

中国草螽属的研究及两新种记述 (直翅目, 草螽科)

刘宪伟 张鼎杰

中国科学院上海昆虫博物馆 上海 200032

摘要 对中国草螽属的种类进行了分类学研究, 认为这 3 个种 *Xiphidium pulchrum* Karny, 1907 (日本); *Xiphidium formosanum* Matsumura et Shiraki, 1908 (台湾) 和 *Xiphidium divergentum* Matsumura et Shiraki, 1908 (台湾) 均是日本草螽 *Conocephalus japonicus* (Redtenbacher, 1891) 的同物异名, 并报道两新种, 即夏氏草螽 *Conocephalus xiai* sp. nov. 和梁氏草螽 *Conocephalus liangi* sp. nov., 模式标本保存在中国科学院上海昆虫博物馆。

关键词 直翅目, 草螽科, 草螽属, 新种, 中国。

中图分类号 Q969.26

草螽属 *Conocephalus* Thunberg, 1815

Conocephalus Thunberg, 1815: 214; *Anisoptera* Berthold, 1827: 409; *Neoxiphidium* Karny, 1912: 8; *Palotta* Walker, 1869: 249; *Xiphidium* Audinet-Serville, 1831: 159; *Xiphidium* Burmeister, 1838: 707; *Xyphidium* Fieber, 1853: 170.

模式种: *Gryllus Tettigonia conocephalus* Linnaeus, 1767

该属记录的有效种多达 100 多种, 分布的范围从北纬 60° 到南纬 45° 之间的广大区域。Rehn et Hebard (1915) 对新热带区的部分种类作了修订, Harz (1969) 对古北区的种类作了全面的修订, Kaltenbach (1968) 和 Hudson (1972) 分别对新喀里多尼亚和新西兰的种类进行了论述, Pitkin (1980) 对太平洋岛国的种类作了修订。中国的种类 Walker (1869)、Redtenbacher (1891)、Matsumura et Shiraki (1908)、Karny (1915)、Hebard (1922)、Uvarov (1933)、Chang (1935)、Ebner (1939)、Tinkham (1943)、Bey-Bienko (1954, 1955, 1957, 1962)、Xia et Liu (1992)、Shi et Zheng (1994, 1998)、Shi et Liang (1997) 等均作过报道或记录, 原锥尾草螽亚属 *Conanahus* (*Conanahus*) 被提升为锥尾草螽属 *Conanahus* Tinkham, 1943 (Xia et Liu, 1992)。中国草螽属原先记录的种类经修订为 18 种, 其中包括 2 新种, 并附中国种类的检索表。

中国种类检索表

- 1 (10) 前胸腹板无刺
- 2 (5) 前翅远超过后足股节端部, 后翅明显长于前翅
- 3 (4) 体形较大 (全长约 35~47 mm); 中足股节腹面具刺; 后足股节腹面具 2 对端距 … 1. 箭竹草螽 *C. bambusanus* Ingrisch, 1990
- 4 (3) 体形小 (全长约 30 mm); 中足股节腹面无刺; 后足股节腹面具 1 对端距 …… 2. 夏氏草螽, 新种 *C. xiai* sp. nov.
- 5 (2) 前翅不超过腹端, 后翅等长于或略长于前翅

- 6 (9) 后足股节腹面具刺
- 7 (8) 头顶与颜顶分离; 雄性下生殖板腹突结节状 …… 3. 沟额草螽 *C. sulcifrons* Xia et Liu, 1992
- 8 (7) 头顶与颜顶毗连; 雄性下生殖板腹突正常 …… 4. 异刺草螽 *C. differentus* Shi et Liang, 1997
- 9 (6) 后足股节腹面无刺 …… 5. 峨眉草螽 *C. emeiensis* Shi et Zheng, 1999
- 10 (1) 前胸腹板具 2 个刺
- 11 (26) 后足股节腹面具刺
- 12 (21) 后翅长于前翅不超过 1 mm
- 13 (18) 后翅等于或略长于前翅
- 14 (17) 体形较大而粗壮 (体长超过 20 mm); 雄性第 10 腹节背板具 1 对狭尖的裂叶; 产卵瓣长于后足股节
- 15 (16) 雄性尾须端部明显趋狭, 具 2 内刺; 产卵瓣长 18 mm …… 6. 广东草螽 *C. guangdongensis* Shi et Liang, 1997
- 16 (15) 雄性尾须端部钝, 具 1 内刺, 刺端具 2 锐齿; 产卵瓣长 25 mm …… 7. 梁氏草螽, 新种 *C. liangi* sp. nov.
- 17 (14) 体形较小而纤弱 (体长不超过 15mm); 雄性第 10 腹节背板具 1 对钝圆的裂叶; 产卵瓣短于后足股节 …… 8. 二齿草螽 *C. bidentatus* Shi et Zheng, 1994
- 18 (13) 后翅短于前翅
- 19 (20) 后足膝部黑色 …… 9. 黑膝草螽 *C. gigantius* (Matsumura et Shiraki, 1908)
- 20 (19) 后足单色 …… 10. 日本草螽 *C. japonicus* (Redtenbacher, 1891)
- 21 (12) 后翅长于前翅至少 1.5 mm
- 22 (25) 后足单色
- 23 (24) 雄性第 10 腹节背板具 1 对钝的裂叶; 产卵瓣不超过后翅端部 …… 11. 长翅草螽 *C. longipennis* (De Haan, 1842)
- 24 (23) 雄性第 10 腹节背板具 1 对狭的裂叶; 产卵瓣远超过后翅端部 …… 12. 变色草螽 *C. discolor* (Thunberg, 1815)
- 25 (22) 后足膝部黑色 …… 13. 悦鸣草螽 *C. melanus* (De Haan, 1842)
- 26 (11) 后足股节腹面无刺
- 27 (32) 前翅远超过后足股节端部, 后翅长于前翅
- 28 (29) 头顶从正面观侧缘扩展呈扇形; 前翅具暗斑 …… 14. 斑翅草螽 *C. maculatus* (Le Gouillou, 1841)

- 29 (28) 头顶从正面观侧缘近乎平行；前翅无暗斑
- 30 (31) 头顶明显狭于触角第1节，侧缘平行；产卵瓣短于后足股节
..... 15. 中华草螽 *C. chinensis* (Redtenbacher, 1891)
- 31 (30) 头顶略微狭于触角第1节，侧缘非平行；产卵瓣长于后足股节
..... 16. 长瓣草螽 *C. gladiatus* (Redtenbacher, 1891)
- 32 (27) 前翅不超过腹端，后翅短于前翅
- 33 (34) 雄性前翅端部狭圆；产卵瓣约为后足股节长的1.8~2.1倍
..... 17. 长尾草螽 *C. percaudatus* Bey-Bienko, 1955
- 34 (33) 雄性前翅端部宽圆；产卵瓣不长于后足股节
..... 18. 贝氏草螽 *C. beybienkoi* Storozhenko, 1981

1 箭竹草螽 *Conocephalus bambusarius* Ingrisch, 1990

Conocephalus bispinatus Pitkin, 1980: 351 (Partum); *Conocephalus bambusarius* Ingrisch, 1990: 113; *Conocephalus abispinatus* Xia et Liu, 1992: 162.

这个体形较大的种类，全长（从头顶迄后翅端）35~47 mm。前胸腹板无刺，中足股节腹面具1~3个外刺，雄性尾须具2个内刺和阳茎端突具粗大多刺的端部。

分布：中国（广西、四川、云南）；越南；泰国；马来西亚；印度尼西亚。

2 夏氏草螽，新种 *Conocephalus xiai* sp. nov. (图1~3)

雌性 体中等，较匀称。头部较大，头顶约为触角第1节宽之半，从正面观侧缘近乎平行，基部于颜顶接触。前胸背板后缘肩凹明显，下缘强倾斜。前胸腹板无刺。前翅较长，超过后足股节端部，Rs脉从R脉中部之后分出。后翅长于前翅约5 mm。前足和中足股节腹面无刺，后足股节腹面具2个内刺和4个外刺，膝叶具2个刺，后足胫节背面两侧各具30~32个刺，端距3个（背面内侧端距和腹面内侧的1对端距缺如）。尾须较短，圆锥形。下生殖板较小，椭圆形，具截形的端部。产卵瓣较短，剑状，边缘光滑。

雄性 未知。

体色 全体淡黄褐色（活时或许为绿色）。复眼暗褐色，头部和前胸背板背面具褐色纵带，前翅背域稍变暗。

♀ 体长15.0 mm，前胸背板长3.0 mm，前翅长20.0 mm，后足股节长13.0 mm，产卵瓣长7.5 mm。

正模♀，安徽（滁州琅琊山），1981-08，陈博尧采。

分布：中国（安徽）。

讨论 新种与双刺草螽 *C. bispinatus* Pitkin, 1980 和箭竹草螽 *C. bambusarius* Ingrisch, 1990 比较接近，区别在于体形明显较小，中足股节腹面无刺，后足胫节腹面具1对端距，后足股节外侧无暗色人字形斑纹。

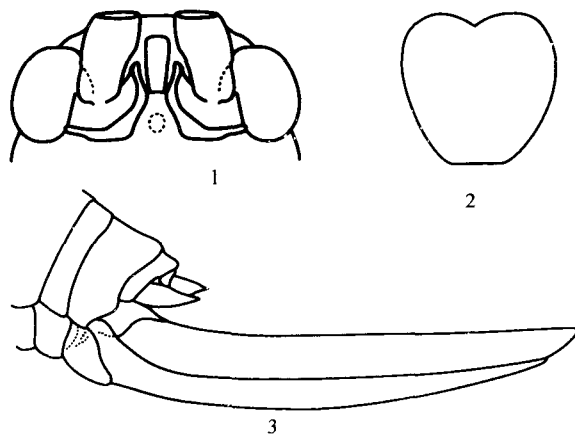


图1~3 夏氏草螽，新种 *Conocephalus xiai* sp. nov., ♀
1. 头顶正面观 (fastigium of vertex, frontal view) 2. 下生殖板腹面观 (subgenital plate, ventral view) 3. 腹端侧面观 (end of abdomen, lateral view)

3 沟额草螽 *Conocephalus sulcifrontis* Xia et Liu, 1992

Conocephalus sulcifrontis Xia et Liu, 1992: 163.

分布：中国（上海、江苏）。

4 异刺草螽 *Conocephalus differentus* Shi et Liang, 1997

Conocephalus differentus Shi et Liang, 1997: 213.

分布：中国（广东）。

5 峨眉草螽 *Conocephalus emeiensis* Shi et Zheng, 1999 (图4~6)

Conocephalus emeiensis Shi et Zheng, 1999: 219.

雌性（新描述） 体中等，较匀称。头部较大，头顶约为触角第1节宽之半，从正面观侧缘近乎平行，基部于颜顶接触。前胸背板后缘肩凹不明显，下缘强倾斜。前胸腹板无刺。前翅较短，不到达腹端，Rs脉从R脉近端部分出。后翅约等长于前翅。各足股节腹面均无刺，后足股节膝叶具2个刺，后足胫节背面内侧具24~26个刺，外侧具21~22个刺，端距5个（背面内侧端距缺如或非常小）。尾须较短，圆锥形。下生殖板较小，椭圆形，具截形的端部。产卵瓣较狭而直，剑状，边缘光滑。

体色 全体淡黄褐色（活时或许为绿色）。复眼、头部和前胸背板背面的纵带、后足胫节刺褐色。

体长：♂ 15.0 mm，♀ 17.0 mm，前胸背板长：♂ 3.0 mm，♀ 3.2 mm，前翅长：♂ 7.5 mm，♀ 7.0 mm，后足股节长：♂ 13.0 mm，♀ 14.0 mm，产卵瓣长：10.5 mm。

观察材料：1♂，四川（雅安周公山），1400 m，

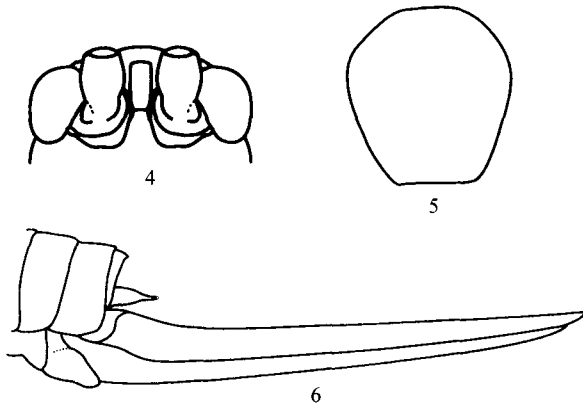


图4~6 峨眉草蠹 *Conocephalus emeiensis* Shi et Zheng, 1999; ♀

4. 头顶正面观 (fastigium of vertex, frontal view) 5. 下生殖板腹面观 (subgenital plate, ventral view) 6. 腹端侧面观 (end of abdomen, lateral view)

2006-08-02, 周顺采; 1♀, 四川 (都江堰青城山),

1987-08-10, 刘宪伟采。

分布: 中国 (四川)。

讨论 这个种近似马克萨斯群岛的三齿草蠹 *Conocephalus tridens* Hebard, 1933, 区别在于前翅较短, 雄性尾须具2内齿和产卵瓣较直。

6 广东草蠹 *Conocephalus guangdongensis* Shi et Liang, 1997 (图7~11)

Conocephalus guangdongensis Shi et Liang, 1997: 211.

这个种与雷氏草蠹 *Conocephalus redtenbacheri* (Bolivar, 1905) 较接近, 区别在于前翅 Sc 和 R 脉非暗色, 雄性尾须和雌性产卵瓣均较长。

体长: ♂ 23.0 mm, ♀ 22.0 ~ 24.0 mm, 前胸背板长: ♂ 4.8 mm, ♀ 4.6 ~ 5.0 mm, 前翅长: ♂ 13.0 mm, ♀ 13.5 ~ 14.5 mm, 后足股节长: ♂ 16.0 mm, ♀ 14.5 ~ 15.5 mm, 产卵瓣长: 16.0 ~ 18.0 mm。

观察材料: 1♂, 1♀, 广东 (龙门南昆山),

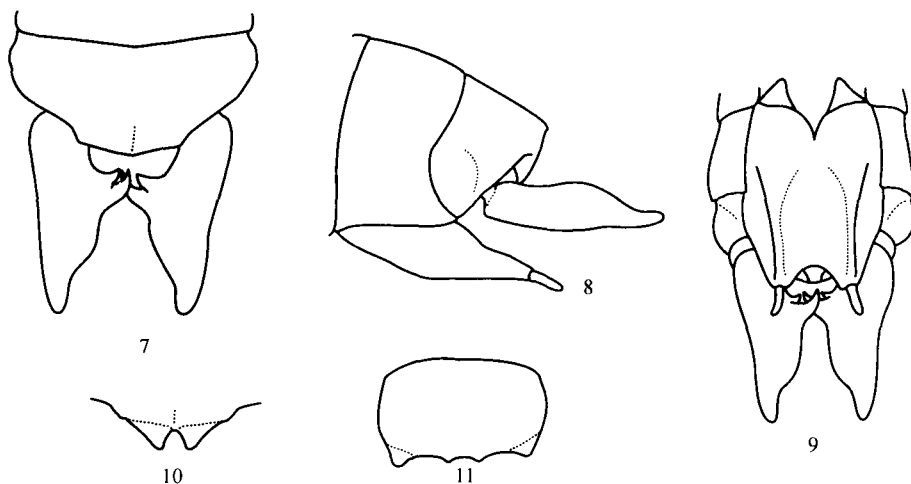


图7~11 广东草蠹 *Conocephalus guangdongensis* Shi et Liang, 1997

7. 雄性腹端背面观 (male end of abdomen, dorsal view) 8. 雄性腹端侧面观 (male end of abdomen, lateral view) 9. 雄性腹端腹面观 (male end of abdomen, ventral view) 10. 雄性第10腹节背板后面观 (male lobes of tenth abdominal tergite, hind view) 11. 雌性下生殖板腹面观 (female subgenital plate, ventral view)

1987-06-09 ~ 14, 陆勇军采; 2♀♀, 广西 (龙胜里骆), 1000 m, 1984-08-10, 黎军采。

分布: 中国 (广东、广西)。

7 梁氏草蠹, 新种 *Conocephalus liangi* sp. nov. (图12~16)

雄性 体较大, 健壮。头部较大, 头顶略宽于触角第1节宽之半, 从正面观侧缘向端部渐扩宽, 基部于颜顶接触。前胸背板后缘肩凹不明显, 下缘略倾斜。前胸腹板具2刺。前翅较长, 超过腹端, 但不到达后足股节端部。Rs脉从R脉近端部1/4处分出。后翅约等长于前翅。中足股节腹面外缘具2~

3个刺, 后足股节腹面内缘具3~5个刺, 外缘具9~11个刺, 膝叶具2个刺, 后足胫节背面内侧具26个刺, 外侧具24个刺, 端距5个 (背面内侧端距缺如)。第10腹节背板后缘中央开裂成两狭叶, 狭叶向下弯折。尾须较短, 圆柱形, 端部钝, 具1内刺, 刺端具2锐齿。下生殖板后缘具深凹口, 腹突较长。

雌性 尾须较短, 圆锥形。下生殖板横宽, 端缘波曲形。产卵瓣较长, 适度向上弯曲, 边缘光滑。

体色 全体淡黄绿色。复眼、头部和前胸背板背面的纵带褐色, 足刺暗褐色。

体长: ♂ 21.0 mm, ♀ 25.0 mm, 前胸背板长: ♂ 4.0 mm, ♀ 5.0 mm, 前翅长: ♂ 17.0 mm, ♀ 18.5

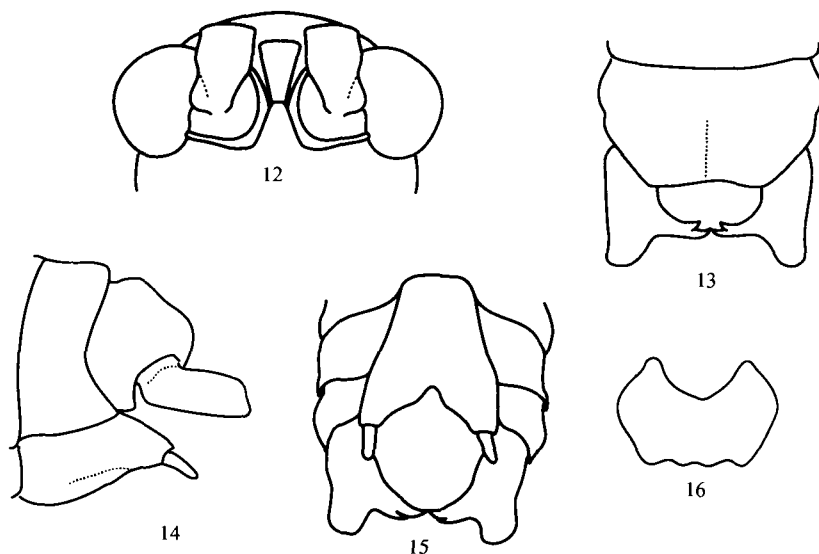


图 12~16 梁氏草螽，新种 *Conocephalus liangi* sp. nov.

12. 雄性头顶正面观 (male fastigium of vertex, frontal view) 13. 雄性腹端背面观 (male end of abdomen, dorsal view)
14. 雄性腹端侧面观 (male end of abdomen, lateral view) 15. 雄性腹端腹面观 (male end of abdomen, ventral view)
16. 雌性下生殖板腹面观 (female subgenital plate, ventral view)

mm, 后足股节长: ♂ 15.0 mm, ♀ 17.0 mm, 产卵瓣长: 25.0 mm.

正模♂, 广东广宁, 1991-06-05, 陈振耀采; 副模♀, 广东清远高田, 1990-07-04, 梁铭球采。

分布: 中国 (广东)。

讨论 新种与广东草螽 *C. guangdongensis* Shi et Liang, 1997 非常相象, 区别在前足股节腹面无刺, 雄性尾须端部钝, 具 1 内刺, 刺端具 2 锐齿和产卵瓣较长。

8 二齿草螽 *Conocephalus bidentatus* Shi et Zheng, 1994 (图 17~19)

Conocephalus bidentatus Shi et Zheng, 1994: 45; *Conocephalus oceanicus* Liu et Jin, 1999: 169 (nec Guillou, 1841)

这个种与滨海草螽 *Conocephalus oceanicus* (Guillou, 1841) 的区别在于中足股节腹面具刺和雄性尾须具 2 个内齿。

体长: ♂ 14.0 mm, 前胸背板长: ♂ 3.5 mm, 前翅长: ♂ 12.0~14.5 mm, 后足股节长: ♂ 8.5~12.5 mm。

观察材料: 1♂, 安徽休宁渠口, 1992-10-10~11, 刘宪伟和金元宝采。

分布: 中国 (浙江、安徽、福建、四川)。

9 黑膝草螽 *Conocephalus gigantius* (Matsumura et Shiraki, 1908)

Xiphidium gigantum Matsumura et Shiraki, 1908: 60; *Conocephalus* (*Xiphidium*) *gigantius* Karny, 1912: 10; *Conocephalus gigantius* Kato, 1932: 46-1.

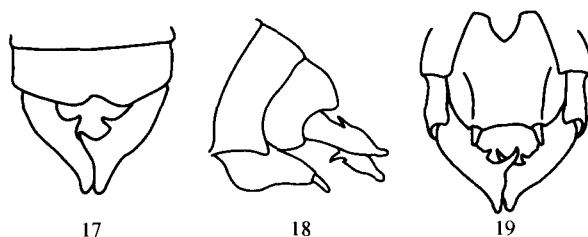


图 17~19 二齿草螽 *Conocephalus bidentatus* Shi et Zheng, 1994; ♂ 腹端 (end of abdomen)

17. 背面观 (dorsal view) 18. 侧面观 (lateral view) 19. 腹面观 (ventral view)

分布: 中国 (台湾)。

10 日本草螽 *Conocephalus japonicus* (Redtenbacher, 1891)

Xiphidium japonicum Redtenbacher, 1891: 525; *Anisoptera japonicum* Kirby, 1906: 282; *Xiphidium pulchrum* Karny, 1907: 95.Syn. n.; *Xiphidium formosarum* Matsumura et Shiraki, 1908: 59.Syn. n.; *Xiphidium divergens* Matsumura et Shiraki, 1908: 61.Syn. n.; *Conocephalus* (*Neoxiphidium*) *japonicus* Karny, 1912: 10; *Conocephalus* (*Xiphidium*) *pulcher* Karny, 1912: 10; *Conocephalus* (*Xiphidium*) *formosarum* Karny, 1912: 10; *Conocephalus* (*Xiphidium*) *divergens* Karny, 1912: 11; *Conocephalus* (*Xiphidium*) *japonicus* Bey-Bienko, 1929: 66; *Xiphidium japonicum* Mori, 1933: 55; *Conocephalus* (*Xiphidium*) *dimidiatus* Tinkham, 1943: 54, 59 (nec Matsumura et Shiraki, 1908); *Conocephalus minutus* Bey-Bienko, 1954: 468; *Conocephalus* (*Xiphidium*) *minutus* Harz, 1969: 109; *Conocephalus* (*Xiphidium*) *japonicum* Harz, 1969: 111; *Conocephalus divergens* Pravdin et Cheryachovsky, 1975: 362, 369; *Conocephalus japonicus minutus* Storozhenko, 1980: 13; *Conocephalus japonicus japonicus* Storozhenko, 1986: 251; *Conocephalus* (*Anisoptera*) *japonicus japonicus* Storozhenko, 1986: 251; *Conocephalus formosarum* Liu et Jin, 1994: 115; *Conocephalus dimidiatus* Liu et Jin, 1994:

115; *Conocephalus japonicus* Kato, 1932: Pl. 40, fig. 2.

这个短翅型的种类, 前翅通常不超出腹端, 后翅明显短于前翅。雄性第 10 腹节背板裂叶钝圆, 尾须具 1 个内刺; 产卵瓣长 11 ~ 17 (21) mm。这 3 个种 *Xiphidium pulchrum* Karny, 1907 (日本); *Xiphidium formosanum* Matsumura et Shiraki, 1908 (台湾) 和 *Xiphidium divergentum* Matsumura et Shiraki, 1908 (台湾) 均是日本草蝨 *Conocephalus japonicus* (Redtenbacher, 1891) 的同物异名, 它们之间诸多的差异都是种间的变异。

分布: 中国 (河北、内蒙古、黑龙江、上海、江苏、安徽、福建、河南、湖南、广东、广西、四川、贵州、香港、台湾); 朝鲜; 日本。

11 长翅草蝨 *Conocephalus longipennis* (De Haan, 1842)

Locusta (*Xiphidium*) *longipennis* De Haan, 1842: 189; *Xiphidium longipenne* Walker, 1869: 274; *Xiphidium spinipes* Stal, 1877: 47; *Xiphidium longicorne* Redtenbacher, 1891: 513; *Anisoptera longicorne* Kirby, 1906: 278; *Anisoptera longipenne* Kirby, 1906: 278; *Xiphidium longipenne* Karny, 1907: 92; *Xiphidium longicorne* Karny, 1907: 92; *Conocephalus* (*Xiphidium*) *longipennis* Karny, 1912: 11; *Conocephalus* (*Xiphidium*) *longipennis longipennis* Karny, 1931: 105; *Conocephalus carolinensis* Willemsen, 1942: 98; *Conocephalus longipennis* Bolivar, 1913: 8.

这个种常见多为长翅型 (偶尔也存在短翅型), 前翅长约 9.5 ~ 18.0 mm, 后翅明显长于前翅, 雄性尾须内刺具球状的端部。这个种 *Xiphidium dimidiatum* Matsumura et Shiraki, 1908 极有可能是这个种的短翅型。

分布: 中国 (安徽、福建、河南、广西、海南、云南、四川、西藏、台湾); 缅甸; 泰国; 尼泊尔; 印度; 斯里兰卡; 新加坡; 印度尼西亚; 菲律宾。

12 变色草蝨 *Conocephalus discolor* (Thunberg, 1815)

Locusta fusca Fabricius, 1793: 43; *Conocephalus discolor* Thunberg, 1815: 275; *Xiphidium fuscum* Audinet-Serville, 1831: 157; *Xiphidium fuscum* Stephens, 1835: 2; *Xiphidium fuscum* Burmeister, 1838: 708; *Xiphidium fuscum* Fieber, 1853: 170; *Xiphidium concolor* Bolivar, 1873: 261; *Anisoptera fuscum* Kirby, 1906: 276; *Conocephalus* (*Xiphidium*) *fuscum* Karny, 1912: 213; *Conocephalus fuscus* Tarbinsky, 1926: 278; *Conocephalus* (*Xiphidium*) *turanius* Bey-Bienko, 1929: 66; *Conocephalus* (*Xiphidium*) *discolor* Harz, 1969: 188; *Conocephalus* (*Anisoptera*) *discolor* Storozhenko, 1986: 250.

分布: 中国 (辽宁、吉林、黑龙江、新疆); 蒙古; 俄罗斯。

13 悦鸣草蝨 *Conocephalus melanus* (De Haan, 1842)

Locusta (*Xiphidium*) *melaena* De Haan, 1842: 189; *Xiphidium melaenum* Walker, 1869: 275; *Xiphidium nigro-geniculatum* Redtenbacher, 1891: 511;

Anisoptera melaenum Kirby, 1906: 278; *Anisoptera nigro-geniculatum* Kirby, 1906: 278; *Xiphidium melan* Karny, 1907: 91; *Xiphidium melaenum* Matsumura ZXC Shiraki, 1908: 57; *Conocephalus* (*Xiphidium*) *melas* Karny, 1912: 11; *Conocephalus melaenum* Kato, 1932: Pl. 39, fig. 3.; *Conocephalus melas* Bey-Bienko, 1957: 413; *Conocephalus melaenus* Ingrisch, 1987: 121.

分布: 中国 (江苏、浙江、福建、湖北、湖南、广东、广西、四川、贵州、云南、台湾); 日本; 尼泊尔; 印度; 泰国; 新加坡; 印度尼西亚。

14 斑翅草蝨 *Conocephalus maculatus* (Le Guillou, 1841)

Xiphidium maculatum Le Guillou, 1841: 294; *Locusta* (*Xiphidium*) *lepada* De Haan, 1842: 189; *Locusta* (*Xiphidium*) *continuum* Walker, 1869: 271; *Locusta* (*Xiphidium*) *maculatum* Walker, 1869: 275; *Xiphidium sinense* Walker, 1871: 35; *Anisoptera maculatum* Kirby, 1906: 278; *Xiphidium maculatum* Karny, 1907: 93; *Xiphidium maculatum* Matsumura et Shiraki, 1908: 51; *Xiphidium neglectum* Bruner, 1920: 123; *Conocephalus* (*Xiphidium*) *maculatus* Karny, 1912: 11; *Conocephalus maculatus* Bolivar, 1913: 8; *Conocephalus sinensis* Jin et Xia, 1994: 33.

分布: 中国 (北京、河北、上海、江苏、浙江、福建、江西、湖北、湖南、广东、广西、四川、贵州、云南、台湾); 日本; 菲律宾; 马来西亚; 印度尼西亚; 缅甸; 泰国; 尼泊尔; 孟加拉; 印度; 斯里兰卡; 新几内亚; 澳大利亚; 埃塞俄比亚; 马达加斯加; 非洲。

15 中华草蝨 *Conocephalus chinensis* (Redtenbacher, 1891)

Xiphidium chinense Redtenbacher, 1891: 509; *Anisoptera chinense* Kirby, 1906: 277; *Xiphidium chinensis* Matsumura et Shiraki, 1908: 53; *Conocephalus* (*Xiphidium*) *chinensis* Karny, 1912: 10; *Conocephalus longipennis* Caudell, 1927: 7 (nec De Haan, 1842); *Xiphidium longipennis* Doi, 1932: 37; *Xiphidium maculatum* Kato, 1932: Pl. 47, fig. 3; *Xiphidium japonicum* Mori, 1935: 9, 16 (nec Redtenbacher, 1891); *Conocephalus* (*Xiphidium*) *chinensis* Chang, 1935: 46; *Conocephalus chinensis* Uvarov, 1926: 283; *Conocephalus* (*Xiphidium*) *chinense* Harz, 1969: 108; *Conocephalus* (*Anisoptera*) *chinensis* Storozhenko, 1986: 250; *Conocephalus* (*Amurocephalus*) *chinensis* Storozhenko, 2004: 73.

分布: 中国 (河北、内蒙古、辽宁、吉林、黑龙江、上海、江苏、安徽、山东、河南、四川); 俄罗斯 (远东); 朝鲜; 日本。

16 长瓣草蝨 *Conocephalus gladiatus* (Redtenbacher, 1891)

Xiphidium gladiatum Redtenbacher, 1891: 514; *Conocephalus* (*Xiphidium*) *gladiatus* Karny, 1912: 11; *Conocephalus gladiatus* Kato, 1932: Pl. 47, fig. 4; *Xiphidium gladiatum* Mori, 1933: 55; Doi, 1933: 88.

分布: 中国 (北京、上海、浙江、福建、湖南、广西、四川、贵州、台湾); 日本; 朝鲜; 尼泊尔; 泰国。

17 长尾草螽 *Conocephalus percaudatus* Bey-Bienko, 1955

Conocephalus caudatus Bey-Bienko, 1954: 468 (nec Morse, 1901);
Conocephalus percaudatus Bey-Bienko, 1955: 1262; *Conocephalus* (*Anisoptera*)
percaudatus Storozhenko, 2004: 79.

分布: 中国(内蒙古、黑龙江、宁夏); 俄罗斯。

18 贝氏草螽 *Conocephalus beybienkoi* Storozhenko, 1981

Conocephalus dorsalis Storozhenko, 1980: 12 (nec Latreille, 1804);
Conocephalus (*Xiphidium*) *dorsalis* beybienkoi Storozhenko, 1981: 1722;
Conocephalus beybienkoi Sergeev, 1986: 45, 1993: 59; Storozhenko, 1992:
45; *Conocephalus* (*Anisoptera*) *beybienkoi* Storozhenko, 2004: 82.

分布: 中国(东北); 俄罗斯(远东); 日本。

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A STUDY OF THE GENUS *CONOCEPHALUS* THUNBERG AND DESCRIPTIONS OF TWO NEW SPECIES FROM CHINA (ORTHOPTERA, CONOCEPHALIDAE)

LIU Xian-Wei, ZHANG Ding-Jie

Shanghai Entomology Museum, Chinese Academy of Sciences, Shanghai 200032, China

Abstract This paper studied the species of the genus *Conocephalus* Thunberg from China, two new species *Conocephalus xiai* sp. nov. and *Conocephalus liangi* sp. nov. and the female of *Conocephalus emeiensis* Shi et Zheng, 1999 were described. As to nomenclature, *Xiphidium pulchrum* Karny, 1907 (Japan); *Xiphidium formosanum* Matsumura et Shiraki, 1908 (Taiwan) and *Xiphidium divergentum* Matsumura et Shiraki, 1908 (Taiwan) are synonyms of *Conocephalus apoincus* (Redtenbacher, 1891). The type specimens are deposited in the Shanghai Entomology Museum, the Chinese Academy of Sciences.

Key to Chinese species

- 1 (10) Prosternum unarmed
2 (5) Tegmina far surpassing apices of hind femora. Hind wings distinctly longer than tegmina
3 (4) Body large (with wings 35-47 mm). Mid femora with ventral spines. Hind tibiae with two pairs of ventrally apical spurs 1. *C. bambusanus* Ingrisch, 1990
4 (3) Body small (with wings 30 mm). Mid femora without ventral spines.

- Hind tibiae with a pairs of ventrally apical spurs
..... 2. *C. xiai* sp. nov.
5 (2) Tegmina not reaching the apex of abdomen. Hind wings equal or a little longer than tegmina
6 (9) Hind femora with ventral spines
7 (8) Between fastigium of vertex and frontal fastigium with a broad groove. Male subgenital plate with tubercular styles
..... 3. *C. sulcifrons* Xia et Liu, 1992
8 (7) Fastigium of vertex connecting to frontal fastigium. Styles of male subgenital plate normal 4. *C. differentus* Shi et Liang, 1997
9 (6) Hind femora without ventral spines
..... 5. *C. emeiensis* Shi et Zheng, 1999
10 (1) Prosternum bispinose
11 (26) Hind femora with ventral spines
12 (21) Hind wings extending beyond the tegmina by less than 1 mm
13 (18) Hind wings nearly equal or a little longer than tegmina
14 (17) Body large and strong (more than 20 mm). Male 10th abdominal tergite with a pair of pointed lobes. Ovipositor surpassing apices of hind femora
15 (16) Male cercus with apex pointed, with 2 internal spines. Length of ovipositor 18 mm 6. *C. guangdongensis* Shi et Liang, 1997
16 (15) Male cercus with apex obtuse, with 1 internal spine and 2 teeth at the extreme apex. Length of ovipositor 25 mm
..... 7. *C. liangi* sp. nov.

- 17 (14) Body small and slender (less than 15 mm). Male 10th abdominal tergite with a pair of obtuse lobes. Ovipositor not reaching apices of hind femora 8. *C. bidentatus* Shi et Zheng, 1994
- 18 (13) Hind wings shorter than tegmina
- 19 (20) Hind femora with knees darkened 9. *C. gigantius* (Atsumura et Shiraki, 1908)
- 20 (19) Hind femora unicolorous 10. *C. japonicus* (Redtenbacher, 1891)
- 21 (12) Hind wings extending beyond the tegmina by more than 1.5 mm
- 22 (25) Hind femora unicolorous
- 23 (24) Male 10th abdominal tergite with a pair of obtuse lobes. Ovipositor not reaching apices of hind wings 11. *C. longipennis* (De Hann, 1842)
- 24 (23) Male 10th abdominal tergite with a pair of pointed lobes. Ovipositor surpassing apices of hind wings 12. *C. discolor* (Thunberg, 1815)
- 25 (22) Knees of hind femora darkened 13. *C. melanus* (De Haan, 1842)
- 26 (11) Hind femora unarmed
- 27 (32) Tegmina distinctly surpassing apex of hind femora. Hind wings longer than tegmina
- 28 (29) Fastigium of vertex with strongly divergent lateral margins. Tegmina with blackish spots 14. *C. maculatus* (Le Gouillou, 1841)
- 29 (28) Fastigium of vertex with almost parallel lateral margins. Tegmina unicolorous
- 30 (31) Fastigium of vertex considerably narrower than 1st antennal segment, with parallel lateral margins. Ovipositor shorter than hind femora 15. *C. chinensis* (Redtenbacher, 1891)
- 31 (30) Fastigium of vertex slightly narrower than 1st antennal segment, with lateral margins not parallel. Ovipositor longer than hind femora 16. *C. gladius* (Redtenbacher, 1891)
- 32 (27) Tegmina not reaching the apex of abdomen. Hind wings shorter than tegmina
- 33 (34) Male tegmen with pointed apex. Ovipositor 1.8-2.1 times as long as than hind femora 17. *C. peraculatus* Bey-Bienko, 1955
- 34 (33) Male tegmen with broadly rounded apex. Ovipositor not longer than hind femora 18. *C. beybienkoi* Storozhenko, 1981

Conocephalus xiai sp. nov. (Figs. 1-3)

Diagnosis. ♀. Macroptera. Fastigium of vertex narrow, with parallel lateral margins (Fig. 1). Prosternum unarmed. Mid femora unarmed ventrally. Hind femora with 2 internoventral spines and 4 externoventral spines. Hind tibiae with 3 apical spurs. Subgenital plate as in text-Fig. 2, ovipositor short and straight, shaped as in text-Fig. 3.

Male unknown.

Coloration. Generally yellow-green, eyes dark brown, head and pronotum with brown dorsal longitudinal stripe, fore wings with darkened dorsal area.

Measurements. ♀. Body 15.0 mm, pronotum 3.0 mm, tegmina 20.0 mm, hind femora 13.0 mm, ovipositor 7.5 mm.

Holotype ♀, Anhui (Chuzhou Langyashan), Aug. 1981, collected by CHEN Bo-Yao.

Discussion. This new species is similar to *C. bispinatus* Pitkin, 1980 and *C. bambusentus* Ingrisch,

1990, but differs in the body smaller, mid femora unarmed ventrally, hind femora without dark brown herring-bone pattern externally, hind tibiae with three apical spurs.

Distribution. Known only from Anhui, China.

Conocephalus emeiensis Shi et Zheng, 1999 (Figs. 4-6)

Diagnosis. ♀ (new). As male in its size and general appearance. Brachypterous. Fastigium of vertex narrow, with parallel lateral margins (Fig. 4). Prosternum unarmed. All femora unarmed ventrally. Hind tibiae with 5 apical spurs. Subgenital plate as in text-Fig. 5, ovipositor narrow and straight, shaped as in text-Fig. 6.

Measurements. ♀. Body 17.0 mm, pronotum 3.2 mm, tegmina 7.0 mm, hind femora 14.0 mm, ovipositor 10.5 mm.

Discussion. This species resembles *C. tridens* Hebard, 1933, it may be distinguished from it by the fore wing length, by the shaped of male cerci, by the narrow and straight ovipositor.

Distribution. Known only from Sichuan, China.

Conocephalus liangi sp. nov. (Figs. 12-16)

Diagnosis. ♂, ♀. Brachypterous. Fastigium of vertex moderately wide, with lateral margins diverging to apically (Fig. 12). Prosternum bispinose. Mid femora with 2-3 externoventral spines. Hind femora with 3-5 internoventral spines and 9-11 externoventral spines. Hind tibiae with 5 apical spurs. End of abdomen of male as in text-Figs. 13-15, female subgenital plate as in text-Fig. 16, ovipositor long and moderately curved.

Coloration. Generally yellow-green, eyes and dorsal longitudinal stripe of body brown, spines of legs dark brown.

Measurements. Body ♂ 21.0, ♀ 25.0 mm; pronotum ♂ 4.0, ♀ 5.0 mm; tegmina ♂ 17.0, ♀ 18.5 mm; hind femora ♂ 15.0, ♀ 17.0 mm, ovipositor ♀ 25.0 mm.

Holotype ♂, Guangdong (Guangning), 5 June 1991, collected by CHEN Zhen-Yao; paratype 1 ♀, Guangdong (Qingyuan Gaotian), 4 July 1990, collected by LIANG Ge-Qiu.

Discussion. This new species is very similar to *C. guangdongensis* Shi et Liang, 1997, but differs in the fore femora unarmed ventrally, shape of the male cerci and longer ovipositor.

Distribution. Known only from Guangdong, China.

Key words Orthoptera, Conocephalidae, *Conocephalus*, new species, China.