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A taxonomic study on the species of the genus *Diestramima* Storozhenko (Orthoptera: Rhaphidophoridae; Aemodogryllinae)

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Abstract

A taxonomic study of the genus *Diestramima* Storozhenko, 1990 is presented. Eleven new species are described: *D. excavata* sp. nov., *D. parabispinosa* sp. nov., *D. tibetensis* sp. nov., *D. guangxiensis* sp. nov., *D. subrectis* sp. nov., *D. curvicaudata* sp. nov., *D. beybienkoi* sp. nov., *D. triangulata* sp. nov., *D. brevis* sp. nov., *D. emeiensis* sp. nov., *D. conica* sp. nov.. A key to the species of *Diestramima* is given.

Key words: Orthoptera, Aemodogryllinae, *Diestramima*, new species, China

Introduction

Diestramima was proposed by Storozhenko (1990) with the type species *Diestrammena cryptopygia* (Chopard, 1918) from India. In that paper, he presented the key to four species of this genus. He also concluded that *Diestrammena palpata* (Rehn, 1906) was a synonym of the type species. But Gorochov & Storozhenko (2015) treated them as two independent and valid species. Here we agree with that. Therefore, we agree the type species should be *Diestrammena cryptopygia* (Chopard, 1918) which is consistent with the figures provided by Storozhenko (1990).

The four species, *D. vietnamensis*, *D. austrosinensis*, *D. major*, *D. minor* were reported by Gorochov (1998) and he transferred other previously described species from *Diestramma*. *D. multa* (Gorochov, 1994) was transferred to *Adiestramma* as the type species. *D. modesta* (Gorochov, 1992), *D. citrea* (Gorochov, 1992), *D. proxima* (Gorochov, 1994) were moved to this genus as well. At the same time, he established *Gigantettix* with the type species *D. gigantea* (Gorochov, 1992) and transferred *D. longipes* (Gorochov, 1992) to this genus. Liu *et al.* (2001) added *D. intermedia* from China (Zhejiang). *D. vietnamensis saturata* was described by Gorochov (2002) from Vietnam. After that, he (2010) also described *D. distincta* from China (Tibet). Storozhenko & Dawwrueng (2014) noted that *Diestramma* included 10 species and provided the key to genera of the tribe Diestramimini. Gorochov *et al.* (2015) reviewed this genus, listed the key to species of *Diestramma* and described six new species, including two female holotypes.

To date, *Diestramma* includes a total of sixteen species, five species are recorded from China, and five species are recorded from Vietnam. The rest are from elsewhere. In this article, eleven new species of *Diestramma* are identified and described under the names *D. excavata* sp. nov., *D. parabispinosa* sp. nov., *D. tibetensis* sp. nov., *D. guangxiensis* sp. nov., *D. subrectis* sp. nov., *D. curvicaudata* sp. nov., *D. beybienkoi* sp. nov., *D. triangulata* sp. nov., *D. brevis* sp. nov., *D. emeiensis* sp. nov., *D. conica* sp. nov.. All the type specimens are deposited in the Shanghai Entomology Museum, Chinese Academy of Sciences.

Diestramma Storozhenko, 1990

Diestramma Storozhenko, 1990. *Entomologicheskoe Obozrenie*, 69(4): 835–837; Gorochov *et al.*, 2015. *Zoosystematica Rossica*, 24(1): 67–77.

Type species. *Diestrammena cryptopygia* Chopard, 1918 (= *Diestrammena palpata* Storozhenko, 1990 nec Rehn, 1906)

Generic diagnosis. Body size intermediate in Diestramimini. Completely apterous. Head with fastigium of vertex divided into two conical tubercles. Legs long and slender. Fore femora without ventral spines. Process of male 7th abdominal tergite long, completely covering paraproct from above. Genitalia membranous, with eight lobes.

Key to the species of the genus *Diestramima*

(Based on males only)

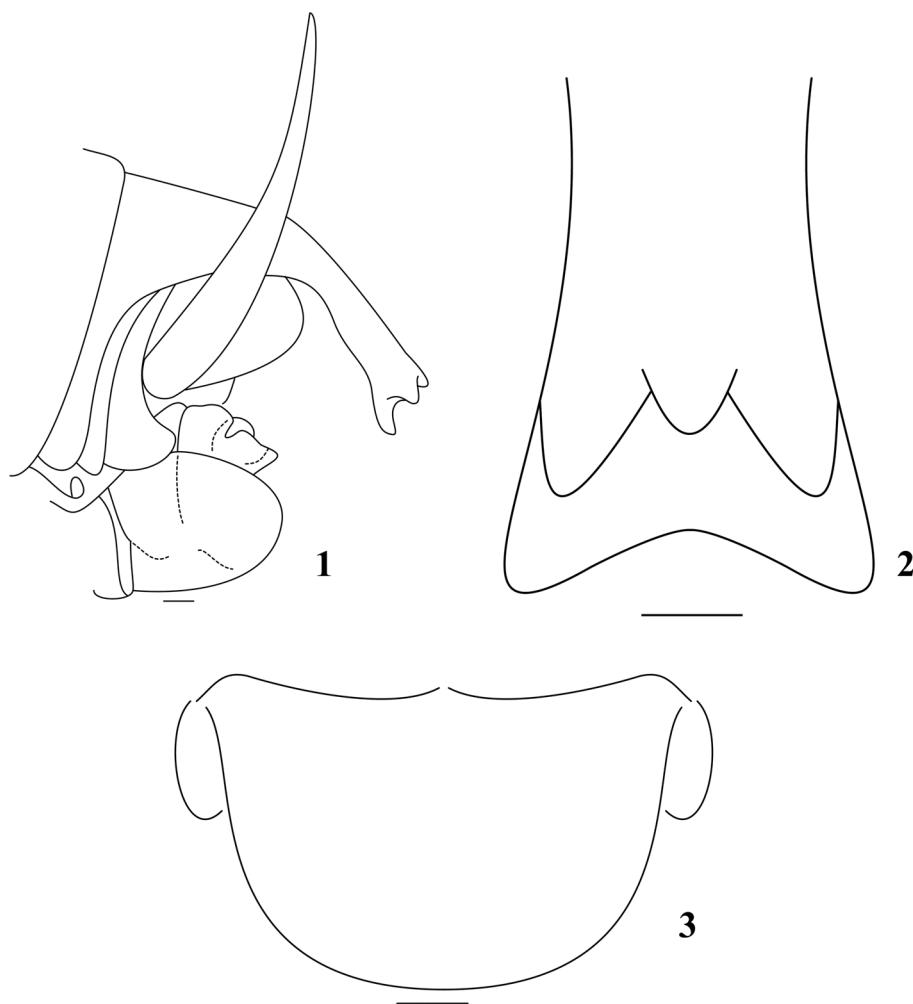
- 1(32) Process of 7th abdominal tergite with concave or truncated apex.
 - 2(19) Process of 7th abdominal tergite with concave apex.
 - 3(12) Paraproct rather wide, without spines and apical half barely narrower than basal half.
 - 4(9) Basal part of process of 7th abdominal tergite narrower than apex; paraproct with a rather acute apical angle.
 - 5(8) Basal part of process of 7th abdominal tergite distinctly narrower than apex and without hollow.
 - 6(7) Legs with distinct stripes; dorsal edge of paraproct slightly concave. *D. vietnamensis* (Gorochov, 1998)
 - 7(6) Legs without distinct stripes; dorsal edge of paraproct distinctly concave. *D. vietnamensis saturata* (Gorochov, 2002)
 - 8(5) Basal part of process of 7th abdominal tergite slightly narrower than apex and apex with a semicircular hollow *D. excavata* sp. nov.
 - 9(4) Basal part of process of 7th abdominal tergite hardly narrower than apex; paraproct with a rather blunt apical angle.
 - 10(11) Apex of process of 7th abdominal tergite with a pair of small tubercles, invisible from behind; paraproct slightly widening to apex *D. palpata* (Rehn, 1906)
 - 11(10) Apex of process of 7th abdominal tergite with a pair of large tubercles, visible from behind; paraproct slightly narrowing to apex *D. austrosinensis* (Gorochov, 1998)
 - 12(3) Paraproct rather narrow, with 1–2 spines and apical half distinctly narrower than basal half.
 - 13(18) Paraproct with 2 spines.
 - 14(15) Low apical spine of paraproct rather long and hooked. *D. hamata* (Gorochov, 2015)
 - 15(14) Low apical spine of paraproct rather short and not hooked.
 - 16(17) Process of 7th abdominal tergite quite straight; 2 apical spines of paraproct distinctly separated. *D. bispinosa* (Gorochov, 2015)
 - 17(16) Process of 7th abdominal tergite strongly curved downwards; 2 apical spines of paraproct very adjacent. *D. parabispinosa* sp. nov.
 - 18(13) Paraproct with 1 spine. *D. hainanensis* (Gorochov, 2015)
 - 19(2) Process of 7th abdominal tergite with truncated apex or middle part incised.
 - 20(29) Process of 7th abdominal tergite quite straight; basal part of paraproct not widened.
 - 21(28) Process of 7th abdominal tergite rather long, distinctly passing apex of paraproct; middle part of paraproct without a tooth-shaped dorsal projection.
 - 22(25) Process of 7th abdominal tergite without parallel lateral margins; paraproct rather straight.
 - 23(24) Apex of process of 7th abdominal tergite wider than middle part *D. major* (Gorochov, 1998)
 - 24(23) Apex of process of 7th abdominal tergite narrower than middle part *D. minor* (Gorochov, 1998)
 - 25(22) Process of 7th abdominal tergite with almost parallel lateral margins; paraproct curved.
 - 26(27) Process of 7th abdominal tergite rather low; apex of paraproct curved downwards. *D. propria* (Gorochov, 2015)
 - 27(26) Process of 7th abdominal tergite rather high; apex of paraproct curved upwards. *D. tibetensis* sp. nov.
 - 28(21) Process of 7th abdominal tergite rather short, hardly passing apex of paraproct; middle part of paraproct with a tooth-shaped dorsal projection *D. distincta* (Gorochov, 2010)
 - 29(20) Process of 7th abdominal tergite distinctly curved downwards; basal part of paraproct strongly widened.
 - 30(31) Basal part of process of 7th abdominal tergite rather low and apex hardly with a incision. *D. cryptopygia* (Chopard, 1918)
 - 31(30) Basal part of process of 7th abdominal tergite rather high and apex with a distinct incision. *D. tsongkhapa* (Würmli, 1973)
 - 32(1) Process of 7th abdominal tergite with rounded or trilobate or blunt apex.
 - 33(44) Process of 7th abdominal tergite with rounded or trilobate apex.
 - 34(37) Apex of process of 7th abdominal tergite with a globular swell.
 - 35(36) Apex of process of 7th abdominal tergite (Fig. 15); hind margin of female subgenital plate with a broad notch. *D. intermedia* (Liu et Zhang, 2001)
 - 36(35) Apex of process of 7th abdominal tergite (Fig. 19); hind margin of female subgenital plate with a deep notch. *D. guangxiensis* sp. nov.
 - 37(34) Apex of process of 7th abdominal tergite compressed.
 - 38(41) Apex of process of 7th abdominal tergite rounded.
 - 39(40) Process of 7th abdominal tergite rather straight behind middle; paraproct with a projected angle near apex *D. subrectis* sp. nov.
 - 40(39) Process of 7th abdominal tergite angularly curved behind middle; paraproct without a projected angle near apex *D. curvicaudata* sp. nov.

- 41(38) Apex of process of 7th abdominal tergite trilobate.
 42(43) Process of 7th abdominal tergite rather narrow; paraproct with a rather blunt apex *D. beybienkoi* sp. nov.
 43(42) Process of 7th abdominal tergite rather wide and short; paraproct with an acute apex..... *D. triangulata* sp. nov.
 44(33) Process of 7th abdominal tergite with blunt apex.
 45(48) Spines on hind tibia arrange sparsely, inner subapical spur almost equal to length of hind metatarsus.
 46(47) Hind femora with a black band on dorsal surface and 9 ventro-internal spines; apical half of paraproct compressed; female subgenital plate with a semicircular notch at apex *D. brevis* sp. nov.
 47(46) Hind femora without black bands on dorsal surface but with 5–6 ventro-internal spines; apical half of paraproct not compressed..... *D. emeiensis* sp. nov.
 48(45) Spines on hind tibia arrange in clusters, inner subapical spur longer than hind metatarsus.....*D. conica* sp. nov.

1. *Diestramima austrosinensis* (Gorochov, 1998)

(Figs. 1–3)

<http://lsid.speciesfile.org/urn:lsid:Orthoptera.speciesfile.org:TaxonName:24075>



FIGURES 1–3. *Diestramima austrosinensis* (Gorochov, 1998). 1. Male abdominal apex, lateral view; 2. Process of male 7th abdominal tergite, dorsal view; 3. Female subgenital plate, ventral view; scale bars=5mm.

Diestramima austrosinensis Gorochov, 1998. *Entomologicheskoe Obozrenie*, 77(1): 86, figs. 91–98.
 Gorochov & Storozhenko, 2015. *Zoosystematica Rossica*, 24(1): 67.

Measurements. (length in mm) Body ♂13.0–20.0, ♀9.0–15.5; pronotum ♂5.5–8.5, ♀4.5–5.5; fore femora ♂11.5–14.0, ♀8.0–12.5; hind femora ♂22.5–26.5, ♀15.5–26.0; hind tibia ♂25.0–28.5, ♀15.0–19.0; ovipositor 5.5–16.5.

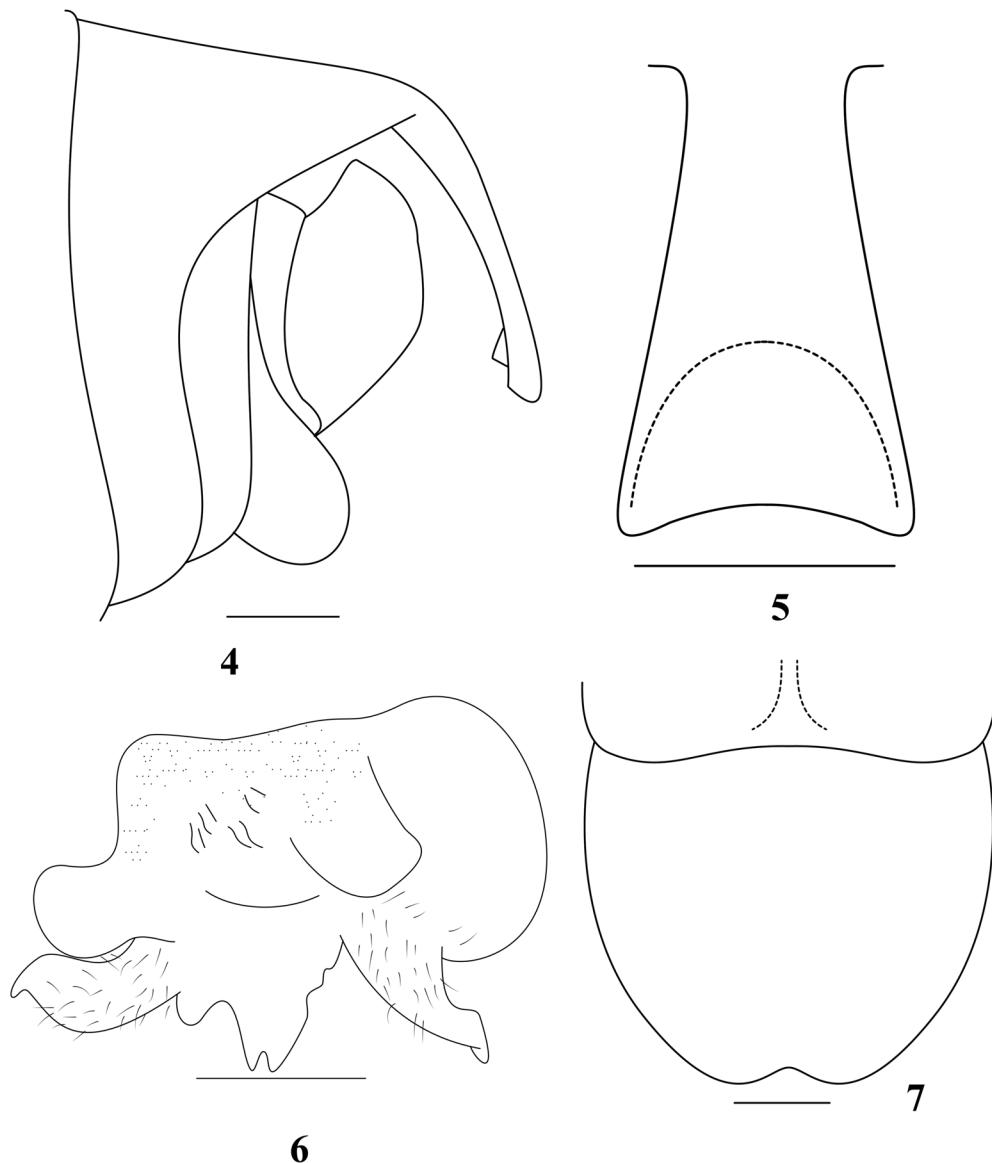
Material examined. 1♂, Tiantong, Yinxian, Zhejiang, 1986.VII.29, collected by Liu Xian-Wei *et al.*; 1♂, Baishanzu, Qingyuan, Zhejiang, 1996.VIII.12–20, collected by Jin Xing-Bao *et al.*; 1♂, Baishanzu, Qingyuan, Zhejiang, alt. 1100m, 2006.IX.2–5, collected by Liu Xian-Wei *et al.*; 1♂, Fengyang Mountain, Longquan, Zhejiang, alt. 1100m, 2008.VII.31–VIII.4, collected by Liu Xian-Wei *et al.*; 2♂♂, Tiantong Mountain, Zhejiang, 2008.VIII.30, collected by Liu Xiao-Yan *et al.*; 1♂, Tiantong Mountain, Zhejiang, 2009.X.7, collected by He Zhu-Qing; 2♂♂3♀♀, Tiantong Mountain, Zhejiang, 2010.VII.18–20, collected by Liu Xian-Wei *et al.*; 1♂4♀♀, Gutian Mountain, Zhejiang, alt. 330–800m, 2012.IX.18–20, collected by Liu Xian-Wei *et al.*.

Distribution. China (Zhejiang, Guangdong).

2. *Diestramima excavata* sp. nov.

(Figs. 4–7)

<http://lsid.speciesfile.org/urn:lsid:Orthoptera.speciesfile.org:TaxonName:477202>



FIGURES 4–7. *Diestramima excavata* sp. nov. 4. Male abdominal apex, lateral view; 5. Process of male 7th abdominal tergite, dorsal view; 6. Male genitalia, dorsal view; 7. Female subgenital plate, ventral view; scale bars=2mm.

Description. Male. Body intermediate sized. Head with fastigium of vertex divided into two conical tubercles. Legs long and slender; fore femora about 2.3 times as long as the pronotum, beneath unarmed, internal knee lobe without spines, genicular lobe with 1 long movable spur; fore tibia beneath with 2 external and 2 internal spurs, between the paired apical spurs with a median spur. Mid femora with a long movable spur on the internal and genicular lobe; mid tibia beneath with 2 external and 2 internal spurs, between the paired apical spurs with a short spur. Hind femora beneath with 6 inter spines and without outer spines; hind tibia above with 30 outer spines and 30–35 inter spines, inner subapical spur of hind tibia equal to length of hind metatarsus. Hind metatarsus with 2 dorsal spines. Paraproct with an acute apical angle (Fig. 4). Apex of process of 7th abdominal tergite with a semicircular hollow (Fig. 5). Male genitalia with notched apex of dorso-median lobe (Fig. 6).

Female. Subgenital plate nearly rounded and apex with a small notch (Fig. 7). Ovipositor longer than the half of hind femora.

Coloration. Body dark black. Face with 4 darkish longitudinal bands and 2 dark spots near clypeal suture. Legs light with dark marks.

Measurements. (length in mm) Body ♂15.0–16.5, ♀16.5; pronotum ♂5.5–6.0, ♀6.0; fore femora ♂12.5, ♀14.0; hind femora ♂25.0, ♀28.5; hind tibia ♂28.5, ♀30.5; ovipositor 18.5.

Material examined. Holotype, 1♂, Maoer Mountain, Guangxi, China, alt. 450–600m, 1992.VIII.5, collected by Liu Xian-Wei *et al.*; paratype, 1♂3♀♀, Maoer Mountain, Guangxi, China, alt. 500–1100m, 2013.VII.30, collected by Zhu Wei-Bing *et al.*.

Distribution. China (Guangxi).

Discussion. This new species is similar to *D. vietnamensis* Gorochov, 1998, but differs as follows: apex of process of male 7th abdominal tergite with a semicircular hollow and slightly wider than basal part.

3. *Diestramima parabispinosa* sp. nov.

(Figs. 8–10)

<http://lsid.speciesfile.org/urn:lsid:Orthoptera.speciesfile.org:TaxonName:477203>

Description. Male. Body large sized. Head with fastigium of vertex divided into two conical tubercles. Legs long and slender; fore femora about 2.6 times as long as the pronotum, beneath unarmed, internal knee lobe without spines, genicular lobe with 1 long movable spur; fore tibia beneath with 2 external and 2 internal spurs, between the paired apical spurs with a median spur. Mid femora with a long movable spur on the internal and genicular lobe; mid tibia beneath with 2 external and 2 internal spurs, between the paired apical spurs with a short spur. Hind femora beneath with 8–9 inter spines and without outer spines; hind tibia above with 34–37 outer spines and 29–32 inter spines, inner spur of hind tibia longer than hind metatarsus. Hind metatarsus with 2 dorsal spines. Paraproct with 2 quite adjacent apical spines (Fig. 8). Process of 7th abdominal tergite strongly curved downwards (Fig. 8) and with truncated apex (Fig. 9). Male genitalia with 2 small apical tubercles of dorso-median lobe and slightly widening to basal part (Fig. 10).

Female. Unknown.

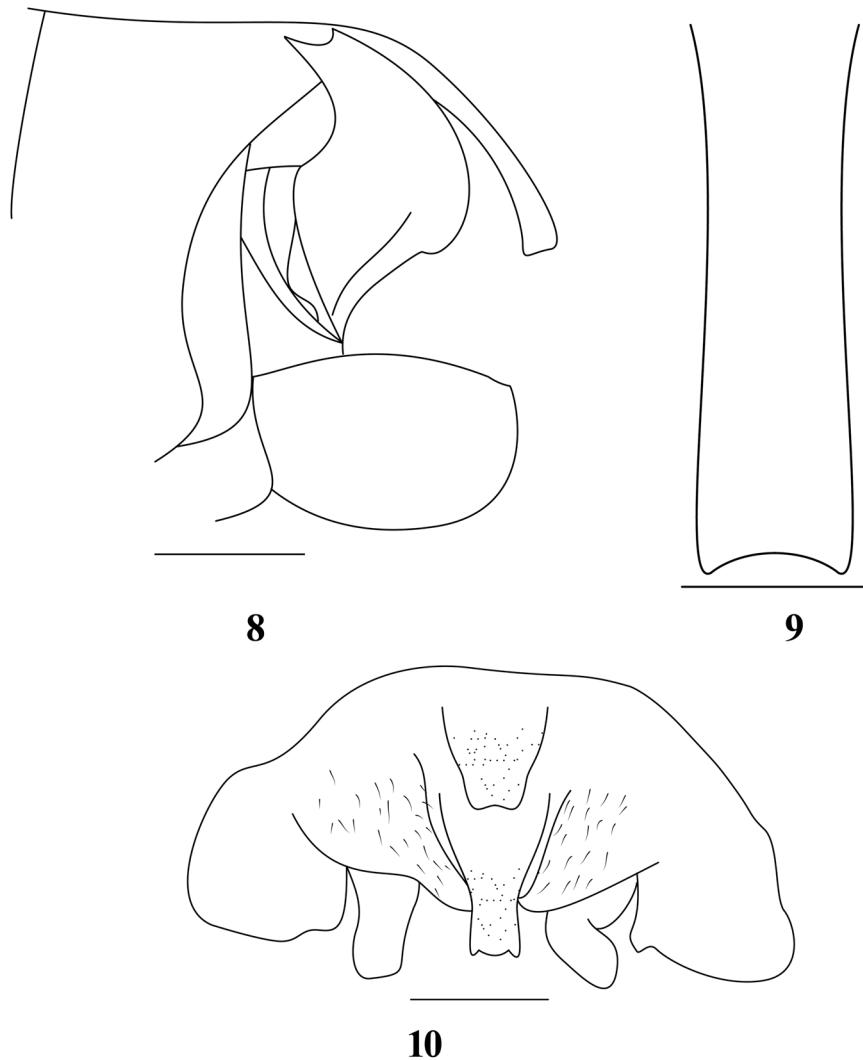
Coloration. Body brown with darkish marks. Face light with 4 darkish longitudinal bands and 2 dark spots near clypeal suture. Legs light with dark marks and genicular lobes black.

Measurements. (length in mm) Body ♂20.0–24.0; pronotum ♂6.0–7.0; fore femora ♂17.0–18.5; hind femora ♂32.0–34.5; hind tibia ♂35.5–37.5.

Material examined. Holotype, 1♂, Mulun nature reserve, Huanjiang, Guangxi, alt. 300m, 2015.VII.18–22, collected by Sun Mei-Ling; paratype, 1♂, same data as holotype.

Distribution. China (Guangxi).

Discussion. This new species is similar to *D. bispinosa* Gorochov, 2015, but differs as follows: 2 apical spines of male paraproct very adjacent, process of male 7th abdominal tergite strongly curved downwards and with truncated apex.



FIGURES 8–10. *Diestramima parabispinosa* sp. nov. 8. Male abdominal apex, lateral view; 9. Process of male 7th abdominal tergite, dorsal view; 10. Male genitalia, dorsal view; scale bars=2mm.

4. *Diestramima tibetensis* sp. nov.

(Figs. 11–14)

<http://lsid.speciesfile.org/urn:lsid:Orthoptera.speciesfile.org:TaxonName:477204>

Description. Male. Body intermediate sized. Head with fastigium of vertex divided into two conical tubercles. Legs long and slender; fore femora about 2.2 times as long as the pronotum, beneath unarmed, internal knee lobe without spines, genicular lobe with 1 long movable spur; fore tibia beneath with 2 external and 2 internal spurs, between the paired apical spurs with a short spur. Mid femora with a long movable spur on the internal and genicular lobe; mid tibia beneath with 2 external and 2 internal spurs, between the paired apical spurs with a short spur. Hind femora beneath with 5–6 inter spines and without outer spines; hind tibia above with 24–31 outer spines and 24–27 inter spines, inner subapical spur of hind tibia longer than hind metatarsus. Hind metatarsus with 2 dorsal spines. Apex of paraproct blunt and curved upwards (Fig. 11). Process of 7th abdominal tergite with a distinct incision (Fig. 12). Male genitalia with a distinct notch at the apex of dorso-median lobe and lateral lobes quite long (Fig. 13).

Female. Subgenital plate nearly triangular, both sides of basal part prominent and apex blunt (Fig. 14). Ovipositor longer than the half of hind femora.

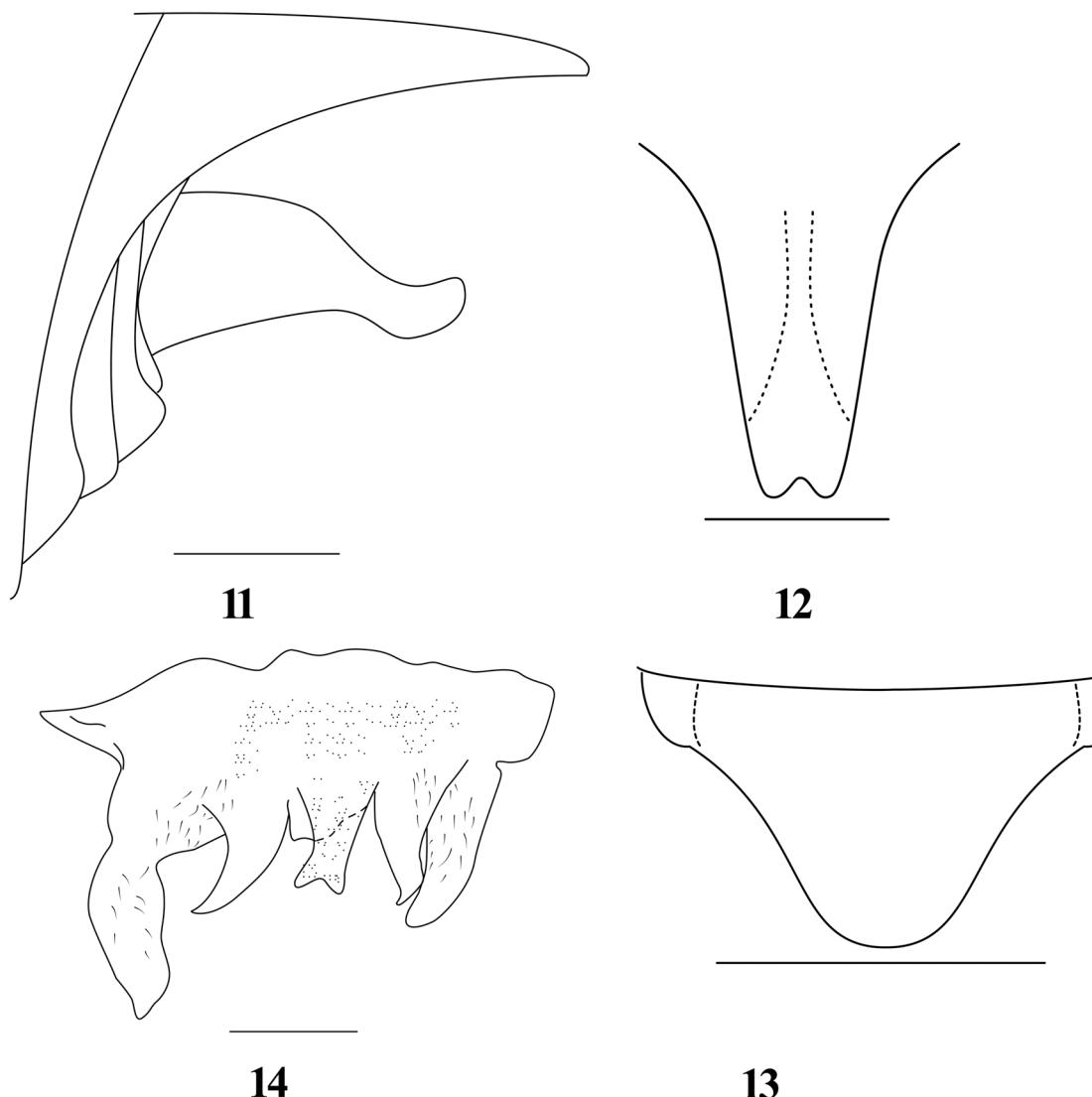
Coloration. Body brown with dark black marks. Face light with 4 darkish longitudinal bands and 2 dark spots near clypeal suture. Back of thorax with 1 light midline. Legs light with dark marks.

Measurements. (length in mm) Body ♂15.0, ♀14.0; pronotum ♂5.0, ♀5.0; fore femora ♂11.0, ♀12.0; hind femora ♂20.0, ♀20.0; hind tibia ♂23.0, ♀24.0; ovipositor 16.0.

Material examined. Holotype, 1♂, Bomi, Tibet, alt. 2080m, 2010.VII.14, collected by Bi Wen-Xuan *et al.*; paratype, 1♀, Hanmi, Tibet, alt. 2100m, 2011.VII.23–VIII.7, collected by Bi Wen-Xuan.

Distribution. China (Tibet).

Discussion. This new species is similar to *D. propria* Gorochov, 2015, but differs as follows: process of male 7th abdominal tergite rather high, apex of male paraproct curved upwards.



FIGURES 11–14. *Diestramima tibetensis* sp. nov. 11. Male abdominal apex, lateral view; 12. Process of male 7th abdominal tergite, dorsal view; 13. Male genitalia, dorsal view; 14. Female subgenital plate, ventral view; scale bars=2mm.

5. *Diestramima intermedia* (Liu et Zhang, 2001)

(Figs. 15–18)

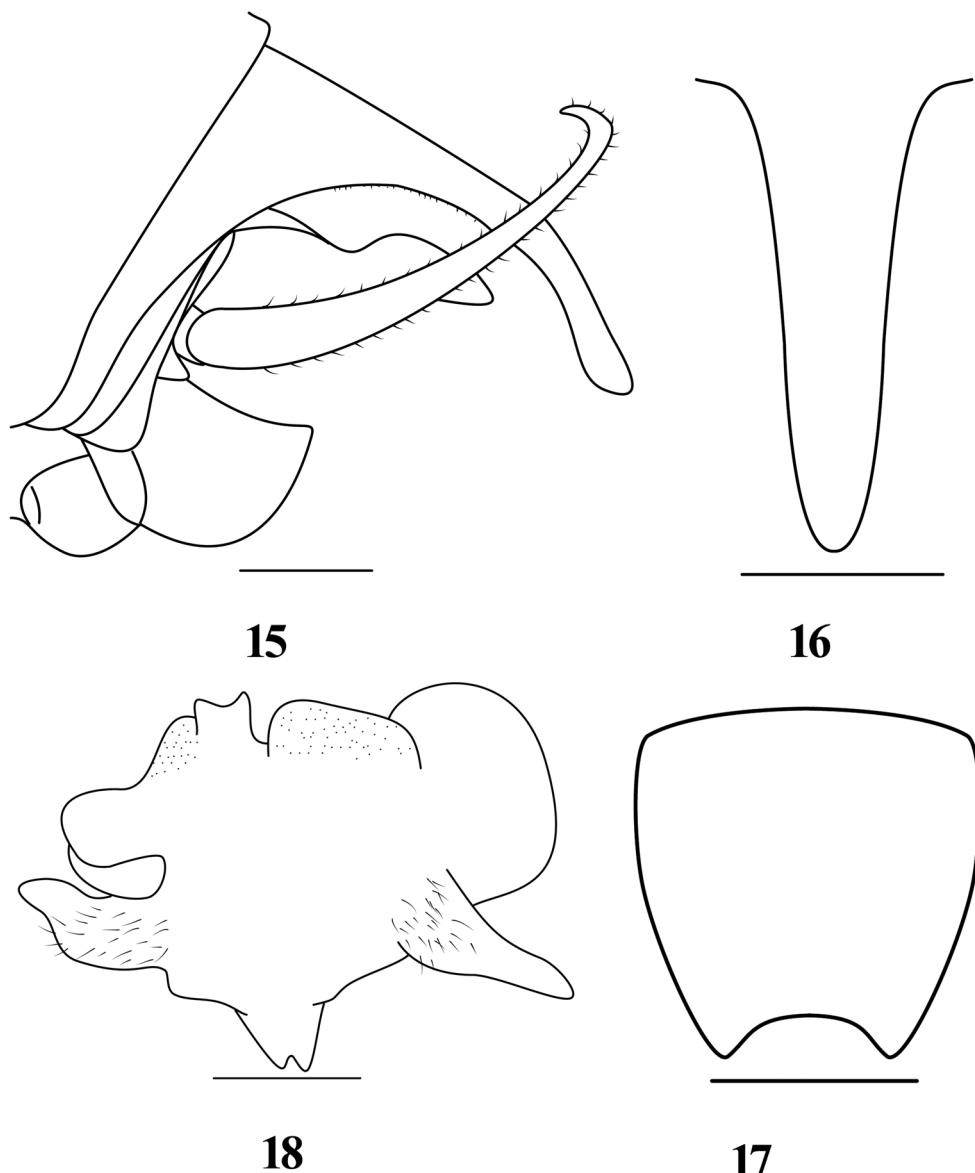
<http://lsid.speciesfile.org/urn:lsid:Orthoptera.speciesfile.org:TaxonName:24068>

Diestramima intermedia Liu et Zhang, 2001. *Insects of Tianmushan National nature reserve*, 96–97; Gorochov & Storozhenko, 2015. *Zoosystematica Rossica*, 24(1): 68.

Measurements. (length in mm) Body ♂18.0, ♀19.0; pronotum ♂7.5, ♀6.5; fore femora ♂13.0, ♀12.0; hind femora ♂28.0, ♀25.0; hind tibia ♂26.5–28.0, ♀27.5; ovipositor 15.0.

Material examined. 1♀, Jinxiu, Guangxi, 1981.IX.24, collected by Jin Gen-Tao *et al.*; 2♂♂, 1♀, Suoxiyu, Cili, Hunan, 1988.IX.1–4, collected by Liu Xian-Wei; 1♂, 4♀♀, Qingcheng Mountain, 1987.VIII.10, collected by Liu Xian-Wei; 1♂, Tianmu Mountain, 1987.VIII.19, collected by Zhou Jian-Zhong *et al.*; 1♂, Maoer Mountain, Guangxi, 1992.VIII.24–25, collected by Liu Xian-Wei *et al.*; 1♂, 2♀♀, Qingcheng Mountain, 1992.VIII.27, collected by Wang Tian-Qi; 1♂, 2♀♀, Emei Mountain, Sichuan, alt. 700m, 2007.VIII.2–4, collected by Liu Huang *et al.*; 4♂♂, 7♀♀, Hongkou Reserve, Sichuan, alt. 900–1100m, 2014.VII.23–27, collected by Wang Han-Qiang *et al.*; 2♂♂, 1♀, Simian Mountain, Chongqing, alt. 930–1000m, 2014.VIII.3–4, collected by Wang Han-Qiang *et al.*.

Distribution. China (Guangxi, Sichuan, Hunan, Chongqing).



FIGURES 15–18. *Diestramima intermedia* (Liu et Zhang, 2001). 15. Male abdominal apex, lateral view; 16. Process of male 7th abdominal tergite, dorsal view; 17. Male genitalia, dorsal view; 18. Female subgenital plate, ventral view; scale bars=2mm.

6. *Diestramima guangxiensis* sp. nov.

(Figs. 19–22)

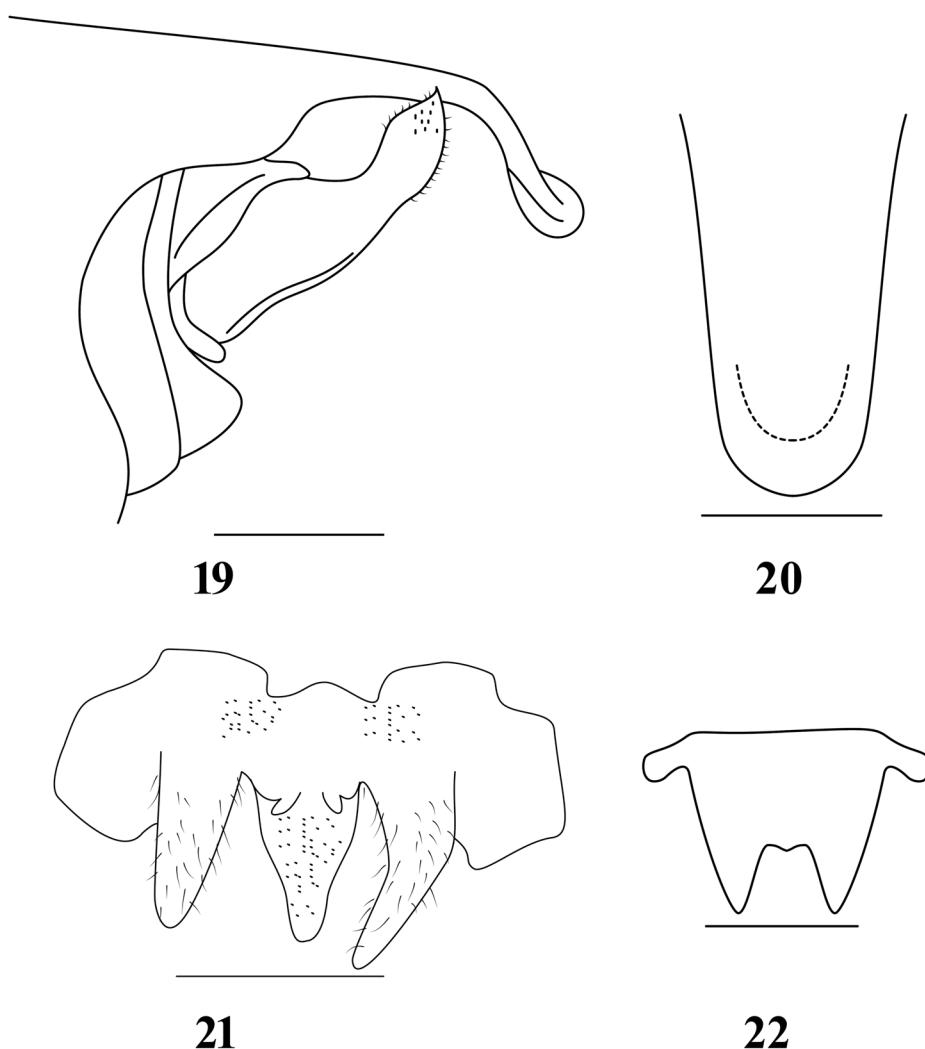
<http://lsid.speciesfile.org/urn:lsid:Orthoptera.speciesfile.org:TaxonName:477205>

Description. Male. Body intermediate sized. Head with fastigium of vertex divided into two conical tubercles. Legs long and slender; fore femora about 2.7 times as long as the pronotum, beneath unarmed, internal knee lobe

without spines, genicular lobe with 1 long movable spur; fore tibia beneath with 2 external and 2 internal spurs, between the paired apical spurs with a median spur. Mid femora with a long movable spur on the internal and genicular lobe; mid tibia beneath with 2 external and 2 internal spurs, between the paired apical spurs with a short spur. Hind femora beneath with 6 inter spines and without outer spines; hind tibia above with 31–41 outer spines and 31–34 inter spines, inner subapical spur of hind tibia about equal to length of hind metatarsus. Hind metatarsus with 2 dorsal spines. Apex of paraproct with a small projection (Fig. 19). Process of 7th abdominal tergite with a globular swell (Figs. 19–20). Male genitalia with blunt apex of dorso-median lobe and widening to basal part (Fig. 21).

Female. Subgenital plate nearly triangular, both sides of basal part strongly prominent and apex with a deep notch (Fig. 22). Ovipositor longer than the half of hind femora.

Coloration. Body dark brown. Face with 4 black longitudinal bands. Legs with dark stripes and knee lobes with distinct marks.



FIGURES 19–22. *Diestramima guangxiensis* sp. nov. 19. Male abdominal apex, lateral view; 20. Process of male 7th abdominal tergite, dorsal view; 21. Male genitalia, dorsal view; 22. Female subgenital plate, ventral view; scale bars=2mm.

Measurements. (length in mm) Body ♂16.0–21.0, ♀15.0–20.0; pronotum ♂4.0–6.0, ♀5.0–6.0; fore femora ♂15.0–16.0, ♀13.0–16.0; hind femora ♂28.0–30.0, ♀29.0–31.0; hind tibia ♂30.0–33.0, ♀31.0–34.0; ovipositor 17.0–19.0.

Material examined. Holotype, 1♂, Daming Mountain, alt. 1250m, 2013.VII.19–25, collected by Liu Xian-Wei *et al.*; paratype, 6♂♂, 15♀♀, same data as holotype; 1♂, Jiawan Mountain, Guangxi, alt. 1200m, 2015.VII.19, collected by Liu Xian-wei *et al.*.

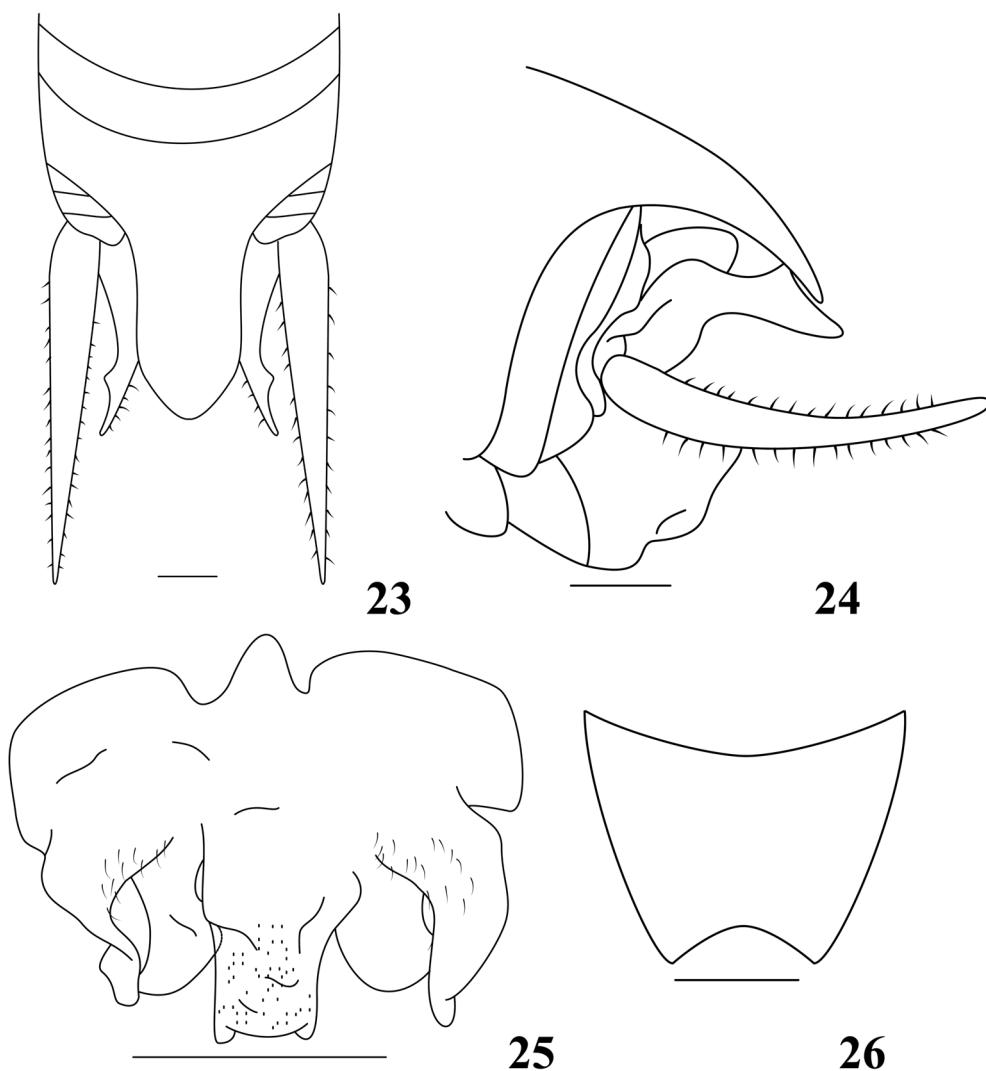
Distribution. China (Guangxi).

Discussion. This new species is similar to *D. intermedia* Liu et Zhang, 2001, but differs as follows: apex of process of male 7th abdominal tergite with a very small projection (Fig. 19), hind margin of female subgenital plate with a deep notch.

7. *Diestramima subrectis* sp. nov.

(Figs. 23–26)

<http://lsid.speciesfile.org/urn:lsid:Orthoptera.speciesfile.org:TaxonName:477206>



FIGURES 23–26. *Diestramima subrectis* sp. nov. 23. Male abdominal apex, dorsal view; 24. Male abdominal apex, lateral view; 25. Male genitalia, dorsal view; 26. Female subgenital plate, ventral view; scale bars=2mm.

Description. Male. Body small to intermediate sized. Head with fastigium of vertex divided into two conical tubercles. Legs long and slender; fore femora about 2.3 times as long as the pronotum, beneath unarmed, internal knee lobe without spines, genicular lobe with 1 long movable spur; fore tibia beneath with 2 external and 2 internal spurs, between the paired apical spurs with a short spur. Mid femora with a long movable spur on the internal and genicular lobe; mid tibia beneath with 2 external and 2 internal spurs, between the paired apical spurs with a short spur. Hind femora beneath with 7–8 inter spines and without outer spines; hind tibia above with 32–33 outer spines and 31–32 inter spines, inner subapical spur of hind tibia about equal to length of hind metatarsus. Hind metatarsus with 2 dorsal spines. Apex of process of male 7th abdominal tergite quite straight (Fig. 23). Paraproct of male with

a projected angular apex (Fig. 24). Male genitalia with 2 small apical tubercles of dorso-median lobe and hardly widening to basal part (Fig. 25).

Female. Subgenital plate nearly trapezoid and apex with a broad notch (Fig. 26). Ovipositor longer than the half of hind femora.

Coloration. Body dark brown. Face with 4 black longitudinal bands. Posterior of thorax with 1 light midline. Legs with dark stripes and knee lobes with dark marks.

Measurements. (length in mm) Body ♂13.5–18.0, ♀12.0–14.0; pronotum ♂4.5–5.5, ♀4.5–6.5; fore femora ♂9.5–12.5, ♀11.0–15.0; hind femora ♂21.5–24.0, ♀19.5–27.0; hind tibia ♂23.0–25.0, ♀20.0–30.0; ovipositor 15.0–20.0.

Material examined. Holotype, 1♂, Maoer Mountain, Guangxi, alt. 500–2100m, 2013.VII.19–VIII.6, collected by Liu Xian-Wei *et al.*; paratype, 11♂♂, 8♀♀, same data as holotype; 1♂, Maoer Mountain, Guangxi, alt. 800–1100m, 2012.VII.23–24, collected by Bi Wen-Xuan *et al.*.

Distribution. China (Guangxi).

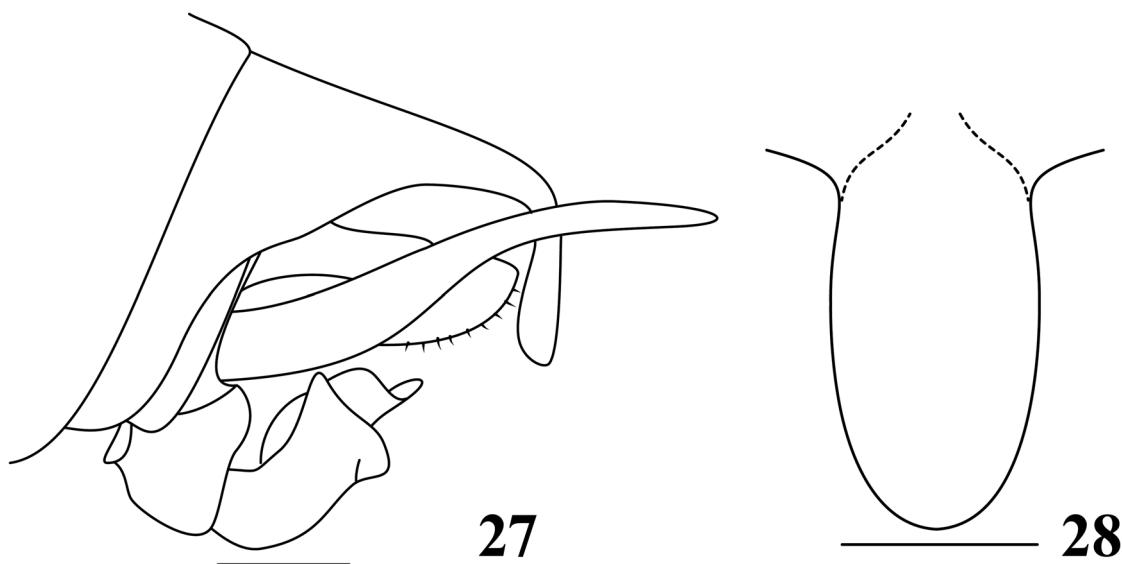
Discussion. This new species is similar to *D. curvicaudata* sp. nov., but differs as follows: apex of process of male 7th abdominal tergite straight, paraproct of male with a projected angle near apex.

8. *Diestramima curvicaudata* sp. nov.

(Figs. 27–28)

<http://lsid.speciesfile.org/urn:lsid:Orthoptera.speciesfile.org:TaxonName:477207>

Description. Male. Body intermediate sized. Head with fastigium of vertex divided into two conical tubercles. Legs long and slender; fore femora about 2.7 times as long as the pronotum, beneath unarmed, internal knee lobe without spines, genicular lobe with 1 long movable spur; fore tibia beneath with 2 external and 2 internal spurs, between the paired apical spurs with a short spur. Mid femora with a long movable spur on the internal and genicular lobe; mid tibia beneath with 2 external and 2 internal spurs, between the paired apical spurs with a short spur. Hind femora beneath with 9 inter spines and without outer spines; hind tibia above with 33–36 outer spines and 32–34 inter spines, inner subapical spur of hind tibia slightly shorter than hind metatarsus. Hind metatarsus with 2 dorsal spines. Apex of paraproct compressed (Fig. 27). Apex of process of male 7th abdominal tergite blunt (Fig. 28).



FIGURES 27–28. *Diestramima curvicaudata* sp. nov. 27. Male abdominal apex, lateral view; 28. Process of male 7th abdominal tergite, dorsal view; scale bars=2mm.

Female. Unknown.

Coloration. Body yellowish. Face with 4 darkish longitudinal bands and 2 dark spots near clypeal suture. Legs with brown stripes.

Measurements. (length in mm) Body ♂17.0; pronotum ♂5.5; fore femora ♂15.0; hind femora ♂23.0; hind tibia ♂27.0.

Material examined. Holotype, 1♂, Fanjing Mountain, Guizhou, alt. 1000–1800m, 2014.VIII.6, collected by Li Miao-Miao *et al.*.

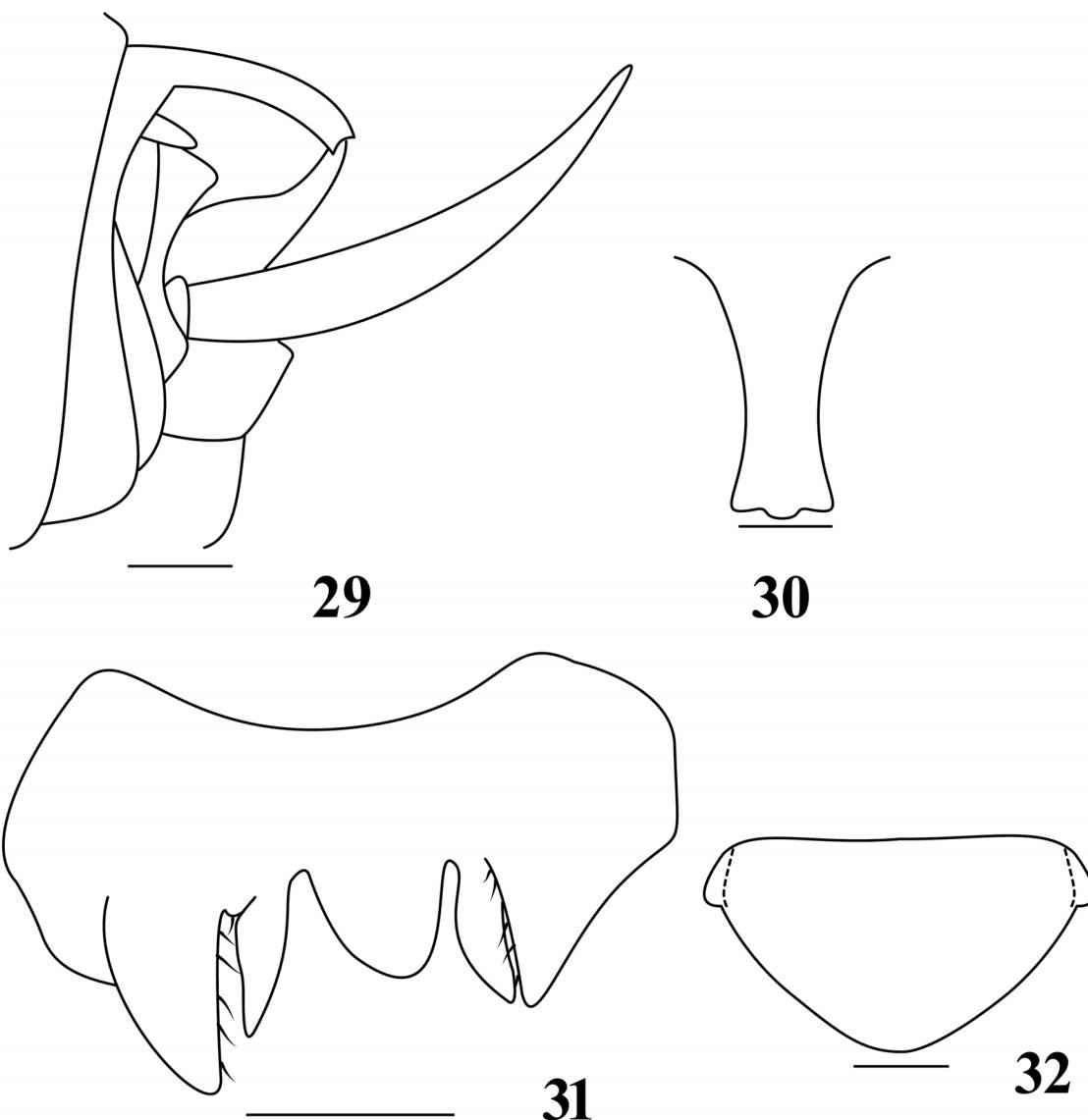
Distribution. China (Guizhou).

Discussion. This new species is similar to *D. subrectis* sp. nov., but differs as follows: process of male 7th abdominal tergite angularly curved behind middle, paraproct of male without a projected angle near apex.

9. *Diestramima beybienkoi* sp. nov.

(Figs. 29–32)

<http://lsid.speciesfile.org/urn:lsid:Orthoptera.speciesfile.org:TaxonName:477208>



FIGURES 29–32. *Diestramima beybienkoi* sp. nov. 29. Male abdominal apex, lateral view; 30. Process of male 7th abdominal tergite, dorsal view; 31. Male genitalia, dorsal view; 32. Female subgenital plate, ventral view; scale bars=2mm.

Description. Male. Body intermediate to large sized. Head with fastigium of vertex divided into two conical tubercles. Legs long and slender; fore femora about 2.2 times as long as the pronotum, beneath unarmed, internal knee lobe without spines, genicular lobe with 1 long movable spur; fore tibia beneath with 2 external and 2 internal spurs, between the paired apical spurs with a short spur. Mid femora with a long movable spur on the internal and genicular lobe; mid tibia beneath with 2 external and 2 internal spurs, between the paired apical spurs with a short spur. Hind femora beneath with 5–7 inter spines and without outer spines; hind tibia above with 35–36 outer spines and 29–34 inter spines, inner subapical spur of hind tibia longer than hind metatarsus. Hind metatarsus with 2 dorsal spines. Basal part of paraproct widened and apex blunt (Fig. 29). Apex of process of male 7th abdominal tergite trilobate (Fig. 30). Male genitalia with rather wide dorso-median lobe and apex blunt (Fig. 31). Female. Subgenital plate nearly triangular, both sides of basal part prominent, apex blunt (Fig. 32). Ovipositor shorter than the half of hind femora.

Coloration. Body dark brown. Face with 4 darkish longitudinal bands and 2 dark spots near clypeal suture. Dorsal surface of hind femora with black bands.

Measurements. (length in mm) Body ♂ 16.0–26.0, ♀ 15.5–22.0; pronotum ♂ 5.5–8.0, ♀ 5.5–7.0; fore femora ♂ 7.5–15.5, ♀ 10.0–15.5; hind femora ♂ 24.5–30.5, ♀ 23.5–30.0; hind tibia ♂ 27.0–33.5, ♀ 26.0–33.5; ovipositor 10.5–22.0.

Material examined. Holotype, 1♂, Suoxiyu, Cili, Hunan, 1988.X.4, collected by Liu Xian-Wei; paratype, 6♂♂, Qingcheng Mountain, Sichuan, alt. 700m, 1987.IX.10, collected by Liu Xian-Wei; 1♀, Suoxiyu, Cili, Hunan, 1988.X.4, collected by Liu Xian-Wei; 1♀, Fanjing Mountain, Guizhou, 2001.VIII.29, collected by Shi Fu-Ming; 2♂♂, Emei Mountain, Sichuan, alt. 700m, 2007.VIII.2–4, collected by Liu.Huang *et al.*; 1♂, 6♀♀, Maoer Mountain, alt. 500–1100m, 2013.VII.30–VIII.6, collected by Liu Xian-Wei *et al.*; 1♂, Hongkou Reserve, Dujiangyan, Sichuan, alt. 1100m, 2014.VII.25, collected by Wang Meng-meng; 7♂♂, 4♀♀, Yinyun Mountain, Chongqing, alt. 350–950m, 2014.VII.29–30, collected by Wang Han-Qiang; 1♂, Simian Mountain, Jiangjin, Chongqing, alt. 1000m, 2014.VIII.3, collected by Wang Han-Qiang; 1♀, Leigong Mountain, Guizhou, alt. 1530–2160m, 2015.VII.28–30, collected by Qin Yan-Yan.

Distribution. China (Sichuan, Hunan, Chongqing, Guangxi, Guizhou).

Discussion. This new species is similar to *D. triangulata* sp. nov., but differs as follows: process of male 7th abdominal tergite rather narrow, paraproct of male with a rather blunt apex.

10. *Diestramima triangulata* sp. nov.

(Figs. 33–36)

<http://lsid.speciesfile.org/urn:lsid:Orthoptera.speciesfile.org:TaxonName:477209>

Description. Male. Body small sized. Head with fastigium of vertex divided into two conical tubercles. Legs long and slender; fore femora about 2.1 times as long as the pronotum, beneath unarmed, internal knee lobe without spines, genicular lobe with 1 long movable spur; fore tibia beneath with 2 external and 2 internal spurs, between the paired apical spurs with a short spur. Mid femora with a long movable spur on the genicular lobe; mid tibia beneath with 2 external and 2 internal spurs, between the paired apical spurs with a short spur. Hind femora beneath with 6 inter spines and 6 outer spines; hind tibia above with 30–31 outer spines and 28–31 inter spines, inner subapical spur of hind tibia shorter than hind metatarsus. Hind metatarsus with 2 dorsal spines. Apex of paraproct acute (Fig. 33). Process of male 7th abdominal tergite rather short and with nearly triangular apex (Figs. 34–35). Male genitalia with blunt apex of dorso-median lobe and distinctly widening to basal part, lateral lobes rather slender near dorso-median lobe (Fig. 36).

Female. Unknown.

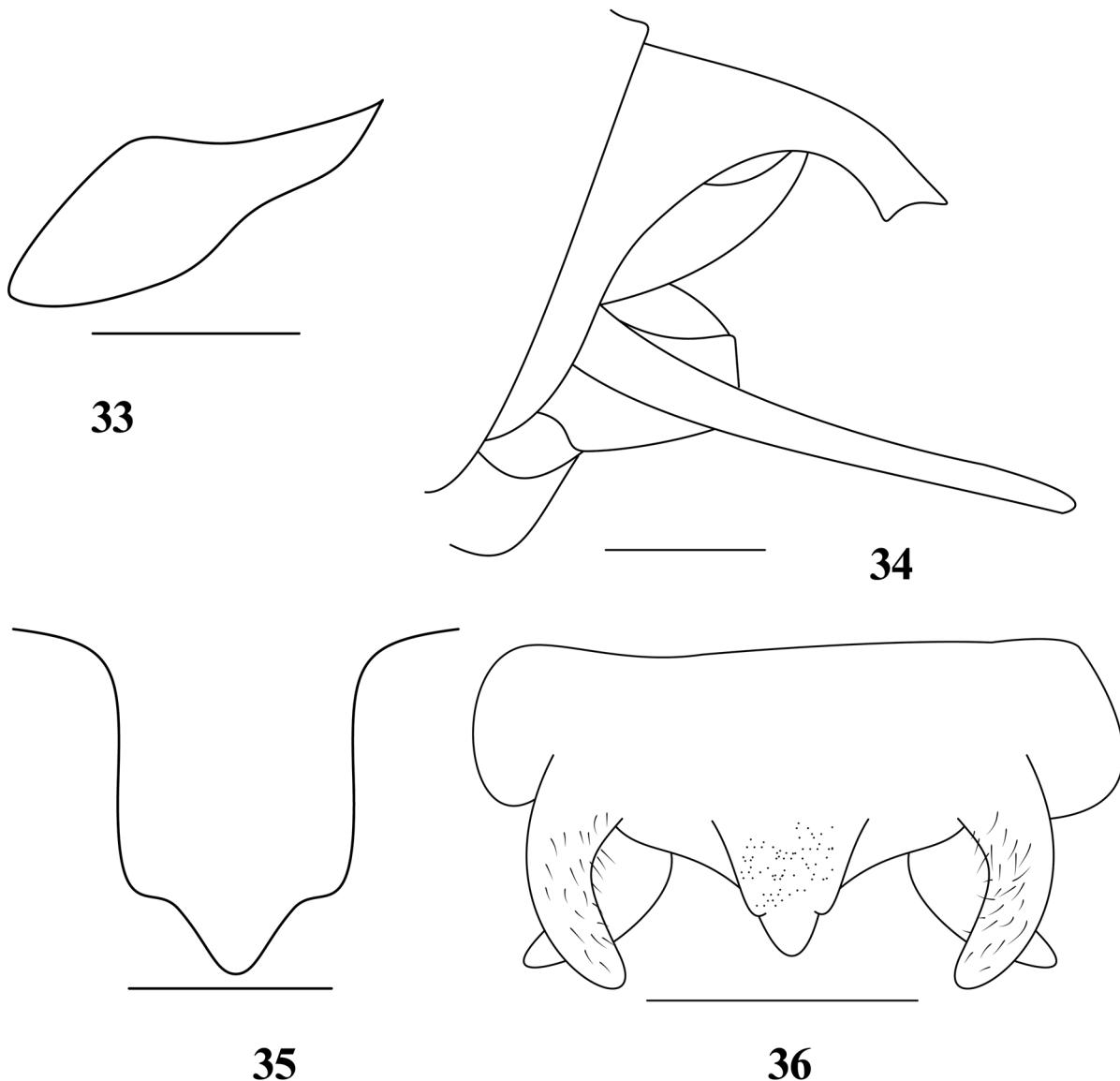
Coloration. Body brown with darkish marks. Face with 4 darkish longitudinal bands. Legs with distinct stripes.

Measurements. (length in mm) Body ♂ 11.0; pronotum ♂ 4.5; fore femora ♂ 9.5; hind femora ♂ 17.0; hind tibia ♂ 17.5.

Material examined. Holotype, 1♂, Leigong Mountain, Guizhou, alt. 1600–2178m, 2015.VII.28, collected by Sun Mei-Ling; paratype, 1♂, same data as holotype.

Distribution. China (Guizhou).

Discussion. This new species is similar to *D. beybienkoi* sp. nov., but differs as follows: process of male 7th abdominal tergite rather wide and short, paraproct of male with an acute apex.



FIGURES 33–36. *Diestramima triangulata* sp. nov. 33. Male paraproct, lateral view; 34. Male abdominal apex, lateral view; 35. Process of male 7th abdominal tergite, dorsal view; 36. Male genitalia, dorsal view; scale bars=2mm.

11. *Diestramima brevis* sp. nov.

(Figs. 37–41)

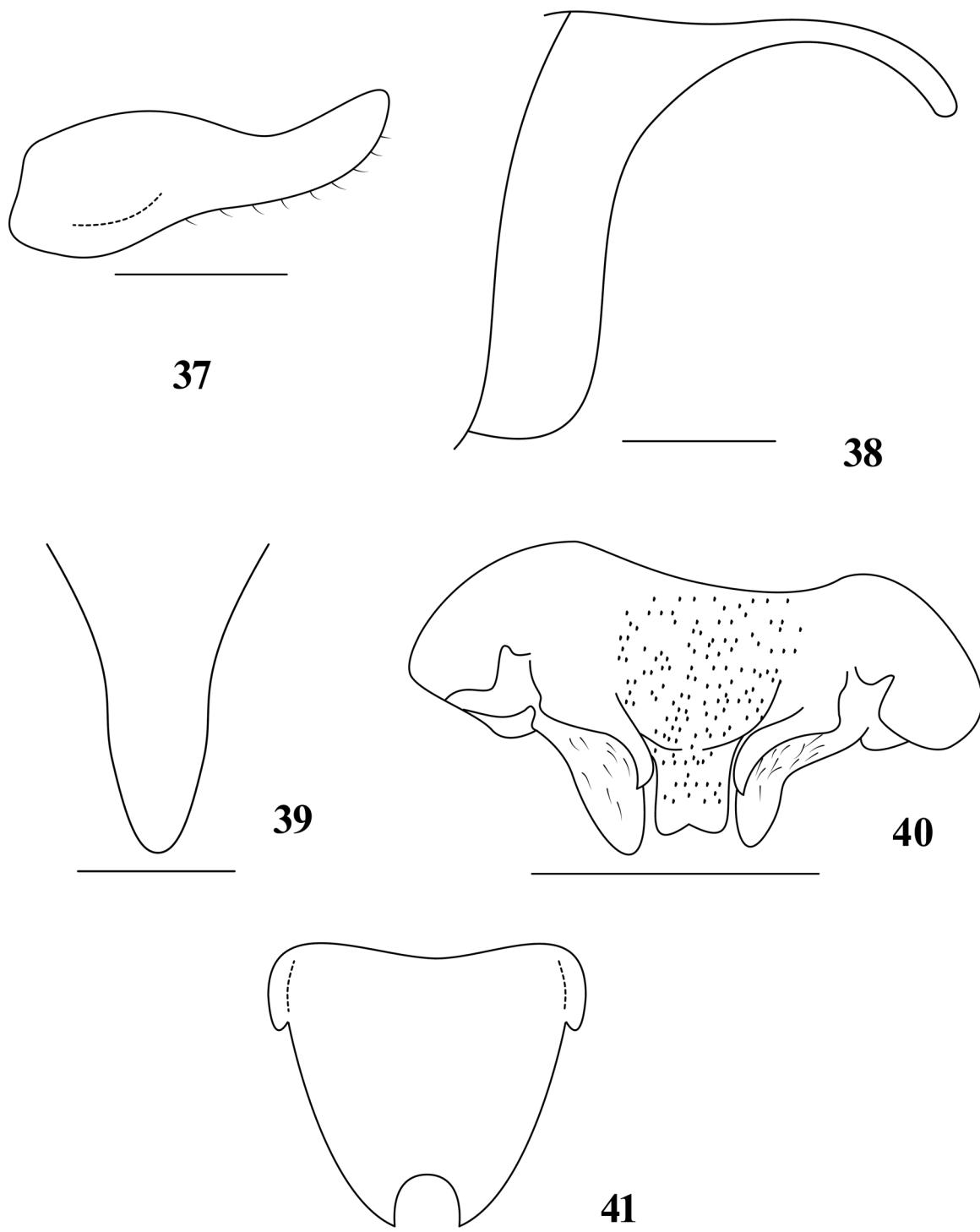
<http://lsid.speciesfile.org/urn:lsid:Orthoptera.speciesfile.org:TaxonName:477210>

Description. Male. Body intermediate-sized. Head with fastigium of vertex divided into two conical tubercles. Legs long and slender; fore femora about 2.5 times as long as the pronotum, beneath unarmed, internal knee lobe without spines, genicular lobe with 1 long movable spur; fore tibia beneath with 2 external and 2 internal spurs, between the paired apical spurs with a short spur. Mid femora with a long movable spur on the genicular lobe; mid tibia beneath with 2 external and 2 internal spurs, between the paired apical spurs with a short spur. Hind femora beneath with 9 inter spines and without outer spines, and with 1 black band on dorsal surface; hind tibia above with 28–30 outer spines and 26–28 inter spines, inner subapical spur of hind tibia almost equal to length of hind

metatarsus. Hind metatarsus with 2 dorsal spines. Apical half of paraproct compressed (Fig. 37). Apex of process of male 7th abdominal tergite slightly narrower than basal part (Figs. 38–39). Male genitalia with slightly notched apex of dorso-median lobe (Fig. 40).

Female. Subgenital plate subquadrate, both sides of basal part strongly prominent and apex concave (Fig. 41). Ovipositor longer than the half of hind femora.

Coloration. Body brown with darkish marks. Face with 4 darkish longitudinal bands and 2 dark spots near clypeal suture. Posterior of thorax with 1 dark midline. Legs with darkish stripes.



FIGURES 37–41. *Diestramima brevis* sp. nov. 37. Male paraproct, lateral view; 38. Male abdominal apex, lateral view; 39. Process of male 7th abdominal tergite, dorsal view; 40. Male genitalia, dorsal view; 41. Female subgenital plate, ventral view; scale bars=2mm.

Measurements. (length in mm) Body ♂16.0–20.0, ♀15.0–18.0; pronotum ♂4.0–5.0, ♀4.0–5.0; fore femora ♂10.0–13.0, ♀10.0–12.0; hind femora ♂19.0–25.0, ♀20.0–22.0; hind tibia ♂22.0–28.0, ♀22.0–24.0; ovipositor 16.0–18.0.

Material examined. Holotype, 1♂, Xitianmu, Zhejiang, alt. 350m, 2012.VIII.30, collected by Liu Xian-Wei *et al.*; paratype, 1♂, 4♀♀, same data as holotype; 1♀, Wuyanling Nature Reserve, Zhejiang, alt. 800m, 2005.X, collected by Wang Yi-Ping; 1♂, 1♀, Xitianmu, Zhejiang, alt. 1163m, 2011.IX.10–XI.8, collected by Pan Hui; 1♀, Qingliangfeng, Zhejiang, 1100m, 2008.VIII.5–7, collected by Liu Xian- Wei *et al.*.

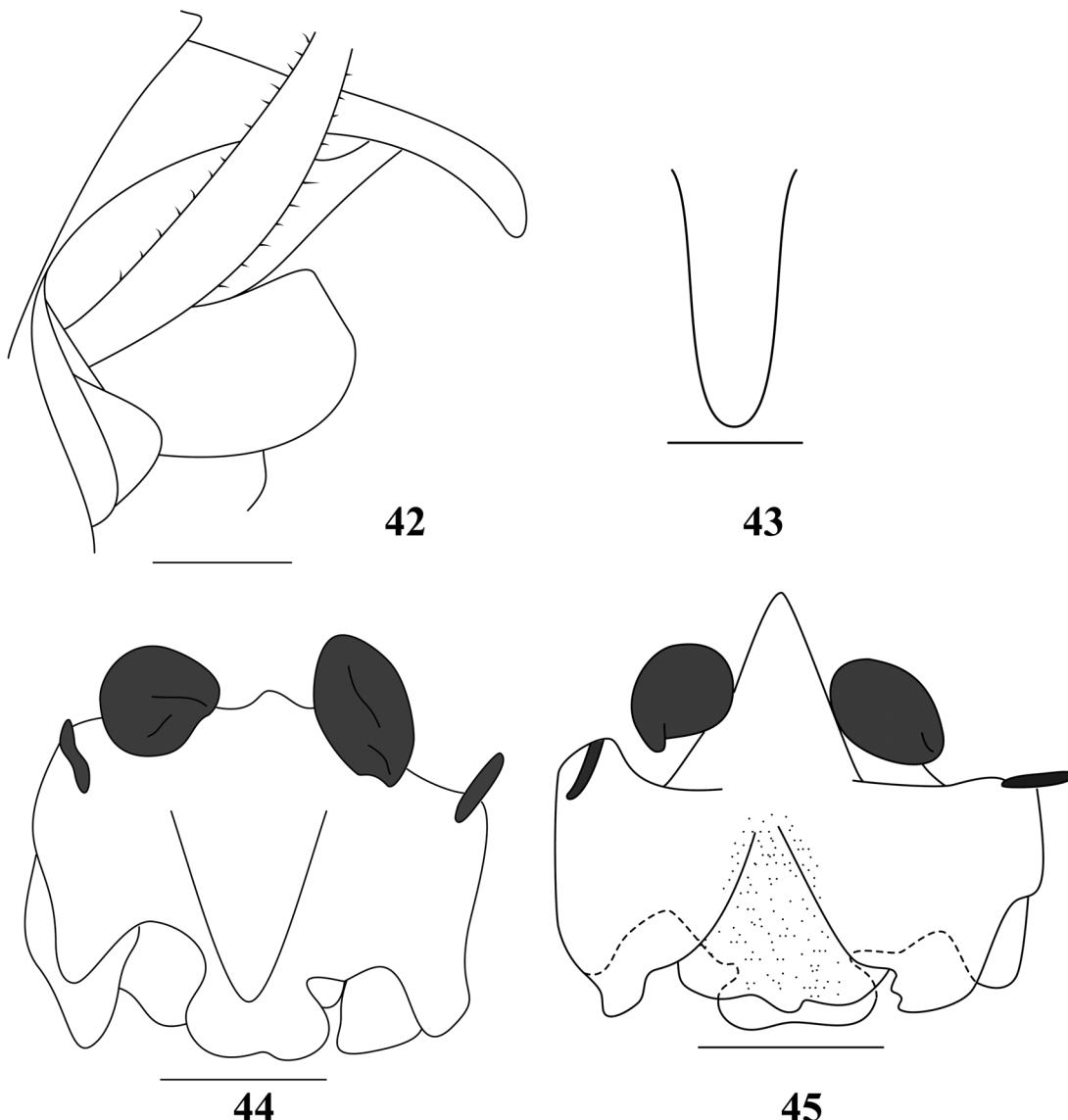
Distribution. China (Zhejiang).

Discussion. This new species is similar to *D. emeiensis* sp. nov., but differs as follows: hind femora with 1 black band on dorsal surface and 9 ventro-internal spines, apical half of male paraproct compressed, apex of process of male 7th abdominal tergite slightly narrower than basal part, apex of female subgenital plate with a semicircular notch.

12. *Diestramima emeiensis* sp. nov.

(Figs. 42–45)

<http://lsid.speciesfile.org/urn:lsid:Orthoptera.speciesfile.org:TaxonName:477211>



FIGURES 42–45. *Diestramima emeiensis* sp. nov. 42. Male abdominal apex, lateral view; 43. Process of male 7th abdominal tergite, dorsal view; 44. Male genitalia, ventral view; 45. Male genitalia, dorsal view; scale bars=2mm.

Description. Male. Body intermediate sized. Head with fastigium of vertex divided into two conical tubercles. Legs long and slender; fore femora about 2.7 times as long as the pronotum, beneath unarmed, internal knee lobe without spines, genicular lobe with 1 long movable spur; fore tibia beneath with 2 external and 2 internal spurs, between the paired apical spurs with a short spur. Mid femora with a long movable spur on the internal and genicular lobe, mid tibia beneath with 2 external and 2 internal spurs, between the paired apical spurs with a median spur. Hind femora beneath with 5–6 inter spines and without outer spines; hind tibia above with 34–35 outer spines and 32–35 inter spines, inner subapical spur of hind tibia almost equal to length of hind metatarsus. Hind metatarsus with 2–3 dorsal spines. Apical half of male paraproct not compressed (Fig. 42). Process of male 7th abdominal tergite rather short and with blunt apex (Fig. 43). Male genitalia with nearly triangular dorso-median lobe and apex sinuate (Figs. 44–45).

Female. Unknown.

Coloration. Body shallow yellowish. Face with 4 dark bands. Legs with shallow stripes.

Measurements. (length in mm) Body ♂ 15.5; pronotum ♂ 5.5; fore femora ♂ 15.0; hind femora ♂ 26.0; hind tibia ♂ 30.0.

Material examined. Holotype, 1♂, Emei Mountain, Sichuan, 1100m, 2006.IX.9, collected by Zhou Shun.

Distribution. China (Sichuan).

Discussion. This new species is similar to *D. brevis* sp. nov., but differs as follows: hind femora without black bands on dorsal surface but with 5–6 ventro-internal spines, apical half of male paraproct not compressed.

13. *Diestramima conica* sp. nov.

(Figs. 46–49)

<http://lsid.speciesfile.org/urn:lsid:Orthoptera.speciesfile.org:TaxonName:477212>

Description. Male. Body small sized. Head with fastigium of vertex divided into two conical tubercles. Legs long and slender; fore femora about 1.6 times as long as the pronotum, beneath unarmed, internal knee lobe without spines, genicular lobe with 1 long movable spur; fore tibia beneath with 2 external and 2 internal spurs, between the paired apical spurs with a short spur. Mid femora with a long movable spur on the internal and genicular lobe, mid tibia beneath with 2 external and 1 internal spur, between the paired apical spurs with a short spur. Hind femora beneath with 4–5 inter spines and without outer spines; hind tibia above with 44–47 outer spines and 39–42 inter spines, arrange in clusters, inner subapical spur of hind tibia longer than hind metatarsus. Hind metatarsus with 2 dorsal spines. Apical half of male paraproct slightly compressed (Fig. 46). Apex of process of male 7th abdominal tergite rather short and narrow (Fig. 47). Male genitalia with notched apex of rather long dorso-median lobe and lateral lobes quite short (Fig. 48).

Female. Subgenital plate nearly rounded and with a truncated apex (Fig. 49). Ovipositor longer than the half of hind femora.

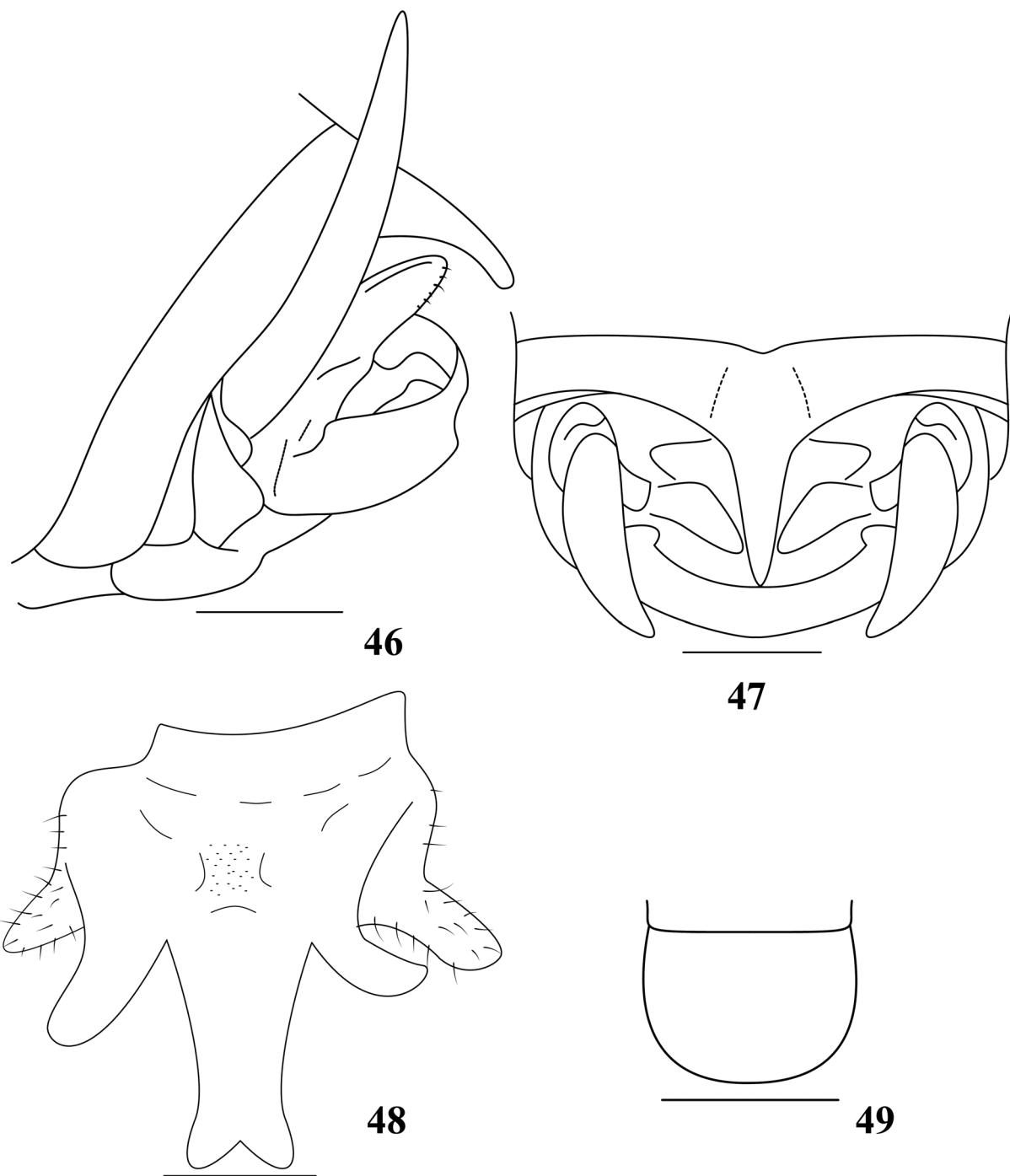
Coloration. Body light brown. Face with 4 darkish longitudinal bands. Legs with distinct dark marks.

Measurements. (length in mm) Body ♂ 10.0–15.0, ♀ 9.0–15.0; Pronotum ♂ 4.0–6.0, ♀ 4.0–5.0; Fore femora ♂ 7.5–9.5, ♀ 7.0–9.0; Hind femora ♂ 17.0–20.0, ♀ 16.0–18.0; Hind tibia ♂ 17.0–20.0, ♀ 16.0–18.0; Ovipositor ♀ 11.0–14.0.

Material examined. Holotype, 1♂, Lushui, Yunnan, 2300m, 2010.VI.24–25, collected by Bi Wen-Xuan *et al.*, paratype, 6♂♂, 9♀♀, same data as holotype; 2♂♂, 1♀, Gongshan, Yunnan, 1900m, 2010.VI.28–VII.3, collected by Bi Wen-Xuan *et al.*.

Distribution. China (Yunnan).

Discussion. This new species is similar to *D. brevis* sp. nov. and *D. emeiensis* sp. nov., but differs as follows: spines on hind tibia arrange in clusters, inner subapical spur longer than hind metatarsus.



FIGURES 46–49. *Diestramima conica* sp. nov. 46. Male abdominal apex, lateral view; 47. Male abdominal apex, dorsal view; 48. Male genitalia, dorsal view; 49. Female subgenital plate, ventral view; scale bars=2mm.

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