1915. Orthoptera et Oothecaria (H. Sauter's Formosa-Ausbeute). *Supplementa Entomologica*, **4**: 56–108.
- Kim T.W. & Pham H.T.** 2014. Checklist of Vietnamese Orthoptera (Saltatoria). *Zootaxa*, **3811**(1): 53–82.
- Liang G.Q. & Zheng Z.M.** 1991. A new species of the genus *Austrohancockia* Günther from China (Orthoptera: Tetrigidae). *Acta Zootaxonomica Sinica*, **16**(2): 194–196. (In Chinese with English summary).
- Liang G.Q. & Zheng Z.M.** 1998. *Fauna Sinica, Insecta, Vol. 12, Orthoptera, Tetrigoidea*. Beijing: Science Press. 278 p. (In Chinese with English summary).
- Otte D.** 1997. *Orthoptera Species File 6. Tetrigoidea and Tridactyloidea (Orthoptera: Caelifera) and Addenda to OSF Vols 1–5*. Philadelphia: Orthopterists' Society & Academy of Natural Sciences of Philadelphia. 261 p.
- Storozhenko S. Yu.** 2015. New species of the genus *Rhopalotettix* Hancock, 1910 (Orthoptera: Tetrigidae, Metrodorinae) from Vietnam. *Zoosystematica Rossica*, **24**(1): 90–93.
- Storozhenko S. Yu. & Paik J.Ch.** 2007. *Orthoptera of Korea*. Vladivostok: Dalnauka. 232 p.
- Storozhenko S. Yu. & Pushkar T.I.** 2015. A new genus of pygmy locusts (Orthoptera, Tetrigidae, Metrodorinae) from Vietnam. *Annales Zoologici, Warszawa*, **65**(1): 65–69.
- Tinkham E.R.** 1936. Four new species of Orthoptera from Loh Fau Shan, Kwangtung, South China. *Lingnan Science Journal*, **15**(3): 401–413, pls 17–18.
- Tumbrinck J.** 2014. Taxonomic revision of the Cladonotinae (Orthoptera: Tetrigidae) from the islands of South-East Asia and from Australia, with general remarks to the classification and morphology of the Tetrigidae and descriptions of new genera and species from New Guinea and New Caledonia: 345–396, pls 64–91. In: Telnov D. (ed.) *Biodiversity, biogeography and nature conservation in Wallacea and New Guinea. Volume II*. RHGa, the Entomological Society of Latvia. 458 p. + 126 pls.
- Yamasaki T.** 1994. On tetrigids of the genus *Austrohancockia* (Orthoptera: Tetrigidae) of the Ryukyus. *Proceedings of the Japanese Society of Systematic Zoology*, **50**: 46–51.
- Zha L.S., Deng W.A., Zheng Z.M. & Li X.M.** 2014. A new species in the genus *Austrohancockia* Günther (Orthoptera: Tetrigoidea: Cladonotidae) from Anhui, China. *Entomotaxonomia*, **36**(2): 85–89.
- Zheng Z.M.** 1992. Orthoptera: Tetrigidae. In: Chen S.X. (ed.) *Insects of the Hengduan Mountains Region, Vol. 1*. Beijing: Science Press. 865 p. (In Chinese with English summary).
- Zheng Z.M.** 1995. Orthoptera: Acridoidea, Eumastacoidea and Tetrigoidea. In: Zhu T. (ed.) *Insects and macrofungi of Gutianshan, Zhejiang*. Hangzhou: Zhejiang Science & Technology Publishing House. 318 p. (In Chinese with English summary).
- Zheng Z.M.** 2005. *Fauna of Tetrigoidea from Western China*. Beijing: Science Press. 501 p. (In Chinese with English summary).
- Zheng Z.M.** 2008. A taxonomic study of the genus *Austrohancockia* Günther (Orthoptera: Tetrigoidea: Cladonotidae), with description of one new species from China. *Acta Entomologica Sinica*, **51**(4): 424–429. (In Chinese with English summary).
- Zheng Z.M. & Liang G.Q.** 1987. A new genus and a new species of Tetrigidae (Orthoptera). *Entomotaxonomia*, **9**(3): 243–247. (In Chinese with English summary).
- Zheng Z.M. & Zhao L.** 2009. Two new species in the genus *Austrohancockia* Günther from Fujian and Zhejiang Province, China (Orthoptera: Cladonotidae). *Journal of Huazhong Agricultural University*, **28**(4): 409–413. (In Chinese with English summary).
- Zheng Z.M. & Zhong Y.L.** 2005. Three new species of Orthoptera from Hubei Province. *Entomotaxonomia*, **27**(4): 249–256. (In Chinese with English summary).

Received 17 April 2016 / Accepted 29 April 2016