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## 中国甲腹茧蜂属台湾甲腹茧蜂的记述

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**摘 要:**对中国甲腹茧蜂属 *Chelonus* Panzer 台湾甲腹茧蜂 *Chelonus formosanus* Sonan, 的形态特征、生物学、分布、寄主进行了记述。其标本保存于海南省农业科学院农业环境与植物保护研究所。

**关键词:**膜翅目;茧蜂科;甲腹茧蜂亚科;甲腹茧蜂属;台湾甲腹茧蜂;海南岛

**中图分类号:** Q 964 **文献标志码:** A

甲腹茧蜂属 *Chelonus* Panzer (1806) 是甲腹茧蜂亚科中最大的属,全世界广泛分布,已经描述的种类达 864 种,主要以鳞翅目昆虫为寄主,大部分种类均为容性内寄生于昆虫的卵—幼虫期,寄主昆虫种类已达 250 余种<sup>[1]</sup>。笔者于 2009 年 3 月份在海南儋州芦笋地采集到甜菜夜蛾幼虫,在实验室饲养甜菜夜蛾幼虫的过程中发现寄生蜂,在海口、三亚、定安等市县采集的甜菜夜蛾幼虫中也发现该种寄生蜂,并经华南农业大学资环学院许再福教授鉴定为中国甲腹茧蜂属 *Chelonus* Panzer 台湾甲腹茧蜂 *Chelonus formosanus* Sonan, 是一种卵—幼虫跨期寄生蜂。目前,国内没有台湾甲腹茧蜂标本<sup>[2-3]</sup>,现将其主要形态特征报告如下:

**雌:**体长 6 mm,前翅长 5 mm,触角长 3 mm;触角细,丝状,是体长的一半,25~30 节(已发现);第 1 鞭节稍短于柄节,但长于第 2 节,倒数第 2 节触角节长是其端部宽的 1.6 倍;端部触角节长稍大于宽;头横置,长宽比为 1.6:1,具细而密集的皱,披密集银色柔毛;侧面观复眼几乎 2 倍于其宽;唇基具密集刻点;面具网状皱;胸部具粗糙的皱褶,胸长为其高的 1.5 倍;小盾片具网状皱;并胸腹节具网状皱,后端陡峭,具明显的端横脊;腹部具粗糙网状皱,腹部长小于宽的 2 倍,腹腔几乎延伸至腹甲末端。见图版 1。

**体:**黑色;翅透明,翅痣暗褐色;SR1 脉稍向上弯曲;足黑色较细,前中足腿节(基部除外)、胫节及跗节褐色;后足黑色,腿节基部突然变细,端部褐色,胫节基部 2/3 及跗节白色,胫节端部连结处黑色;腹部近基部具 1 白色带,带中间被黑色间断。见图版 1。

**雄:**与雌相似,触角 25 节、28 节(已发现)。见图版 1。

**生物学:**产卵于寄主的卵,并汲取寄主营养一同发育,待寄主发育至老熟幼虫时,开始破体而出,25 °C 时 1~2 d 吐丝化茧。

**寄主包括:**甜菜夜蛾 *Spodoptera exigua*、斜纹夜蛾 *Prodenia litura* (Fabricius)、棉铃虫 *Helicoverpa armigera*、劳氏粘虫 *Leucania loreyi*、草地夜蛾 *Spodoptera frugiperda*<sup>[3]</sup>。

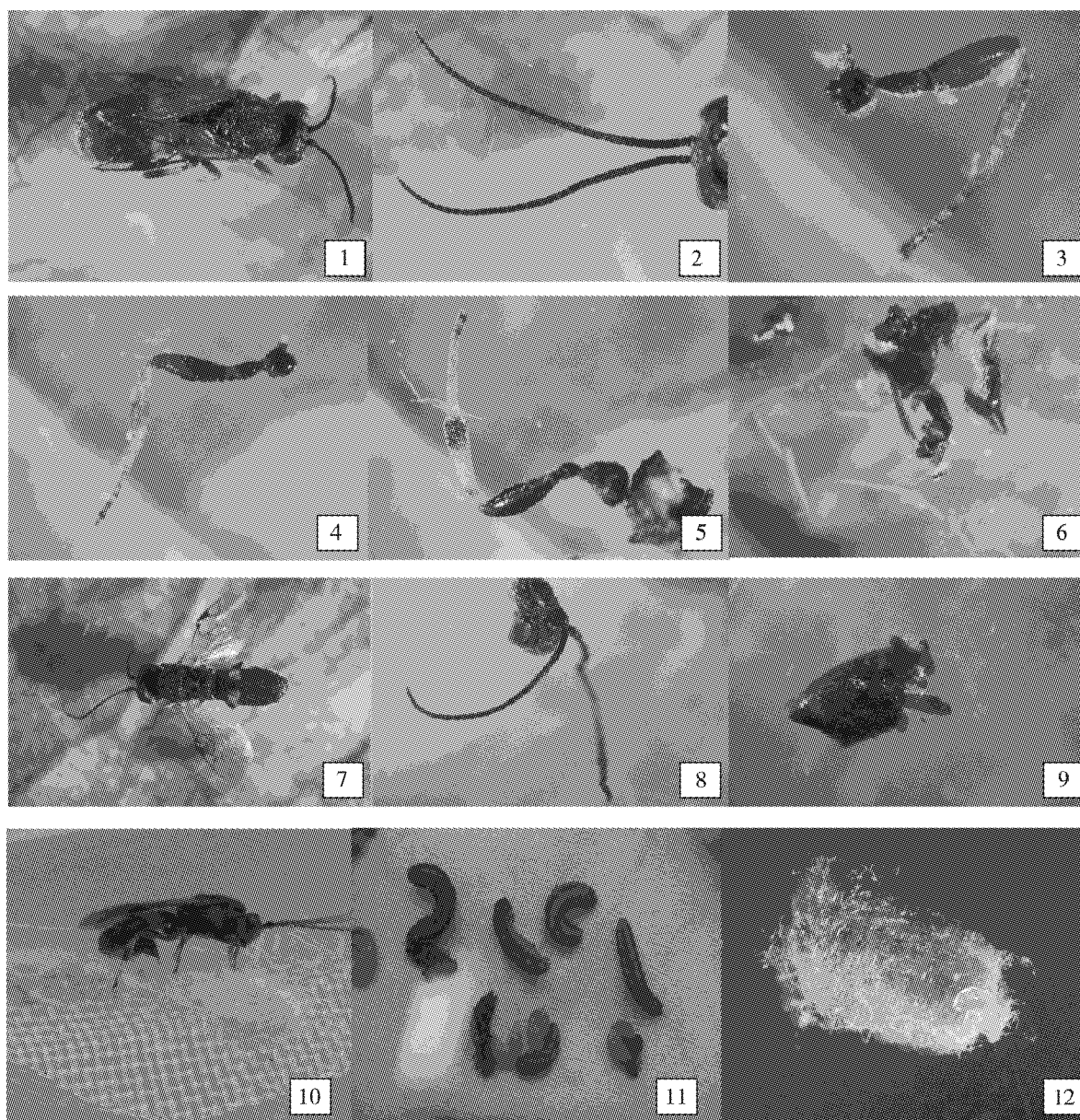
**分布:**台湾<sup>[4]</sup>、广东(深圳)<sup>[5]</sup>、浙江<sup>[3]</sup>、海南。

**附注:**与 Sonan 1932 所述特征相吻合,仅雌虫触角为 30 节<sup>[2]</sup>。

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图版1~6为雌蜂图片:1.雌蜂,2.触角,3.前足,4.中足,5.后足,6.产卵器;  
7~12为雄蜂图片:7.雄蜂,8.触角,9.阳具,10.寄生卵块,11.咬破虫体,12.化茧

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## Record of *Chelonus formosanus* Sonan of *Chelonus* Panzer from China

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**Abstract:** *Chelonus formosanus* Sonan of *Chelonus* Panzer was recorded in Hainan Island, China, and its specimens with the description, distribution, host records and characteristic graph are placed available in the Institute of Agricultural Environment and Plant Protection, Hainan Academy of Agricultural Sciences.

**Key words:** Hymenoptera; Braconidae; Cheloninae; *Chelonus* Panzer; *Chelonus formosanus* Sonan; Hainan Island

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## Induction of banana *Fusarium* Wilt disease with biocontrol bacteria and pathogen by inoculation

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**Abstract:** Banana vitroplants of 4—5 leaves were inoculated in different ways with two biocontrol bacteria *Bacillus subtilis* strains A<sub>5-6</sub> and C<sub>10-1</sub> and the banana *Fusarium* wilt pathogen (Foc4) to observe their changes of polyphenol oxidase (PPO), peroxidase (POD) and phenylalanine ammonialyase (PAL) activities in leaves, which are related to plant tolerance to the disease. The PPO, POD and PAL activities in the leaves of the banana plants were determined by using the physiological and biochemical methods. The banana plants inoculated with the strains A<sub>5-6</sub> and C<sub>10-1</sub> separately showed higher leaf PPO, POD and PAL activities than those inoculated with the sterile water control, and the banana plants inoculated with mixture of the biocontrol bacteria and Foc4 pathogen had higher leaf PPO, POD and PAL activities than those inoculated with Foc4 alone.

**Key words:** banana; *Fusarium* wilt; *Bacillus subtilis*; induced tolerance