# NEW RECORDS OF FRUIT FLIES FROM NORTHERN VIETNAM, WITH DESCRIPTION OF A NEW GENUS AND SPECIES OF ADRAMINI (DIPTERA: TEPHRITIDAE: TRYPETINAE)

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## Abstract

*Sapadrama citrina* gen. et sp. n. is described from northern Vietnam and placed in a modified generic key. An updated list of *Adrama* Walker host plants, new records of *Euphranta macularis* (Wiedemann) and *Gastrozona proterva* Hering from Vietnam and a behavioural note on *Rioxoptilona formosana* (Enderlein) are included.

## Introduction

Tribe Adramini currently includes 17 described genera in the Oriental and Australasian Regions, plus an undescribed genus from the Solomon Islands (Hancock and Drew 2005). They are attractively patterned, slender flies of relatively large size usually encountered in rainforest or riverine locations. On a recent visit to northern Vietnam, one of us (SAM) collected two specimens of a new genus and species (Figs 1-2) on a broad-leafed understorey plant in the Sapa district near the Chinese border. It is described below. Some additional records of Vietnamese Tephritidae and an updated list of *Adrama* Walker host plants are included.

Morphological terminology follows White *et al.* (1999) and the following abbreviation has been used: DEBU – University of Guelph, Ontario, Canada.

## Modified key to Asian and Australasian genera of Adramini

Hancock and Drew (2005) provided a key to Australasian genera of Adramini. Additional East Asian genera, including the new genus *Sapadrama*, may be identified by the following modification to couplets 1-3 of that key. Characters for *Pelmatops* Enderlein and *Pseudopelmatops* Shiraki are derived from Chen *et al.* (2010).

1 Head strongly produced laterally, the eyes on long stalks but no head setae on the stalks ..... 1A

– Head not laterally produced and eyes not on long stalks ..... 1B

1A Orbital and genal setae absent; eye stalk in male at least as long as or longer than abdomen, shorter in female; palpi spatulate and sparsely covered with fine yellow setulae ..... *Pelmatops* Enderlein

– Orbital and genal setae present; eye stalk in both sexes shorter than abdomen; palpi usually narrow and densely covered with distinct black setulae ..... *Pseudopelmatops* Shiraki

1B Wing vein $Cu_1$ setose; only 2 scutellar setae (basals); mid tibia with 2-3 long apical spines ..... *Soita* Walker

– Wing vein $Cu_1$ bare; 2 or 4 scutellar setae; mid tibia with 1-2 long apical spines ..... 2

2 Antenna much longer than face; scutum with transverse suture complete or nearly so; 2 scutellar setae (apicals) ..... *Meracanthomyia* Hendel

– Antenna normally shorter than face, rarely slightly longer; transverse scutal suture neither complete nor nearly so; 2 or 4 scutellar setae ..... 2A

2A Metathoracic postcoxal bridge broadly sclerotised; 2 or 4 scutellar setae, if 4 then head with postocellar, postocular and genal setae absent ..... 3

– Metathoracic postcoxal bridge semimembranous medially; 4 distinct scutellar setae; postocellar, postocular and genal setae not all absent .... 4

3 Wing hyaline with a narrow brown costal band; postocular and genal setae absent; only 2 distinct scutellar setae (basals); mid and hind femora without rows of ventral spines ..... *Ichneumonosoma* de Meijere

– Wing with at least apical area mostly brown; postocular and genal setae present or absent; 2 or 4 scutellar setae, if 2 then these are apicals; mid and hind femora with or without rows of ventral spines ..... 3A

3A Head with postocular and genal setae absent; wing cell bcu with an acute apical lobe; 2 or 4 scutellar setae; mid and hind femora each with 2 rows of short, stout ventral spines; mid tibia with 1 long apical spine ..... ..... *Adrama* Walker

– Head with postocular and genal setae present; wing cell bcu without an acute apical lobe; 2 scutellar setae; mid and hind femora without rows of ventral spines; mid tibia with 2 long apical spines .... *Sapadrama* **gen. n.**

### *Sapadrama* gen. n.

Type species *Sapadrama citrina* sp. n., by present designation.

*Diagnosis*. Relatively large flies: body length 11-15 mm, wing length 8-12 mm. Head somewhat gibbose; one pair each of black orbital plus medial and lateral vertical setae; frontal, upper orbital, ocellar, postocellar and paravertical setae absent, genal and a row of weak postocular setae present and black; face depressed and flat on dorsal half, convex on ventral half; antenna with third segment short and apically rounded, less than half length of face; arista plumose. Thorax without a yellow medial vitta and with the following setae: outer scapular, anterior and posterior notopleural, anterior and posterior supra-alars and intra-alar setae present; one pair (apical) of scutellar setae; other setae absent; posteroventral corner of anatergite and posterodorsal corner of katatergite with inconspicuous, fine pale hairs; metathoracic postcoxal bridge broadly sclerotised. Legs without femoral spines; fore tibia and tarsi largely black; mid tibia with a pair of large apical black spines in addition to several small apical spines, including one between the two large ones.



**Figs 1-2.** *Sapadrama citrina* sp. n.: (1) male; (2) holotype male and paratype female *in copula*. Photographs © S.A. Marshall.

Wing elongate; stigma (costal part of cell sc) narrow, apically acute and half length of cell c; vein $R_1$ setose; apex of vein $R_{2+3}$ well before wing apex, just beyond line of DM-Cu crossvein; R-M crossvein placed just before apical quarter of cell dm and well beyond apex of stigma; vein $Cu_1$ bare; cell bcu blunt, without an acute apical extension; combined vein $A_1$+$Cu_2$ as long as cell bcu. Abdomen elongate; spinulose setae on sternites absent; female with oviscape about as long as tergites V+VI; aculeus about one-third length of oviscape and apically acute; male with lateral surstyli short, broad and distally blunt; forked vanes of phallopodeme not fused.

*Etymology*. The generic name is a combination of Sapa, the district of the type locality and *Adrama*, the type genus of tribe Adramini.

### ***Sapadrama citrina* sp. n.**

(Figs 1-9)

*Types. Holotype* ♂, VIETNAM: Catcat, Sapa district, 22°19'26.64"N 103°48'30.64"E, 18.viii.2011, S. Marshall (in DEBU). *Paratype* ♀, same data as holotype (in DEBU).

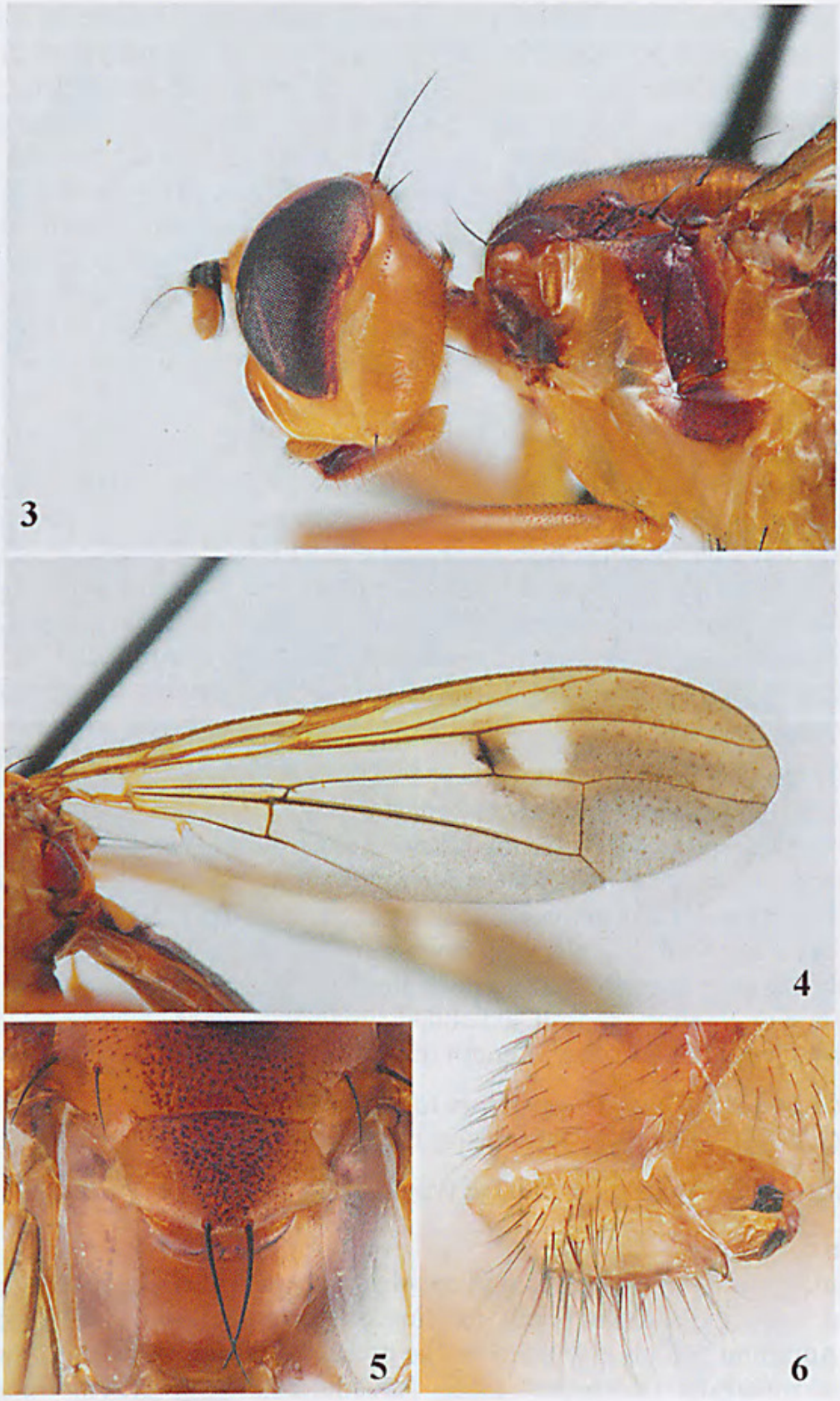
*Description*. As for genus plus the following characters.

Male (Fig. 1). Length of body 11 mm, of wing 8.0 mm. Head largely yellowish, slightly higher than long, somewhat gibbose; frons with a round medial black spot between and anterior to orbital setae; face entirely pale translucent yellow, depressed and flat on dorsal half, convex on ventral half; antenna with first segment yellow, second segment black, third segment short, yellowish and apically rounded, less than half length of face; arista plumose, the longest hairs about two-thirds width of third antennal segment.

Thorax mostly rufous; scutum (Figs 1, 5) browner posteriorly and laterally and with a narrow brownish medial vitta that evanesces anteriorly, a pair of narrow, dark brown dorsolateral vittae from anterior margin which unite with the darker posterior marking posteriorly and with the dark lateral band anteriorly above postpronotal lobes; postpronotal lobes yellow; scutellum rufous, darker medially on disc, with only the apical pair of scutellar setae. Pleura with brown transverse bands on proepisternum below postpronotal lobe and on anepisternum, the latter continuing onto upper part of katepisternum; anatergite and katatergite brown; anterior part of anepisternum, anepimeron and most of katepisternum largely yellow; subscutellum and mediotergite rufous.

Legs largely rufous; fore and mid coxae yellow, hind coxa largely brown; fore femur with a subapical dark streak on inner surface; mid and hind femora with only uniformly small ventral setulae; fore tibia except extreme base and fore tarsi black; mid tibia and tarsi tending brownish.

Wing (Fig. 4) elongate; stigma (costal part of cell sc) narrow, yellow-brown, apically acute and half length of cell c; apex of vein $R_{2+3}$ well before wing




**Figs 3-6.** *Sapadrama citrina* sp. n.: (3) head and thorax of female, lateral view (orbital setae not visible); (4) wing; (5) scutellum; (6) lateral view of male terminalia.

apex, just beyond line of DM-Cu crossvein; vein $R_{4+5}$ bare except for a row of 5 setae at base; R-M crossvein placed just before apical quarter of cell dm and well beyond apex of stigma; cell $r_{2+3}$ very narrow in basal quarter then abruptly broadening; cell bm strap-like, much narrower than cell bcu; cell dm broadening evenly from base to apex; cell bcu blunt, without an acute apical extension; combined vein $A_1$+$Cu_2$ as long as cell bcu. Wing mostly hyaline; yellowish anteriorly to vein $R_{4+5}$ and apex of vein $R_{2+3}$, including costal cells; a diffuse grey-brown patch over apical third connected basally through cell dm to a blackish patch over R-M crossvein that does not cross vein $R_{4+5}$; cell m with a broad but indistinct subhyaline marginal indentation; cell br with a narrow yellow band below humeral vein and cells br and bm with a yellowish suffusion. Halteres yellow.

Abdomen club-shaped, narrowed at base; tergites rufous, especially laterally; sternites yellow. Male genitalia (Figs 6-7) with medial surstyli short, the prensisetae fused into a broad tooth on right side and separated as two distinct teeth on left side; phallus with moderately short (about as long as glans plus preglans) stipe bearing neither spines nor other special cuticular projections; glans large, as long as epandrium, well sclerotised, with an expanded preglans area; with paired, moderately elongate semitubular lobes of acrophallus and apicodorsal rod well sclerotised and forming a flagellum-like projection at its apex.

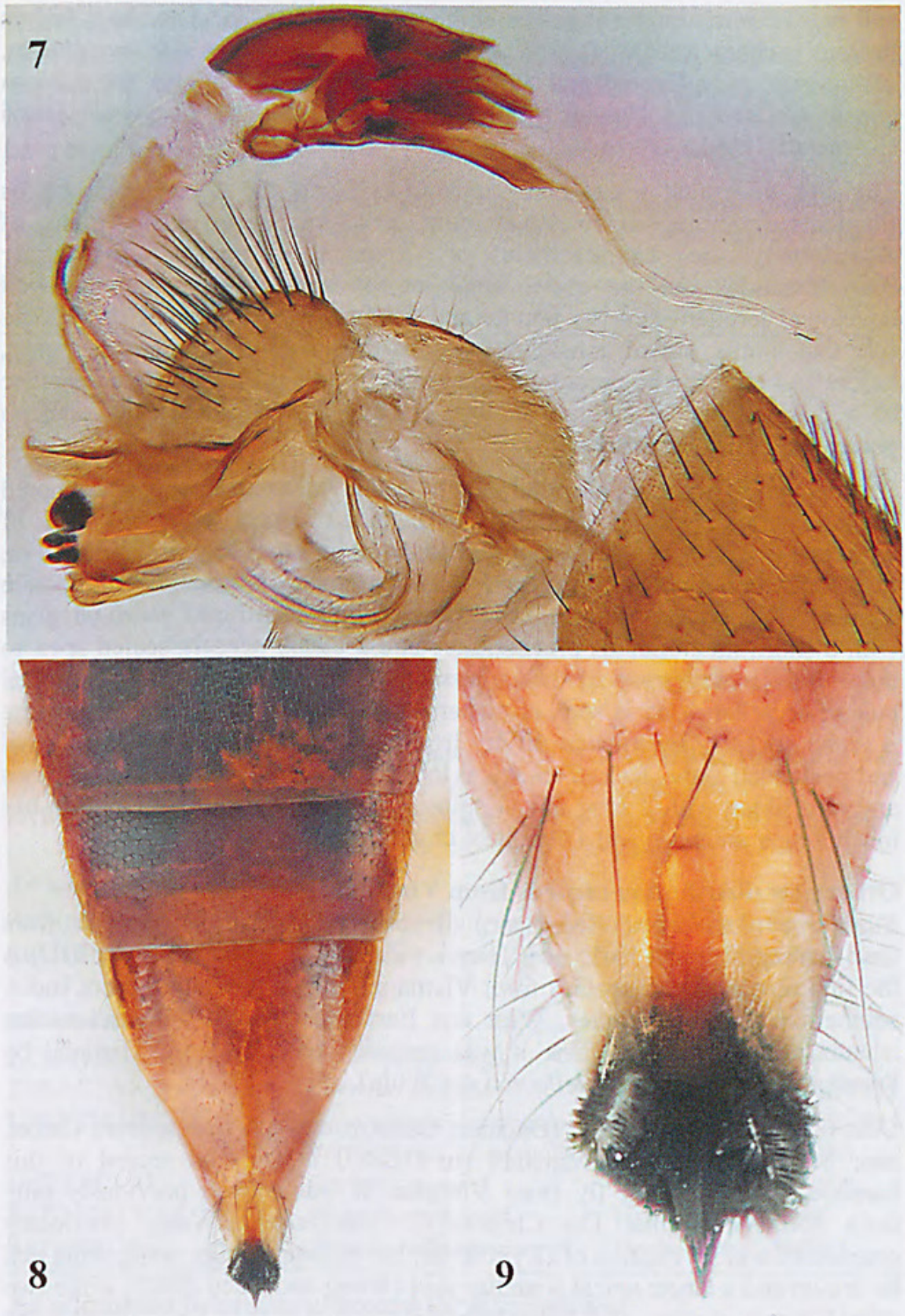
Female (Figs 2-3) as for male except face darker yellow on facial bulge and abdomen elongate; tergite VI as long as tergite V; sternites I-VI yellow; anteromedial apodeme of sternite VI not examined; oviscape (Fig. 8) rufous, subtriangular in dorsal view; eversible membrane 2.5 mm in length, about as long as tergites V+VI combined, with a pair of long, faintly indicated taeniae, apically black with a collar of dense, monodentate black scales that are slightly shorter laterally but equally long on dorsal and ventral surfaces; aculeus (Fig. 9) short, slightly expanded subapically and apically acute, about one-third length of oviscape. Length of body 15 mm, of wing 12 mm.

*Etymology*. The name *citrina* refers to the predominantly orange and yellow coloration of this species, particularly the yellow abdominal sternites.

*Distribution*. Known only from the type locality in northern Vietnam.

**Discussion**

Placement of this new genus and species has proved difficult. The lack of frontal setae and the blunt apex to wing cell bcu are unknown elsewhere in tribe Adramini, which is defined by the presence of relatively long, fine hairs on the anatergite (Korneyev 1999) [several additional genera sometimes included but lacking these hairs were referred to the *Sophira* complex in tribe Acanthonevrini by Hancock and Drew (2005)]. The blunt apex to cell bcu also occurs in some genera of the *Sophira* complex (*Adramoides* Hardy, *Pseudosophira* Malloch and *Robertsomyia* Hardy) but in these genera




**Figs 7-9.** *Sapadrama citrina* sp. n. (7) male terminalia; (8) dorsal view of female oviscape; (9) dorsal view of female eversible membrane and aculeus.

cell bcu is much longer than the combined vein $A_1$+$Cu_2$. The short female aculeus is characteristic of some other Asian genera such as *Adrama* Walker, *Meracanthomyia* Hendel and *Piestometopon* de Meijere, plus the African genera *Celidodacus* Hendel, *Conradtina* Enderlein and *Munromyia* Bezzi (Korneyev 1999).

The lack of frontal setae, blunt apex to cell bcu and 2 or 3 acrophallus filaments (homologous to the tubular structures seen in the glans of *Sapadrama*) are characteristic or frequently observed in family Platystomatidae but the costal break at the apex of vein Sc, the well developed tergite VI in the female and the presence of distinct prensisetae rule that family out of consideration. The presence of three costal breaks, before and after the humeral vein and at the tip of vein Sc, plus the presence of a distinct row of setulae on vein $R_1$ and paired prensisetae, confirm placement in the Tephritidae.

*Sapadrama* differs from all other genera in the Adramini in characters noted in the generic diagnosis, particularly in the lack of frontal setae and shape of wing cell bcu. It appears most similar to *Adrama*, especially in wing pattern, the black fore tibia and tarsi and shape of the male surstyli and female aculeus. *Adrama* species also have a large, well sclerotised aedeagal glans with a short, membranous protuberance and a black, densely scaled apex to the eversible membrane of the ovipositor. The presence of only the apical pair of scutellar setae is seen elsewhere only in *Meracanthomyia* and some *Adrama* species. *Sapadrama* differs from *Adrama* in the presence of genal and postocular setae, lack of an apical lobe to cell bcu, lack of femoral spines and mid tibiae with 2 long apical spines. *Meracanthomyia* additionally has much longer antennae and a complete or almost complete scutal suture.

**Other new distribution records from Vietnam**

*Euphranta macularis* (Wiedemann) (Trypetinae: Adramini). A male from Cuc Phuong National Park, near Hanoi, viii.2011, S. Marshall (in DEBU) is the first record of this species from Vietnam. Known previously from India, southern China, Philippines, West and East Malaysia and the Indonesian islands of Sumatra and Java, it was recorded recently from Thailand by Permkam (2005, as *E. striatella* van der Wulp).

*Gastrozona proterva* Hering (Dacinae: Gastrozonini). A female from Catcat, near Sapa, viii.2011, S. Marshall (in DEBU) is the first record of this bamboo-shoot infesting fly from Vietnam. It was known previously only from northern Burma. The Chinese *G. quadrivittata* Wang, previously considered a close relative of *G. proterva*, has distinct ocellar setae, wing cell bc brown and a larger apical scutellar spot (Wang and Chen 2002), while two other Chinese species, with heads only slightly higher than long, appear to be misplaced: *G. appendiculata* Zia likely belongs in *Paragastrozona* Shiraki, while *G. hancocki* Wang & Chen probably belongs in a separate genus.

## Host plants of *Adrama* species

Host plants for many genera of Adramini, including *Sapadrama*, remain unrecorded but an updated list for *Adrama* species is shown in Table 1. Larvae appear to feed in seeds and developing cotyledons and some species have been regarded as pests of tea (*Camellia sinensis*: Theaceae).

**Table 1**. Known host plants of *Adrama* species. ^ = botanical name changed from *Ryparosa javanica* (Webber and Woodrow 2006); * = single specimen record requiring confirmation.

| Species / Plant family | Host plant | Reference |
|---|---|---|
| ***Adrama apicalis* Shiraki** | | |
| THEACEAE | *Camellia sinensis* | White & Elson-Harris 1992 |
| FABACEAE | *Albizia procera* | Hancock & Drew 1994 |
| ***Adrama austeni* Hendel** | | |
| THEACEAE | *Camellia sinensis* | White & Elson-Harris 1992 |
| ***Adrama biseta* Malloch** | | |
| LECYTHIDACEAE | *Barringtonia acutangula* | Permkam & Hancock 1995 |
| | *Barringtonia asiatica* | Hancock *et al.* 2000 |
| | *Barringtonia calyptrata* | Hancock *et al.* 2000 |
| | *Barringtonia racemosa* | Hancock *et al.* 2000 |
| ***Adrama determinata* (Walker)** | | |
| THEACEAE | *Camellia sinensis* | White & Elson-Harris 1992 |
| SAPINDACEAE | *Lepisanthes ?falcata* | Chua 2000 |
| FABACEAE | *Millettia atropurpurea* | D. Kovac & P. Dohm pers. comm. |
| ***Adrama rufiventris* (Walker)** | | |
| SAPOTACEAE | *Palaquium maingayi* | Hancock & Drew 1994 |
| LECYTHIDACEAE | *Barringtonia* sp. | D. Kovac & P. Dohm pers. comm. |
| ***Adrama selecta* Walker** | | |
| ACHARIACEAE | *Ryparosa kurrangii*^ | Hancock *et al.* 2000 |
| THEACEAE | *Camellia sinensis* | Permkam & Hancock 1995 |
| LECYTHIDACEAE | *Barringtonia acutangula* | Permkam & Hancock 1995 |
| | *Barringtonia calyptocalyx* | Hancock & Drew 2003 |
| GNETACEAE | *Gnetum gnemon** | Hancock & Drew 2003 |
| SAPINDACEAE | *Harpullia arborea** | Hancock *et al.* 2000 |
| SAPOTACEAE | *Planchonella obovoidea** | Hancock *et al.* 2000 |

## An additional behavioural record for *Rioxoptilona*

*Rioxoptilona formosana* (Enderlein) (Phytalmiinae: Acanthonevrini). A male from near Catcat, Sapa district, viii.2011, S. Marshall (in DEBU) was collected underneath a leaf of an understorey plant, thereby exhibiting similar

resting behaviour to that recorded for other species of *Rioxoptilona* Hendel collected in northern Thailand (Hancock 2011).

**Acknowledgements**

We thank Dave Cheung for help with photography of the pinned specimens, Andrew Whittington for helpful discussions on Platystomatidae and Hanh Pham Duc for expediting the second author's field work in Vietnam. Damir Kovac and Patrick Dohm (Forschungsinstitut Senckenberg, Frankfurt am Main) provided additional host plant information for *Adrama* species from West Malaysia.

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