

# ***THEMARA MACULIPENNIS* (WESTWOOD) AND *THEMARA HIRTIPES* RONDANI (DIPTERA: TEPHRITIDAE: ACANTHONEVRINI): A CASE OF CONFUSED SYNONYMIES**

DAVID L. HANCOCK

8/3 McPherson Close, Edge Hill, Cairns, Qld 4870

## **Abstract**

Two species of the Oriental genus *Themara* Walker, viz. *T. maculipennis* (Westwood) and *T. hirtipes* Rondani, are discussed, with *T. enderleini* Hering removed from synonymy with *T. hirtipes* and placed as a new synonym of *T. maculipennis*, while *Themara montina* Enderlein is removed from synonymy with *T. maculipennis* and placed as a new synonym of *T. hirtipes*. Lectotypes for *T. maculipennis* and *T. enderleini* are designated. A note on biology is included.

## **Introduction**

During a recent examination of *Themara* Walker specimens in the Natural History Museum, London, it became clear that the synonymies in *T. maculipennis* (Westwood) and *T. hirtipes* Rondani had become confused. This is due to an undue reliance being placed on the presence or absence of a dark medial vitta on the scutum for assigning specimens to one species or the other (e.g. Perkins 1938, Hardy 1974, 1986). It is now known that this character is intraspecifically variable (Hancock 2011), with the extent of curvature in vein  $R_{2+3}$  in males being far more reliable as a specific character.

*Themara yunnana* Zia, previously placed as a synonym of *T. hirtipes* (e.g. Hardy 1974, 1986, Hancock and Drew 1994), was shown to be a distinct species by Hancock (2011). Two other cases of misplaced synonyms are discussed here. Since the type series of one of these synonyms, *T. enderleini* Hering, appears to be a mix of three separate species, a lectotype is designated so that it may be properly defined. A lectotype is also designated for *T. maculipennis* (Westwood) so that it, too, becomes taxonomically fixed. Since biological studies are being undertaken on these species (e.g. Burkhardt and de la Motte 1994, 1996), it is essential that they are properly identified.

The following abbreviations have been used for specimen depositories: BMNH – The Natural History Museum, London; DEI – Senckenberg Deutsches Entomologisches Institut; MCSNG – Museo Civico di Storia Naturale “Giacomo Doria”, Genoa; OUMNH – Oxford University Museum of Natural History, Oxford; PAN – Polish Academy of Science Museum of the Institute of Zoology, Warsaw; QDPI – Queensland Department of Agriculture, Forestry and Fisheries, Brisbane; ZMHU – Museum für Naturkunde, Berlin.

## **Systematics**

### ***Themara maculipennis* (Westwood)**

(Figs 1-3)

*Achias maculipennis* Westwood, 1847: 38, pl. 18 fig. 4. Type locality Java, Indonesia. Lectotype ♂ in BMNH, here designated; examined.



*Achias horsfieldii* Westwood, 1850: 235, pl. 23 fig. 9. Type locality Java, Indonesia. Lectotype ♂ in BMNH, designated by Hardy (1969); examined.

*Acanthoneura maculipennis*: Enderlein, 1911: 415 [partim]. Soekeranda and Liangagas, Sumatra, Indonesia.

*Themara enderleini* Hering, 1938: 409. Type locality Liangagas, Sumatra, Indonesia. Lectotype ♂ in BMNH; here designated; examined. **Syn. n.**

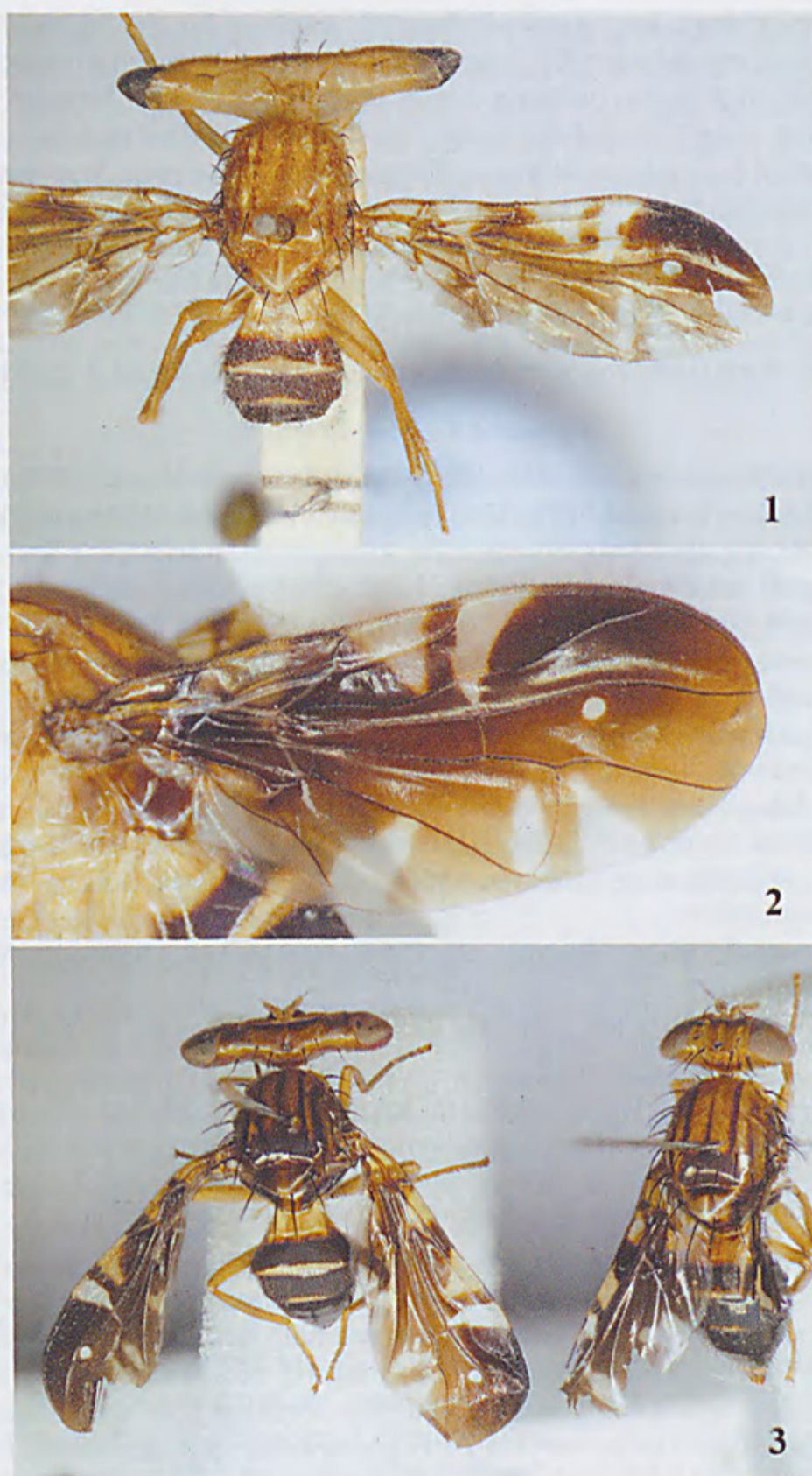
**Material examined.** INDONESIA: Lectotype ♂ of *Achias maculipennis* [labelled HT], Java (BMNH); 1 ♂ paralectotype [labelled ST], Java (BMNH); 1 ♂ paralectotype, 'W' [ex Westwood Collection], no data (OUMNH); Lectotype ♂ and 1 ♂, 1 ♀ paralectotypes of *Achias horsfieldii*, Java (BMNH); 4 ♂♂, 2 ♀♀, West Java (BMNH); Lectotype ♂ of *Themara enderleini* [labelled PT], Liangagas, Sumatra, Dohrn (also labelled '*Themara enderleini*, PT, det. M. Hering 1937' / 'Purch. from E.M. Hering, B.M. 1965-270') (BMNH); 1 ♂, West Sumatra (BMNH); 1 ♂, Padang, Sumatra (BMNH); 1 ♂, Lebang Tandal, West Sumatra (BMNH). SINGAPORE: 1 ♂, Singapore, 1867 (OUMNH); 1 ♂, Singapore (BMNH). WEST MALAYSIA: 1 ♂, 1 ♀, Ulu Gombak, Serdang, 25.iii.1988, I.M. White & Ooi, C.S. (BMNH).

**Notes.** *Themara enderleini* was placed in synonymy with *T. hirtipes* by Hardy (1974) but Enderlein's (1911) series, removed from *T. maculipennis* and renamed by Hering (1938), is clearly mixed, containing representatives of *T. maculipennis*, *T. hirtipes* (a female with the hyaline indentation in cell m narrow – presumably the specimen referred to *T. hirtipes* below) and *T. ampla* Walker (a female with no hyaline spot in cell  $r_{4+5}$  near the DM-Cu crossvein). Enderlein (1911) noted the range of variation and had included *T. ampla* within the synonymy of *T. maculipennis*. Hering (1938) referred to a 'Type ♂', a 'Type ♀' and several other specimens; these are thus all of syntype status. The location of most of this material is uncertain (Norrbon *et al.* 1999). Hering (1938) stated 'Stettiner Museum' [now PAN], whereas Hardy (1974) recorded the 'Type ♂' as in DEI. One pair of STs, however, is in BMNH (from Hering's personal collection) so it is evident that not all, if any, of the specimens examined by Hering were returned to PAN [the intervention of World War II might have prevented this]. In order to stabilise the name and prevent further confusion, a lectotype is designated. The male in BMNH (Fig. 1), although labelled PT, is selected since (a) it bears Hering's determination label and was definitely seen by him; (b) its location is known; and (c) it is readily comparable with the lectotypes of *T. maculipennis* and *T. horsfieldii*, both also in BMNH.

In order to maintain stability of the name *T. maculipennis*, a lectotype is also designated for that species. Three syntype males are present in BMNH and OUMNH, the specimen selected being the male in BMNH labelled 'HT'.

Perkins (1938) also illustrated the male wing. The wing of a Javan female attributed to this species is provided here (Fig. 2). The above specimens from West Malaysia (Fig. 3) are smaller than typical specimens and the male has a correspondingly narrower head but they otherwise appear to belong to *T. maculipennis* and are included here.





Figs 1-3. *Themara maculipennis*. (1) Lectotype male of the synonym *T. enderleini* from Sumatra; (2) wing of female from West Java; (3) male and female from West Malaysia. Photos by K. Goodger © Natural History Museum, London.



This species may be separated from *T. hirtipes* by the more distinctly undulate and curved vein  $R_{2+3}$ , especially in males (where it meets the costa before the mid point between veins  $R_1$  and  $R_{4+5}$ ), the broader hyaline indentation in cell m and the generally shorter and thicker 'eye stalks' in males. From *T. ampla* it differs in the presence of the male 'eye stalks' and better developed hyaline spot in cell  $r_{4+5}$  near the DM-Cu crossvein. The dark medial vitta on the scutum is often indistinct. In the otherwise similar Indo-Chinese species *T. yunnana*, the male head is broad but not produced into distinct 'eye stalks' (Hancock 2011, David and Ramani 2011).

*T. maculipennis* is known from Java, Sumatra, Singapore and West Malaysia.

### *Themara hirtipes* Rondani

*Achias maculipennis*: Walker, 1856: 134. Sarawak, Malaysia. Misidentification.

*Themara hirtipes* Rondani, 1875: 435. Type locality Sarawak, Malaysia. Type ♂ in MCSNG; not examined.

*Acanthoneura maculipennis*: Enderlein, 1911: 415 [partim]. Soekeranda, Sumatra, Indonesia. Misidentification.

*Acanthoneura montina* Enderlein, 1911: 416. Type locality Mt Gede, west Java, Indonesia. Holotype ♂ in PAN; not examined. **Syn. n.**

*Themara enderleini*: Hering, 1938: 409 [partim]. Soekeranda, Sumatra, Indonesia. Misidentification.

*Themara palawanica* Hering, 1938: 410, fig. 2. Type locality Binaluan, Palawan, Philippines. Holotype ♂ in ZMHU; not examined. Synonymised by Hardy (1974).

*Themara maculipennis*: Hardy, 1986: 141 [partim]. Sabah, Malaysia. Misidentification.

*Themara maculipennis*: Hancock & Drew, 1994: 564. Sarawak, Malaysia. Misidentification.

*Themara maculipennis*: Chua, 2002: 46. Brunei. Misidentification.

**Material examined.** INDONESIA: 1 ♀ [labelled PT of *Themara enderleini*], Soekeranda, Sumatra, Dohrn (BMNH). EAST MALAYSIA: 17 ♂♂, Kuching, Sarawak (OUMNH); 1 ♂, Tarat Agric. Station, near Kuching, Sarawak, 10.viii.1992, S. Leong (QDPI); 2 ♂♂, Sg. Poyan, Limbang, Sarawak, vi.1993, S. Leong (QDPI). Several additional specimens from Sarawak, of both sexes, in BMNH.

**Notes.** *Acanthoneura montina* was placed in synonymy with *T. maculipennis* by Hardy (1986) but Enderlein's (1911) description indicates a very broad head and states 'r<sub>2+3</sub> endet sehr wenig ausserhalb der Mitte zwischen r<sub>1</sub> und r<sub>4+5</sub>' (vein  $R_{2+3}$  ends a little outside [beyond] the mid point between veins  $R_1$  and  $R_{4+5}$ ), thus indicating a weakly undulate vein that does not curve sharply towards the costa. The synonymy of *T. palawanica* is evident from Hering's (1938) description and illustration. At least one specimen from Enderlein's (1911) series (the 'PT' of *T. enderleini* from Soekeranda, Sumatra noted above) appears to belong to *T. hirtipes*. A third species included in the synonymy of *T. hirtipes* by Hardy (1974), *T. yunnana* Zia, was shown to be a distinct species by Hancock (2011) and removed.



This species was illustrated by Perkins (1938), Hancock and Drew (1994, as *T. maculipennis*) and Hancock (2011). It differs from both *T. maculipennis* and *T. ampla* in the less undulate vein  $R_{2+3}$  in both sexes, the narrower hyaline indentation in cell m and the generally more elongate and slender 'eye stalks' in males. The dark medial vitta on the scutum may be present or absent and the amount of black on the scutellum is variable in extent.

*T. hirtipes* has been recorded from southeast China (Hainan), Laos, Thailand, southern Burma, Sumatra, Java, West Malaysia, Sarawak, Sabah, Brunei and Palawan. The note following the Singapore record of *T. maculipennis* in Hardy (1986) possibly refers to one of the other listed specimens.

### Biology

Perkins (1938) recorded specimens of *Themara hirtipes* collected on the bark of felled trees in old secondary forest in Sarawak, Malaysia and this species is now known to breed in rotting logs, with females ovipositing in holes made by bark beetles or other insects (Burkhardt and de la Motte 1994, 1996). Perkins (1938) also recorded specimens of *T. hirsuta* (Perkins) on bark of felled trees and it is likely that all species of *Themara* breed in rotting logs. It is also likely that the closely related genera *Acanthonevra* Macquart (as restricted by Hancock 2011, 2012b), *Chaetomerella* de Meijere and *Freyomyia* Hardy also utilise this host. A presumed association with bamboo (Hancock 2011) for these genera is likely to be no more than casual, whereas other genera in the *Acanthonevra* complex, such as *Ptilona* van der Wulp and *Rioxoptilona* Hendel, breed in dead bamboo culms or decaying bamboo shoots respectively (Hancock 2011).

The breeding biology of *Themara* is very similar to that of *Rioxa sexmaculata* (van der Wulp) [a species in the related *Rioxa* complex], which also oviposits in holes made by bark beetles or other insects in rotting logs (Kovac *et al.* 2010) and log-breeding might be a basal character in the *Acanthonevra* complex, with utilisation of decaying bamboo a secondary characteristic (and possibly independently derived in *Ptilona* and *Rioxoptilona*, which use different parts of the bamboo plant). In the similarly related *Sophira* complex, it appears to be living bamboo stems and older shoots that are utilised (Hancock 2012a).

### Acknowledgements

I thank Kim Goodger (BMNH) and James Hogan (OUMNH) for the photographs and/or access to specimens in their care. Damir Kovac (Forschungsinstitut Senckenberg, Frankfurt am Main) kindly brought the studies on *Themara* biology to my attention and supplied a copy of his paper.

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