

THREE NEWLY RECORDED SPECIES OF *PTEROMALUS* (CHALCIDOIDEA, PTEROMALIDAE) FROM CHINA

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Abstract Three species of *Pteromalus* Swederus are newly reported from China. Morphological descriptions, distribution and morphological figures are provided. All the specimens are deposited in the Zoological Museum, Institute of Zoology, Chinese Academy of Sciences.

Pteromalus chrysos Walker

Materials examined. 1 ♀, 1 ♂, Fujian, Liancheng, Taipingliao Village, 1996-09-15, coll. XIAO Hui.

Distribution. China (Fujian); Australia.

Key words Hymenoptera, Pteromalidae, *Pteromalus*, newly record species, China.

Pteromalus smaragdus Graham

Materials examined. 1 ♀, 1 ♂, Fujian, Shanghang, Gutian, 1996-09-14, coll. XIAO Hui.

Distribution. China (Fujian); Sweden.

Pteromalus sequester Walker

Materials examined. 1 ♀, Inner Mongolia. Hohhot, alt. 1 060 m, 1984-08-08, coll. LIAO Ding-Xi.

Distribution. China (Inner Mongolia); Worldwide.

中国金小蜂属三新纪录种 (小蜂总科, 金小蜂科)

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摘要 记录了中国金小蜂属 *Pteromalus* Swederus, 1795 3 新纪录种: 金色金小蜂 *Pteromalus chrysos* (Walker), 绿金小蜂 *Pteromalus smaragdus* Graham 和隐金小蜂 *Pteromalus sequester* Walker。提供了形态描述、分布及形态特征图, 并提供了分种检索表。研究标本保存于中国科学院动物研究所动物标本馆。

关键词 膜翅目, 金小蜂科, 金小蜂属, 新纪录, 中国。

中图分类号 Q969.545.3

Swederus (1795) 在金小蜂科下建立金小蜂属 *Pteromalus*, 之后物种数量激增。但由于 *Pteromalus* 和 *Habrocytus* 这 2 个属极其相似, 仅仅以上颚齿的数量来判定 (*Pteromalus* 上颚齿式为 4:4, *Habrocytus* 上颚齿式为 3:4), 使很多分类学者在研究过程中很难判定那些小齿出现部分联合的现象。Graham (1969) 认为这两个属应该合二为一; Bouček & Graham (1978) 终于将这两个属合二为一, 将 *Habrocytus* 属做为 *Pteromalus* 属下的一个亚属。这样, 金小蜂属下划分了 2 个亚属: *Habrocytus* 亚属上颚左 3 齿右 4 齿, 并胸腹节较长; *Pteromalus* 亚属上颚左 4 齿右 4 齿, 并胸腹节较短。随着研究的深入, 发现在许多种类中这些性状呈现许多不同的组合形式, 很难严格区分, 因而其亚属的划分不再为学者们所采用。

该属目前已记录 504 种 (Noyes, 2011)。全球广泛分布。我国记录 8 种 (廖定熹, 1982; 廖定熹等, 1987; 黄大卫等, 1987; 姚艳霞等, 2008), 分布于北京、河北、青海、山西、西藏等地。研究在收集整理中国科学院动物研究所的馆藏标本基础上, 对金小蜂属进行了初步研究, 发现 3 新纪录

种。描述术语如无特别指出, 均采用 Bouček (1988) 和 Gibson 等 (1997)。

金小蜂属 *Pteromalus* Swederus, 1795

Pteromalus Swederus, 1795: 16: 201. Type species: *Idneumon puparum* Linnaeus, 1758, by designation of Westwood, 1839. Latreille, 1809: 31; Latreille, 1810: 436; Curtis, 1829: 116; Dalla Torre, 1898: 108; Ashmead, 1904: 320–321; Schmiedeknecht, 1909: 335–354; Kurdjumov, 1913: 9, 17; Nikol'skaya, 1952: 230; Peck *et al.*, 1964: 58; Janzon, 1984: 25–26; Bouček, 1993: 1280; Askew, 1995: 245; Dzhankmen & Grissell, 2003: 537.

Colas Curtis, 1827: 166. Type species: *Colas dispar* Curtis, by monotypy and original designation. Synonym of *Habrocytus* Thomson, Graham, 1969: 494–495.

Metopachia Westwood, 1839: 71. Type species: *Colas dispar* Curtis, original designation and monotypy. Synonym of *Habrocytus* Thomson, Graham, 1969: 494.

Habrocytus Thomson, 1878: 88, 109 (as subgenus of *Etroxys* Förster). Type species: *Pteromalus albipennis* Walker; designated by Ashmead, 1904. Dalla Torre, 1898: 102; Ashmead, 1904: 316; Girault, 1917: 178; Bouček, 1957: 160. Synonym of *Pteromalus* Swederus, Bouček & Graham, 1978: 228.

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Heterolacus Masi, 1937: 371. Type species: *H. mauritanicus* Masi by original designation. Synonym of *Pteromalus* Swederus, Graham, 1969: 488.

Gerontidella Szelenyi, 1982: 383. Type species: *Gerontidella graciliventris* Szelenyi, original designation and monotypy. Synonym of *Pteromalus* Swederus, Bouček, 1991: 204.

属征 虫体紧凑, 体绿色或暗绿色具金属光泽; 头多宽于胸; 触角位于颜面中部, 唇基具齿或不具齿; 触式 11263; 前胸背板短, 领部前缘一般具脊; 中胸盾片宽大于长, 盾纵沟不完整; 并胸腹节颈部明显或不明显加长, 具完整的侧褶, 中脊有或无; 胸腹侧片较小, 一般较光滑, 不具网状刻点。

生物学 寄主广泛, 寄生于鳞翅目 (蝶类及蛾类) 及鞘翅目的预蛹和蛹, 瘿蜂的虫瘿, 有的种类也寄生于蝇类, 有时为次寄生。

中国金小蜂属分种检索表 (雌)

1. 前胸背板几与中胸等宽, 前部两侧角向两侧突出, 中部长为前胸盾片长的 1/5; 两颊在上颚基部显著平缓且具脊缘; 并胸腹节具被网状刻点的颈部 金色金小蜂 *P. chrysos* Walker
前胸背板明显窄于中胸, 前部两侧角不向两侧突出, 中部短; 两颊在上颚基部较膨胀, 无脊缘 2
2. 触角各索节长均大于宽 (图 3); 小盾片无横沟; 并胸腹节无中脊; 柄后腹长为宽的 1.8 倍, 稍短于头胸长之和
..... 绿金小蜂 *P. smaragdus* Graham
触角 F1 ~ F4 索节方形, F5、F6 宽略大于长 (图 4 ~ 5); 小盾片有横沟; 并胸腹节有中脊, 且后缘分叉柄; 柄后腹长为宽的 1.38 倍, 稍长于头胸长之和 隐金小蜂 *P. sequester* Walker

1 金色金小蜂 *Pteromalus chrysos* Walker (图 1 ~ 2)

Pteromalus chrysos Walker, 1836: 491.
Pteromalus inclusus Walker, 1836: 493. Synonymized by Graham, 1969.
Pteromalus zipaetes Walker, 1839: 213. Synonymized by Graham, 1969.
Pteromalus telon Walker, 1839: 216. Synonymized by Graham, 1969.
Etraxys (Habrocytus) acutigena Thomson, 1878: 117. Synonymized by Graham, 1969.
Pteromalus eucerus Ratzeburg, 1848: 198. Synonymized by Graham, 1969.
Hypopteromalus poecilopus Crawford, 1910: 21. Synonymized by Ferrière, 1952.

雌 体长 2.2 ~ 2.5 mm。体墨绿色具光泽 (图 1); 复眼、单眼均褐色; 触角柄节棕黄色, 其余褐色; 足基节、腿节中部与体同色, 其余为棕黄色或黄色, 端附节褐色; 翅透明。

头前面观, 具凸脊网状刻纹, 被白色稀毛, 头部网状刻纹比胸部刻纹稍密; 触角洼宽, 浅, 触角洼凸脊网状刻纹与头部其它处刻纹相同; 颜面不隆起; 头宽为高的 1.25 倍, 唇基平截, 具放射状刻纹; 复眼高为宽的 2.80 倍, 复眼间距为复眼高的 1.43 倍, 颞眼距为复眼高的一半; 左上颚 3 齿。触角位于复眼下缘线的稍上方, 柄节最多伸达头顶; 触角 (图 2) 长为头宽的 0.93 倍, 梗节短于第 1 索节, F1 ~ F4 索节长稍大于宽, 其余均为方形或亚方形; 棒节大于末 2 索节长。头背面观宽为长的 1.86 倍, POL 为 OOL 的 1.8 倍, 上颊为复眼长的 1/3。

胸部较头窄, 胸宽为头宽的 0.89 倍; 前胸背板两侧角明显向两侧突起, 领部具脊, 陡; 为中胸盾片长之 1/5, 宽与胸宽相当。小盾片无横沟。并胸腹节具侧褶, 中脊仅前部有; 刻点与中胸相同; 颈部明显, 具横纹。前翅缘室较宽, 长为宽

的 8.57 倍, 上表面光滑, 下表面后 1/3 处被长毛; 基脉、基室光滑无毛; 缘脉与后缘脉等长, 后缘脉为痣脉的 1.26 倍; 痣脉较膨大。

柄后腹稍短于头胸之和, 柄后腹长为头胸之和长的 0.92 倍, 其长为宽的 1.4 倍。柄后腹第 1 节稍长, 背板后缘中部弧形外突。

雄 主要特征与雌体较相似, 除触角黄棕色, 各索节均长大于宽; 后足腿节为褐色, 其余为黄色; 柄后腹较窄且短小, 中前部为黄棕色。

检视标本: 1 ♀, 1 ♂, 福建连城县太平寮村, 1996-09-15, 肖晖采。

寄主: Graham (1969) 记载其由姬蜂 *Diadegma armillata* (Grav.) 次寄生于苹果巢蛾 *Hyponomeuta padellus* (L.), 也有寄生于松异舟蛾 *Thaumtopoea pityocampa* 的记录。

分布: 中国 (福建); 澳大利亚。

2 绿金小蜂 *Pteromalus smaragdus* Graham (图 3)

Pteromalus smaragdus Graham, 1969: 494.

雌 体长 2 mm。体墨绿色; 触角除柄节黄色外, 其余均为棕黄色; 足基节与体同色, 端附节褐色, 其余为棕黄色。

头前面观, 具凸脊网状刻纹, 头宽大于高, 为高的 1.5 倍; 唇基下缘中部稍凹, 具刻纹线, 但不伸至颊部。触角着生于颜面中部, 触角窝位于复眼下缘线上方, 柄节最多伸达头顶; 柄节稍短于复眼高, 柄节长为复眼高的 0.83 倍; 梗节与第 1 索节长相当, 各索节长均大于宽; 棒节较膨大, 长为宽的 1.5 倍。触角 (图 3) 梗节与鞭节长之和稍小于或等于头宽。头背面观, 头宽为长的 2.28 倍, 上颊为复眼长的 1/2; POL 为 OOL 的 1.5 倍。

胸部窄于头, 前胸背板较短, 领前缘具脊, 前胸背板宽窄于中胸盾片; 中胸稍突起, 长稍大于宽, 长为宽的 1.11 倍; 小盾片后无横沟; 并胸腹节稍长于小盾片长的一半, 中部凸起, 具规则刻点; 并胸腹节颈部明显且突起, 具大的刻点; 无中脊, 侧褶完整, 伸至并胸腹节颈部。前翅缘室下表面具 1 完整毛列, 端部 1/3 有 1 不完整毛列; 缘室上表面无毛; 基脉具几根毛, 基室光滑; 缘脉、后缘脉和痣脉的相对长度为 14 : 13 : 10。

柄后腹无柄, 卵圆形, 长为宽的 1.8 倍, 比头胸长之和稍短或相等。

雄 体形稍小, 柄后腹前半部黄色透明。

检视标本: 1 ♀, 1 ♂, 福建上杭古田, 1996-09-14, 肖晖采。

寄主: 未知。

分布: 中国 (福建); 瑞典。

3 隐金小蜂 *Pteromalus sequester* Walker (图 4 ~ 8)

Pteromalus sequester Walker, 1835a: 495.
Pteromalus varius Walker, 1835a: 494. Synonymized by Graham, 1969.
Pteromalus infectus Walker, 1835b: 186. Synonymized by Graham, 1969.
Pteromalus placidus Walker, 1835b: 187. Synonymized by Graham, 1969.
Pteromalus simulans Walker, 1836: 495. Synonymized by Graham, 1969.
Pteromalus oroetes Walker, 1839: 211. Synonymized by Graham, 1969.
Pteromalus eulimene Walker, 1848: 179. Synonymized by Graham, 1969.
Pteromalus leguminum Ratzeburg, 1852: 234. Synonymized by

Graham, 1969.
Pteromalus insularis Walker, 1872: 100. Synonymized by Graham, 1969.
Habroclytus medicaginis Gahan, 1914: 163. Synonymized by Bouček, 1988.

雌 体长 2.4 mm。体绿色具金属光泽，但腹部前 3 节背板颜色较后面的淡；复眼、单眼均淡红褐色；触角柄节黄色，梗节背面黄褐色，腹面黄色，鞭节黄褐色；足基节与体同色，腿节黄褐色，靠近胫节部位颜色稍淡，胫节黄色，跗节除末节黄褐色其余黄色。

头前面观（图 4），具凸脊网状刻纹，被白色稀毛，头部网状刻纹比胸部刻纹稍密；触角洼宽而浅；头宽为高的 1.33

倍；唇基下缘具对称 2 大齿，口上沟明显，唇基上具放射状刻纹（图 4~5）；复眼高为宽的 2.78 倍，复眼间距为复眼高的 1.56 倍，复眼高为颊长的 2.50 倍；具颞眼沟。触角（图 5）着生于颜面中部，触角窝在复眼下缘线以上，柄节伸达中单眼没超出头顶；头宽稍大于触角长；梗节长为宽的 2.00 倍；2 环节均横形；触角索节 F1~F4 长宽相等，F5、F6 宽略大于长，各索节均被短毛及 1 轮感觉毛；棒节短于末 3 索节长，棒节长为宽的 1.71 倍。头背面观，宽为长的 3.35 倍，无后头脊；复眼长为上颊长的 2.83 倍，上颊圆滑；三单眼呈三角形；POL 为 OOL 的 1.88 倍。头侧面观，颊后缘圆滑。

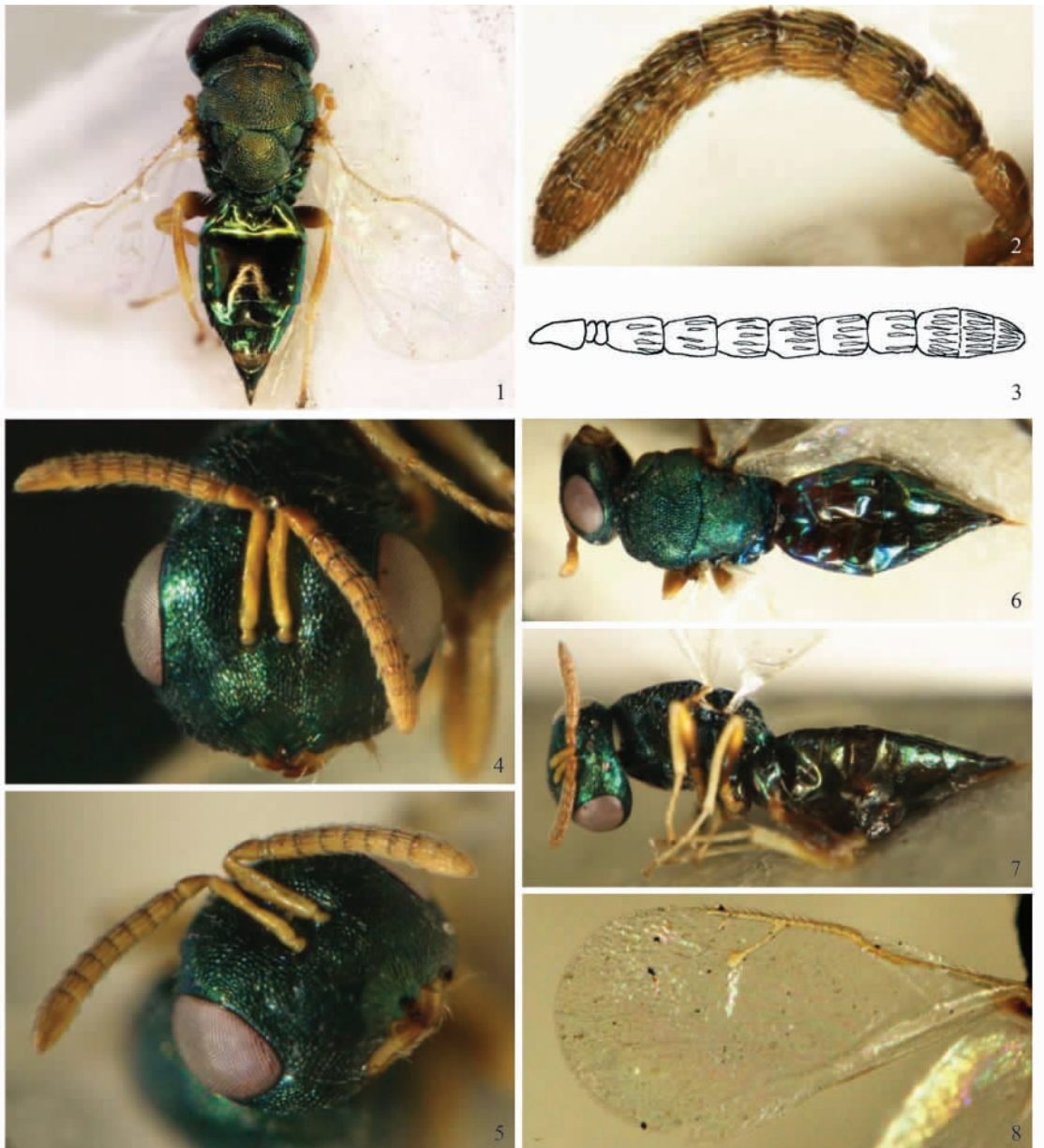


图 1~2 金色金小蜂 *Pteromalus chrysus* Walker 图 3 绿金小蜂 *Pteromalus smaragdus* Graham 图 4~8 隐金小蜂 *Pteromalus sequester* Walker

1~8. ♀ 1. 体背面观 (body in dorsal view) 2~3. 触角 (antenna) 4. 头正面观 (head in front view) 5. 头正侧面观 (head in frontolateral view) 6. 体背面观 (body in dorsal view) 7. 体侧面观 (body in lateral view) 8. 前翅 (fore wing)

中胸背面显著隆起（图 7），胸宽稍窄于头宽。前胸背板短，明显分成颈和领，领前缘有脊，领前部有凸脊网状刻纹，

后缘光滑无刻纹，背面观（图 6）前胸背板后缘呈弧形凹入，两侧角与中胸盾片前缘间有缢缩，前胸背板宽窄于中胸盾片。

中胸盾片宽大于长, 上散布稀疏毛, 毛生于网状刻纹窝中间, 网状刻纹与小盾片和三角片上的刻纹相同, 中胸盾片前缘呈弧形前突; 盾纵沟不完整, 较浅, 只前 1/2 可见。小盾片具凸脊网状刻纹, 长宽相当, 后缘被毛较前缘密, 横沟浅; 后胸背板中间的小背板很短, 无刻纹, 后缘有刻纹沟。并胸腹节中脊在后缘分叉, 侧褶完整, 侧区无刻纹, 气门内侧凸起; 并胸腹节有颈, 很短, 中区和颈之间有很短的凹痕, 侧肢被密毛。前翅 (图 8) 后伸达腹末之外, 长为宽的 2.05 倍, 前缘室正面无毛, 反面有 1 列毛, 基室内无毛, 基脉后缘上只有几根毛, 基室下方开式, 有透明斑, 下方无毛, 开放, 透明斑外方翅面上的纤毛密, 亚缘脉: 缘前脉: 缘脉: 后缘脉: 痣脉长 = 18 : 7 : 10 : 10 : 8。后足基节伸到并胸腹节后, 侧面具凸脊网状刻纹, 大小约为前、中足的两倍; 前足、中足、后足胫节依次变长 (31:35:42)。

柄后腹无腹柄, 背面观 (图 6) 纺锤形, 长为宽的 1.34 倍; 腹宽为胸宽的 1.3 倍, 最宽处在第 2 背板后缘两侧, 柄后腹端部尖突, 柄后腹长稍大于或等于头胸部长之和, 柄后腹有微弱的刻纹, T1 后缘中部弧形向后突出, 背板侧面有稀毛, 从 T2 起各节背板侧面及中间均有毛, 但第 7 背板毛较密, 各背板后缘中部没有向后突出。

检视标本: 1 ♀, 内蒙古呼和浩特, 海拔 1060 m, 1984-08-08, 廖定熏采。

寄主: 该种寄主涉及广肩小蜂科 Eurytomidae, 叶甲科 Chrysomelidae, 锥象鼻虫科 Brentidae, 金小蜂科 Pteromalidae, 螟蛾科 Pyralidae, 瘿蚊科 Cecidomyiidae, 象鼻虫科 Curculionidae (Noyes, 2002); 国内标本无寄主记录。

分布: 内蒙古; 全球分布。

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