

THE FRUIT FLIES OF THE GENUS *DACUS* FABRICIUS OF JAVA, SUMATRA AND LOMBOK, INDONESIA (DIPTERA: TEPHRITIDAE) *)

by

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RINGKASAN

Jenis-jenis Dacus Fabricius yang tersebar di Jawa, Sumatra dan Lombok dipertelakan dalam karangan ini. Beberapa di antaranya berupa jenis baru. Untuk mengenal jenis baru disertakan pula ilustrasinya. Kunci pengenalan juga disusun untuk memudahkan identifikasinya.

SUMMARY

The species of Dacus Fabricius from Java, Sumatra and Lombok are described in this article. A few of them are newly described species. Key to the species and illustrations of new species are presented.

This paper deals with the partial results of eight months of field work my wife and I did in Indonesia in 1975. One of our major purposes was to obtain field data and host information needed for the preparation of a planned monograph of the fruit flies of all of Indonesia. This project will deal with about 450 species and will be a long term study. Because of the great economic importance of many of the species of *Dacus*, and the impending threat, of invasion of dangerous species from adjacent territories, and their spread throughout Indonesia I am bringing our knowledge of this group up to date for the islands of Java, Sumatra and Lombok. A similar treatment is now being completed for the island of Sulawesi. The present study has turned up several new records of potentially dangerous species from the Philippines which are now established in Indonesia.

The need for a thorough survey of the *Dacus* throughout Indonesia is apparent and strict quarantine measures need to be enforced wherever needed to prevent further invasion and spread of serious pest species. A serious threat to the economy of these islands may occur if some of the

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species known to occur in Papua, New Guinea (and surely must be in Irian Jaya) should spread over Indonesia. The most dangerous of these are the infamous Queensland fruit fly, *Dacus tryoni* (Froggatt) and the closely related species *neohumeralis* Hardy which attack almost all fleshy fruits; *musae* (tryon), the most serious pest of banana; and *bryoniae* (Tryon) which attacks Curbitaceae and Passifloraceae.

This survey was conducted largely by use of male lures, especially methyl eugenol and Cue lure. These powerful attractants are most effective for quickly assessing the Dacini species occurring in an area. Unfortunately, however, only males are attracted and we get only a partial understanding of the species. The endemic species were all collected in forest areas, the disturbed, cultivated areas are populated by widespread species, depending upon the particular availability of host plants.

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Key to *Dacus* known from Sumatra, Java and Lombok

1. Posterior lobes of male surstylus long and slender (Fig. 11d); fifth sternum gently concave on hind margin (Fig. 11c). Usually with four scutellar bristles and usually with a presutural mark of yellow on each side continuous with yellow lateral vittae on mesonotum (Fig. 11a). The *Dacus* Group of subgenera 2
- Posterior lobe of surstylus very short (Fig. 6c) and fifth sternum with a deep V-shaped concavity on hind margin (Fig. 6b). Only two scutellar and usually no presutural yellow mark before lateral vittae (Fig. 1a). The *Bactrocera* Group of subgenera 20
- 2 (1). Prescutellar bristles absent and only one pair of scutellars (Fig. 8). 3
- Prescutellars present, usually four scutellar 5

- 3 (2). Abdominal terga not fused *Pacifodacus* Drew ... 4
 Abdominal terga fused. Costal band very broad, filling nearly all
 of cell R_5 . Costal cells brown Java
 *Dacus* Fabricius, *limbipennis* Macquart
- 4 (3). Large, mostly rufous species, body 7.5-8.0 mm. Face with a
 complete black band over lower portion. A large round spot
 fills entire apex of wing through all of cell R_5 into upper
 portion of 2nd M_2 Sumatra, Java and Thailand.
 *infestus* (Enderlein)
 Rather small, body 5.0-6.0 mm. Mesonotum mostly black, with
 two postsutural yellow vittae. Face with two large black
 spots. Costal band not so greatly expanded apically, not filling
 cell R_5 (Fig. 8).....Sumatra *drewi* n.sp.
- 5 (2). Anterior supraalar bristles present 6
 Anterior supraalars absent. Only one pair of scutellars. Yellow
 mark of mesopleuron connected with humerus. Costal band
 very narrow, almost discontinuous through basal half of 5th
 costal section (Fig. 7). Face and femora black Java ...
 *Javadacus* n. subgenus, *montanus* n.sp.
- 6 (5). Male with a row of bristles (pecten) on each side of third tergum
 (Fig. 9). *Zeugodacus* 7
 Male lacking pecten. Mesonotum mostly or entirely rufous.
 Costal band broad, filling most of cell R_5 . Apex of female
 ovipositor trilobed widespread
 *Paratridacus* Shiraki, *expandens* Walker
- 7 (6). Only two postsutural yellow vittae on mesonotum (Fig. 12).... 8
 Three postsutural yellow vittae (Fig. 11a). 9
- 8 (7). Four scutellar bristles. Face with a large black spot on each side.
 Postsutural yellow vittae very short, pointed posteriorly and
 extending scarcely past a level with anterior supraalars. No
 cubital streak in wing W. Malaysia, Thailand,
 Java ? *pendleburyi* (Perkins)
 Typically with two scutellars. Face black medianly. Postsutural
 yellow vittae straight sided, extending beyond inner postalars
 (Fig. 12) cubital streak well developed Sumatra
 *tenuifinis* n.sp.
- 9 (7). With a brown mark covering m crossvein. 10
 No mark on m 11

- 10 (9). Mesonotum mostly brownish red; median vitta narrow. Only two scutellar bristlesWidespread *cucurbitae* Coquillett
 Mesonotum mostly black; median vitta broad, wedge shaped.
 Four scutellarsWidespread, Southeast Asia
 *ubiquitus* Hardy
- 11 (9). Face with a black crossband, or median portion mostly or entirely black 12
 Face with two black spots 16
- 12 (11). With four scutellar bristles 13
 Only two scutellars 15
- 13 (12). Face entirely black medianly, or with lower median half black to the anterior margin. Only one lower inferior fronto-orbital bristle. 4th and 5th sterna normal in size 14
 Face with narrow black crossband over lower median portion, not extending to anterior margin. Two lower inferior fronto-orbitals. 4th and 5th sterna of male unusually large, broad, very conspicuousWidespread *caudatus* Fabricius
- 14 (13). Upper median portion of face yellow. Front femora almost all black, mid and hind black at least on apical halves. Costal band not extending into cell R_3 except at apex
 Moluccas, Sulawesi and W. Sumatra *exornatus* (Hering)
 Median portion of face black to bases of antennae (Fig. 11b).
 Legs all yellow except for tinge of brown at bases of hind tibiae. Costal band extending below vein R_{2+3} (Fig. 11a).
 Lower portion of front cream colored Java
personatus n.sp.
- 15 (12). Median portion of face entirely black from bases of antennae to oral margin. Front coxae and lower portion of propleuron yellow, tinged with brown. Lateral vittae blunt posteriorly, ending before inner postalar bristle, median vitta not extending beyond prescutellar bristles Java
 *bogorensis* n.sp.
 Upper median portion of face yellow also a narrow line of yellow above oral margin. Front coxae and propleura black. Lateral vittae pointed, extending beyond inner postalars; median vitta extending beyond bases of prescutellar bristles (Fig. 9) Sumatra *ascitus* n.sp.

- 16 (11). Scutellum entirely yellow. Femora entirely yellow or largely black with front pair all black except for narrow yellow bases 17
 Scutellum with a black spot at apex between scutellar-bristles. Femora each with a preapical black mark on posterior surface Thailand, Sumatra, Java *platanus* Hardy
- 17 (16). Femora yellow, sometimes a tinge of brown at apices of front pair. Costal band enlarged into a prominent apical spot. Facial black spots higher than wide. Yellow mark on upper sterno-pleuron as wide as yellow mark on sternopleuron 18
 Front femora all black except for narrow bases; mid and hind black on apical halves or 2/5. Costal band gradually expanded at apex. Facial spots small, wider than high. Yellow mark on sternopleuron much narrower than mark on mesopleura Timor, Flores, Sumba, Lombok ? *timorensis* (Perkins)
- 18 (17). Sterna 3-5 dark brown to black. Typically larger species 19
 Sterna 3-5 yellow or faintly tinged with brown or rufous n.sp. ? Java
- 19 (18). Female ovipositor slender, pointed at apex Widespread over Oriental region. *tau* Walker
 Ovipositor trilobed at apex Java n.sp?
- 20 (1). Anterior supraalar bristles present (Bactrocera) 21
 Anterior supraalars absent. Face with a short, transverse black band. A broad, yellow, mesopleural mark extending from hind margin of humerus to wing base. Wings with a brown mark over crossvein and costal band enlarged at apex. Femora black at apices; mid and hind tibia all black Java ...
 *Afrodacus* Bezzi, *javanensis* (Perkins)
- 21 (20) Wings with crossbands 22
 Wings with only costal and cubital longitudinal bands, no crossbands 23
- 22 (21). Wings with three crossbands. Legs all yellow. Basal and posterior portion of 2nd costal cell bare of microtrichia Widespread *umbrosus* Fabricius
 With only one band over wing covering r-m and m crossveins. (Fig. 1a). Mid and hind femora blackish apically. 2nd costal

- cell filled with microtrichia **Java**, Sulawesi; Christmas Islands, Indian Ocean *albistrigatus* de Meijere
- 23 (21). Area between humeri and notopleural calli black or dark colored, not with continuous yellow marking 24
 A broad yellow band connects each humerus and the notopleural callus, this is also continuous with the post-sutural yellow vitta except for a very narrow separation at the suture (Fig. 4). Costal cell dark brown, the same coloration as costal band, and both filled with microtrichia **Java**
 *pusillus* n.sp.
- 24 (23). Mesonotum lacking postsutural yellow vittae, or entirely rufous with a small, inconspicuous, median, yellow vitta about the length of the distance between inner and outer postalars . . . 25
 Mesonotum with two or three conspicuous postsutural vittae; otherwise mostly black or dark reddish brown 26
- 25 (24). Face with a black crossband. Mesonotum rufous with a short yellow median vitta. Costal band expanded into a very large spot filling entire apex of wing into upper portion of cell 2nd M_2 . Costal cells yellow. Abdomen petiolate. *Callantra*-like
 **Java**
 .. *Pacifodacus infestus* (Endelein), aberrant specimen from **Java**
 Face with two black spots. Postsutural vittae completely lacking. Costal band not enlarged, costal cells hyaline **Java**
 *obscuratus* de Meijere
- 26 (24). Three postsutural yellow vittae on mesonotum 27
 Two postsutural yellow vittae 28
- 27 (26). Face with a black band across middle. Costal band almost interrupted in basal portion of 5th costal section. Apical spot in wing filling upper half of cell R_5 ; crossvein m infuscated
 **E. Java** *transtillum* Hering
 Face yellow, with pair of black spots. Costal band rather broad, greatly expanded at apex filling all of apex of cell R_5 ; crossvein m not infuscated **Java**
 *apicalis* de Meijere
- 28 (26). Face with two black spots, or prominently marked with black... 29
 Faced entirely reddish yellow **Java**
 *impunctatus* de Meijere

- 29 (28). All femora predominantly black on at least apical 1/2-2/5, front and middle often all black 30
 Femora yellow, sometimes discolored with brown on dorsoapical portions but never predominantly shining black 33
- 30 (29). Costal band rather narrow, not extending into cell R_3 except at apex (Fig. 3). 31
 Costal band broad, extending though all or nearly all of R_3 (Fig. 5). 32
- 31 (30). Face black except on sides, no distinctly isolated black spots. Median front at least broadly discolored with black. Front and middle femora all black, all tibiae black. Tergum 2 mostly black with a pair of long, submedian, yellow marks along posterior margin, the black basal band broadly connected with the marking on tergum 3 down the median portion (Fig. 6) Sumatra *sumatranus* n.sp.
 Face yellow with two distinctly isolated black spots, sometimes with a median discoloration of brown to blackish; front femur yellow on anterodorsal margin; middle yellow to rufous, tinged with brown at base and apex, mid tibiae yellow on apical halves. Tergum 2 yellow, except for an incomplete, narrow, basal band and a mark of black on each lateral margin (Fig. 3). Lombok *mulyonoi* n.sp.
- 32 (30). Costal band filling all of cell R_3 . Postsutural yellow vittae broad, straight sided, not narrowed posteriorly and extending slightly beyond the inner postalar bristles. Front and middle femora broadly yellow basally; tibiae yellow except for discoloration of brown on hind pair. First and second costal cells bare except for microtrichia in upper apex of second Philippines, Java, Sumatra *limbifer* (Bezzi)
 Costal band not quite filling cell R_3 . Postsutural vittae tapered, pointed posteriorly and ending well before inner postalar, (Fig. 5). Front and middle femora mostly black and front tibiae black. Second costal cell largely filled with microtrichia, first with microtrichia along upper portion Sumatra *silvaticus* n.sp.
- 33 (29). Mesonotum predominantly black or at least marked with black. Costal cells hyaline 34
 Mesonotum rufous, tinged with brown, sometimes a faint, narrow blackish streak in line with dorso-central bristles.

- Costal cells tinged with yellow Moluccas, Java
 *moluccensis* (Perkins)
- 34 (33). Costal band not extending below vein R_{2+3} except at apex . . 35
 Costal band extending along upper edge of cell R_3 37
- 35 (34). Postsutural vittae broad straight sided extending beyond bases
 of inner postalar bristles 36
 Postsutural vittae tapered, rather pointed posteriorly and ending
 slightly before inner postalars Philippines, Java. . .
 *cognatus* Hardy and Adachi
- 36 (35). Area around anterior spiracle and front coxae yellow to rufous,
 with a tinge of brown.
 Widespread *dorsalis* Hendel
 Area around spiracle and the front coxae black or blackish
 widespread *pedestris* (Bezzi)
- 37 (34). Postsutural yellow vittae rather narrow, tapered posteriorly,
 ending at or slightly before inner postalar bristle 38
 Postsutural vittae broad, straight sided, squared or rounded
 posteriorly (like *dorsalis*) and extending beyond inner postalar
 lar; second costal cell with microtrichia only in apex
 widespread *occipitalis* (Bezzi)
- 38 (37). First and second costal cells with microtrichia (visible under high
 power) along upper portions. second largely filled with
 microtrichia. Smaller (5.0 mm), blacker species. Tibiae all or
 mostly black and propleura black. Postsutural vittae end
 before inner postalar bristles. Facial spots elongate, three
 times higher than wide, costal band not enlarged apically,
 extending to or beyond middle of cell R_5 Sumatra
 *occipitalis-cognatus*-like n.sp. 'A'.
 First costal cell entirely bare, second with microtrichia only in
 upper apical portion. Larger species (6.75-7.0 mm). Apical
 half of mid tibia yellow, propleura brownish red. Postsutural
 vittae extend to base of inner postalars. Facial spot slightly
 less than two times higher than wide. Costal band slightly
 enlarged apically and extending only into upper portion of R_5
 Sumatra *occipitalis-cognatus*-like n.sp. 'B'.

Genus *Dacus* FABRICIUS

Dacus Fabricius, 1805, Syst Antliat. p.272. Type-species, *armatus* Fabricius, by designation of Hendel, 1927:24.

Tridacus Bezzi, 1915, Bull. ent. Res 6:86. Type-species, *Dacus armatus* Fabricius, by designation of Collart, 1935:9.

For diagnostic features with keys to subgenera refer to DREW(1972) and HARDY (1955; 1973 and 1975).

• Bactrocera Group of Subgenera

Characterized by fifth sternum of male with a deep concavity on hind margin (Fig. 6b) and posterior lobe of male surstylus short (Fig. 6c) (These characters are usually readily seen *in situ*). Refer to DREW(1972:5). It should be noted that Drew referred to this as the "Strumeta" group. The latter name has been sunk as a synonym of *Bactrocera*. Most of the species of the Bactrocera Group lack the presutural yellow mark continuous with postsutural yellow vittae on sides of mesonotum.

Subgenus *Afrodacus* BEZZI

Afrodacus Bezzi, 1942 Ann. S. Afr. Mus. 19:469. Type-species, *Chaetodacus biguttulus* Bezzi, by monotypy.

Belonging in the Bactrocera Group of subgenera and differentiated by having one pair of scutellar bristles, humeral and anterior supraalar bristles lacking and prescutellars present. It fits between *Daculus* Speiser and *Bactrocera* Macquart; the first differs by lacking prescutellars and the second by having anterior supraalar bristles.

Only one species known from Indonesia.

Dacus (*Afrodacus*) *javanensis* (PERKINS)

Afrodacus javanensis Perkins, 1938, Proc. R. Soc. Qd. 49(11):132.

Type-locality: Mount Ardjoena, E. Java. Type ♀ in British Museum (Natural History) collection.

This species is characterized by having a black transverse band over face; mesopleural yellow mark broad and extending from hind margin of humerus to wing base; mesonotum with three postsutural yellow vittae; wings with an infuscation of brown over m crossvein and costal band enlarged at apex, filling about upper half of cell R_5 . The femora are black at apices; mid and hind tibiae all black and front tibiae black basally. The

abdomen is bright fulvous with bases of terga 1-3 and anterolateral margins of 4-5 black also a median black vitta extends over terga 3-5. The sterna are dark brown to black.

Subgenus *Bactrocera* MACQUART

Bactrocera Macquart, 1835, Hist. nat. Ins. Dipt. 2:452, 453, pl. 19, fig 13.

Type-species, *longicornis* Macquart, by monotypy.

Strumeta Walker, 1856 J. Proc. Linn. Soc. Lond., Zool. 1:33. Type-species, *conformis* Walker, by monotypy, = *umbrosus* (Fabricius).

For other synonymy refer to HARDY in Delfinado and HARDY (1977:48).

Characterized by having one pair of scutellar bristles, with pecten on third abdominal tergum of male, humeral bristles absent and anterior supraalar present. Typically two postsutural yellow vittae are present and these end at the suture; only rarely are presutural yellow marks present in front of lateral vittae.

Dacus (*Bactrocera*) *albistrigatus* DE MEIJERE (Figs. 1a-f).

Dacus albistrigatus de Meijere, 1911, Tijdschr. Ent. 54:377. Type-locality: Batavia (Jakarta), Java.

This species has previously been known only from the type female and has been treated as a synonym of *frauenfeldi* Schiner in the literature (refer. HARDY AND ADACHI, 1954:168). Host: Reared from *Eugenia malaccensis* Linnaeus, on Java.

A large series of specimens have now been studied from several localities over west Java, from Palu, Sulawesi as well as from Christmas Island, Indian Ocean, July 23, 1972 (H. Carson) and this is probably a distinct species. It is differentiated from *frauenfeldi* by having the lower 2/3 of each humerus bright yellow, rather than humeri black or discolored with dark brown. I see no other reliable characters for separating these.

Fitting the descriptions of *frauenfeldi* in most respects. Face typically yellow with a pair of prominent dark brown to black spots and some specimens with a brownish median discoloration and in a few with the median portion of the face largely blackish. The development of the black marking on the scutellum is variable. Typically the mark is in a form of a broadly convex black basal band (Fig. 1c); in some specimens this is narrow, with no convexity (Fig. 1b); in others a distinct basal triangle is developed (Fig. 1d); in a few a black spot is present at the apex between bristles (Fig. 1e) and rarely the triangular black mark is extended down

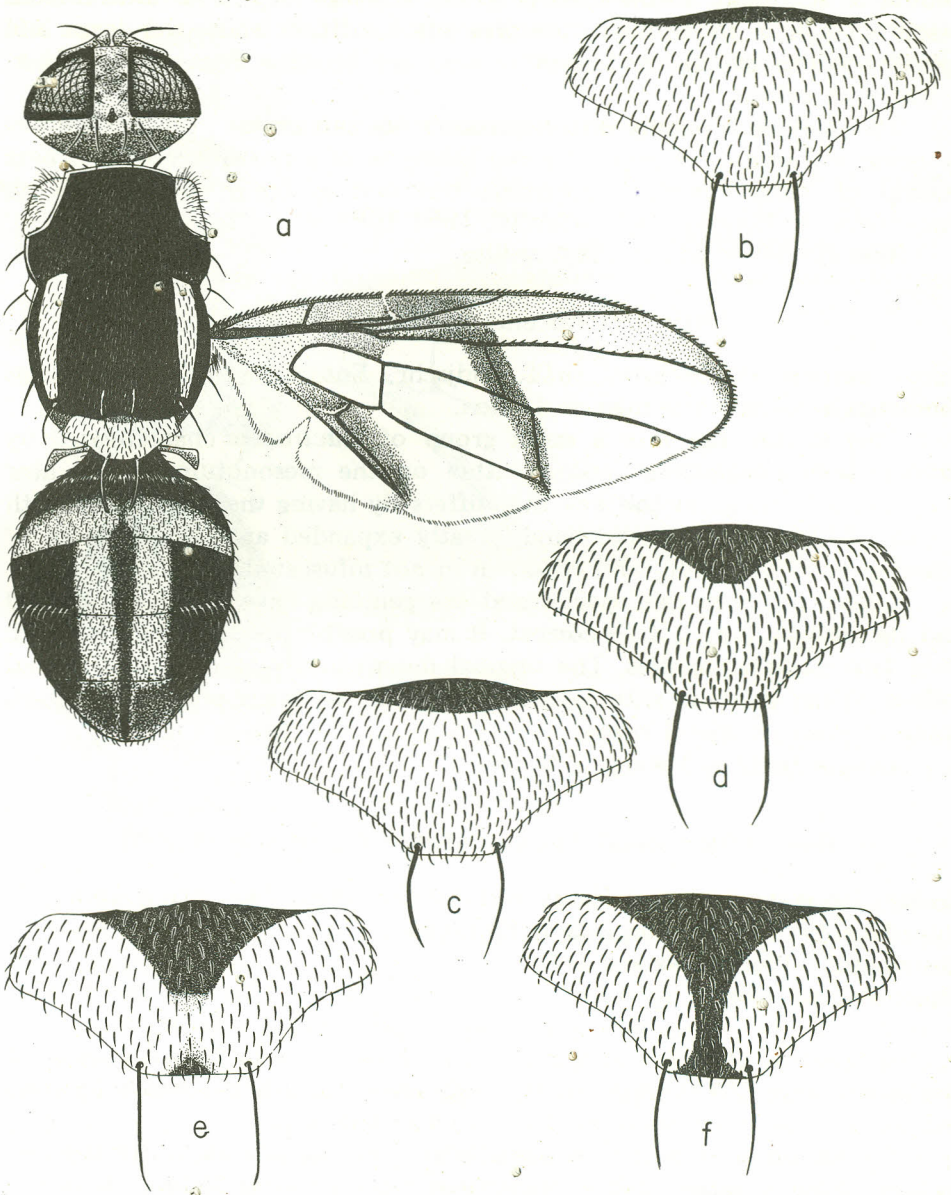


Fig. 1. *Dacus albistrigatus*

middle of scutellum to the apex (Fig. 1f). The legs vary in coloration from nearly all yellow to rufous to the typically condition where the coxae and apical portions of mid and hind femora are broadly brownish to black, tinged with rufous.

This species is readily differentiated from any others presently known to occur on Java or Sumatra by the presence of a brown cross band over middle of wing covering crossveins r-m and m (refer to Fig. 10b. of *frauenfeldi*, in HARDY AND ADACHI, 1954:169).

This species is attracted to Cue lure.

Dacus (*Bactrocera*) *apicalis* DE MEJERE

Dacus apicalis de Meijere, 1911, Tidjschr. Ent. 54:376. Type-locality: Sindanglaja, Java. Type male in Leiden.

This species fits into a small group of *Bactrocera* characterized by having three post-sutural yellow vittae on the mesonotum. It fits near *transtillum* (Hering) in the key but differs by having the face yellow with a pair of black spots; costal band, greatly expanded at apex filling all of apical portion of cell R_5 and crossvein m not infuscated.

I have not seen this species and the genitalia have not been checked and its position may not be correct. It may possibly be a *Zeugodacus* with only two scutellar bristles. The original description says three postsutural yellow vittae present, with laterals short and with no presutural yellow spots in front of lateral vittae.

Length body and wings, 6.0 mm.

Dacus (*Bactrocera*) *cognatus* HARDY AND ADACHI (Fig. 2).

Dacus (*Strumeta*) *cognatus* Hardy and Adachi, 1954, Pacif Sci. 8:162.

Type-locality: Los Bannos, Luzon, Philippines

Distribution: Philippines and Java.

Host: Reared from *Eugenia* sp. in the Philippines. It is attracted to Cue lure.

Specimens, collected at Cue lure, in Java seems to fit with *cognatus* specimens from the Philippines although only males have been seen from Indonesia. This is a new record for the latter country.

Fitting the description of *dorsalis* in most respects and differentiated by the sharp pointed, yellow mesonotal vittae, ending before the inner postalar bristles (Fig. 2). The propleura, and area around the mesothoracic spiracle is dark brown to black as in *pedestris* (Bezzi).

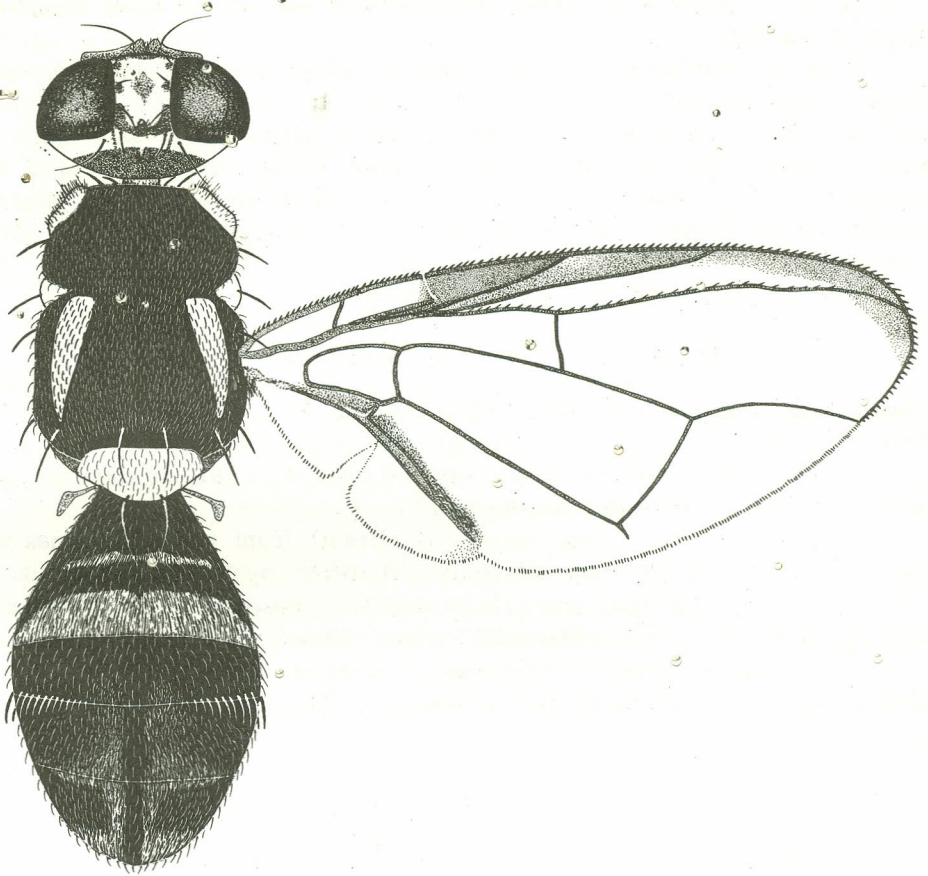


Fig. 2. *Dacus cognatus*

Dacus (*Bactrocera*) *dorsalis* HENDEL

Dacus dorsalis Hendel, 1912 *Supplta ent.* 1:18. Type-locality: Koshun, Taiwan.

For synonym refer to HARDY *in* DELFINADO AND HARDY, 1977:49.

For descriptive details and taxonomic relationships refer to Hardy 1969.

Distribution: This species is widespread throughout the Oriental region, including all of Indonesia. It also occurs through Micronesia, the Hawaiian Islands.

Hosts: It attacks all fleshy fruits and is one of the most dangerous fruit fly species.

It is differentiated by the characters given the key, the diagnostic features are: The predominantly black mesonotum with broad, postsutural, yellow vittae extending to beyond inner postalar, two black spots on face hyaline costal cells and rather narrow costal band, the band not extending below vein R_{2+3} except at apex. Also the abdomen distinctly marked with black. For female ovipositor characters refer to HARDY (1969:399)

The species is attracted to Methyl Eugenol.

Dacus (Bactrocera) impunctatus DE MEIJERE

Dacus impunctatus de Meijere, 1914, Tijdschr. Ent. 57:188. Type-locality: Semarang Java.

This species is known only from the type ♂. I have studied the type in the Zoological Museum, Amsterdam.

This seems to fit near *mcgregori* (Bezzi) from the Philippines and Malaysia by having the face all yellow. It differs by lacking a bulla in the wing above cubital vein and by having the mesonotum predominantly shining black. The two postsutural yellow vittae are short and broad and end before the inner postalar bristles. A faint, gray vitta extends 2/3 the length down the middle of the mesonotum. The legs are entirely yellow.

Dacus (Bactrocera) limbifer (BEZZI)

Chaetodacus ferrugineus var. *limbiferus* Bezzi, 1919, Philipp. J. Sci 13(5):424. Type-locality: Batbatan Island, Philippines.

Distribution: Indonesia, Philippines.

Host: *Dracontomelum dao*, in the Philippines. It is attracted to Cue lure in Indonesia.

Populations from Java, Sumatra and Lombok seems to fit with *limbifer* specimens from the Philippines.

It fits close to *dorsalis-pedestris* but is readily differentiated by having the costal band broad, filling cell R_3 , also the femora are broadly black at spines. The Indonesian specimens have the area around the mesothoracic spiracle black, as in *pedestris*; in Philippines specimens the area is mostly rufous, tinged with brown, as in *dorsalis*. The character of the female ovipositor is distinctive in *limbifer*; refer to HARDY(1969:415. Figs. 10b, c).

Again, biological data are needed.

***Dacus (Bactrocera) moluccensis* (PERKINS)**

Strumeta moluccensis Perkins, 1939, Pap. Dep. Biol. Univ. Qd 1 (10) 17
Type-locality: Buru, Moluccas.

Distribution: Java, Lihir Island, Moluccas (Buru), New Britain, New Guinea, New Ireland, Solomon Islands.

Host: *Inocarpus edulis* Forst. It is attracted to Cue lure in Indonesia.

This had been treated as a synonym of *froggatti* (Bezzi) (refer HARDY AND ADACHI, 1954; 169). This synonym is not correct.

This species is common in Kebun Raya (The botanical gardens), Bogor, Java. This is a new record for Indonesia.

It is readily differentiated from other *Bactrocera* known from Indonesia by having the mesonotum rufous, tinged with brown and not more than a faint blackish streak in line with dorsocentral bristles and costal cells tinged with yellow; also by its comparatively large size; body 8.0-10.0 mm.

For complete descriptions and figures refer to DREW (1974:60) and HARDY, (1970:120).

I do not agree with Drew (*loc. cit.*) that *Strumeta rutila* Hering is a synonym of *moluccensis*. I have examined the three males HERING (1953:58) recorded as *rutila* from the Archbold Expedition Bernhard Camp, New Guinea and these are a different species from *moluccensis*. They are distinctly smaller—Hering gave the wing length of the type as 6.0 mm; the wing of *moluccensis* measures 7.5-8.5 mm. The first costal cell in hyaline, not yellowish fumose. The abdomen appears to be typically all rufous, lacking distinct black markings but with discolorations of brown to blackish on posterior lateral margins of tergum 3 and on one specimen of the 3 (also on the type ♂) with a faint indication of a brownish median vitta over tergum 5. The mesonotum is all rufous, lacking the brownish tinge or faint indications of blackish vittae found typically in *moluccensis*. Also the postsutural yellow vittae are tapered and pointed posteriorly in *rutilus* and straight sided, truncate posteriorly in *moluccensis*.

In DREW's key to *Strumeta* (1972:216) *rutilus* would run to *dyscritus* Drew, from New Guinea. I have not seen this species.

***Dacus (Bactrocera) mulyonoi* new species (Fig. 3).**

Fitting near *sumatranus* n.sp. but differing by having face largely yellow, with large, well defined black spots; front femora yellow on anterodorsal margin and middle femora yellow to rufous, tinged with brown at bases and apices; middle tibiae yellow on apical halves; second

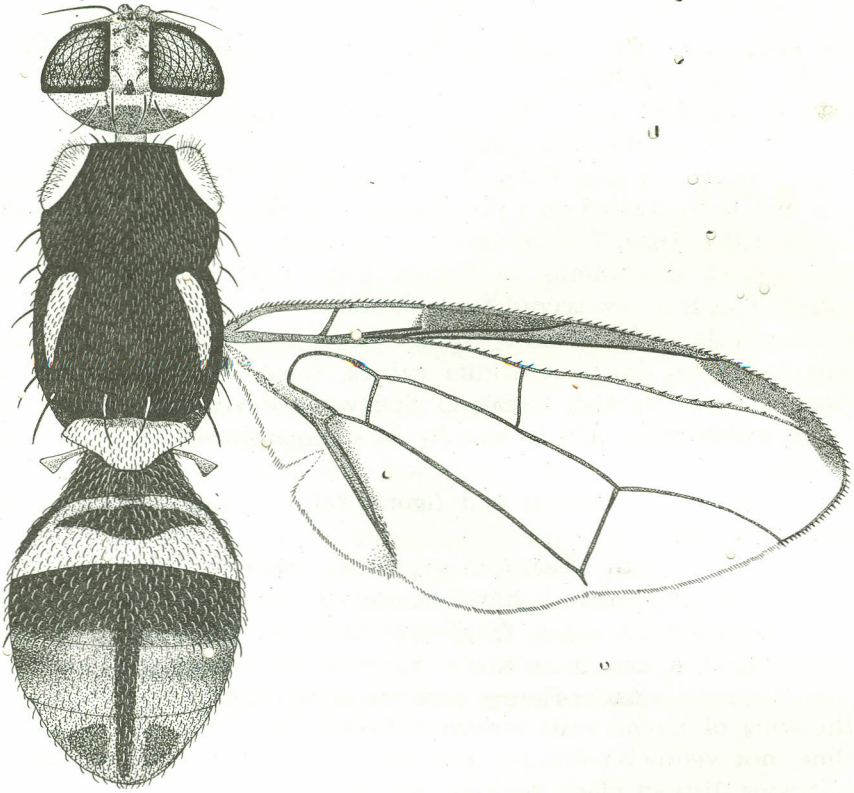


Fig. 3. *Dacus mulyonoi*

tergum yellow except for an incomplete narrow, basal, black band and a mark of black on each lateral margin (fig. 3); terga 4-5 mostly rufous and also lower median portion of front, above carina, yellow, not black.

Male. Head: Front like *sumatranus* except as noted above. Face yellow, except for black spots in antennal furrows, about two times higher than wide and extending approximately to oral margin; also a slight brownish discoloration in middle of central carina but no connecting mark between the black facial spots. *Thorax:* subshining black with faint grayish pollinose submedian vittae. Postsutural yellow vittae pointed posteriorly, ending well before inner postalar, extending about $\frac{2}{3}$ the distance from supraalar to postalar (Fig. 3). Pleura entirely black except for the usual yellow marks. *Legs:* Like *sumatranus*, except as noted above. *Wings:* As in *sumatranus*. (Fig. 3). *Abdomen:* First tergum largely yellow, black on sides

and in middle. Second tergum yellow except for a black, incomplete band over base and a small spot on each side. Third tergum black except for a pair of submedian, yellow-rufous marks on hind margin. A narrow black vitta extends down middle of 3-5 but does not extend to apex of 5. Terga 4-5 otherwise rufous, tinged with brown on tergal glands. Sterna 1, 3-5 reddish brown to blackish. Epandrium black.

Length: body, 7.0 mm.

Female unknown.

Holotype male, S.E. Slope of Mt. Rindjani, 3 km. N. Pesugulan, Lombok, 400 m., in primary forest at Cue lure, June 12, 1975 (D.E. and A.T. Hardy).

Seventeen paratypes, all ♂♂, from the following localities on Lombok all collected by Mr. Mulyono: Sesaot 400 m., Oct. 1976; Batu Belik, 450 m., Nov. 4, 1976 and Lemor Forest, on slope of Rindjani, 2 km. South Pesugulan, 500 m., June 7, 1975. Gunung Rindjani is the last remaining habitat for endemic insects on the island of Lombok:

Type in the Museum Zoologicum Bogoriense, paratypes in University of Hawaii, and U.S. Nat. Museum collections.

It is a pleasure to name this species after Eko M. Mulyono of the plant quarantine service, Ampenan, Lombok. We are indebted to him for all of our work on the island of Lombok.

Dacus (Bactrocera) obscuratus DE MEIJERE

Dacus obscuratus de Meijere, 1911, Tijdsch. Ent. 54:373. Type-locality: Enkhuizen (Pulau Nyamuk Kecil) near Batavia (Jakarta), Java.

Known only from the type female. I have collected on Pulu Rambut, in the same group of islands off the north coast of Java as Nyamuk Kecil and was never able to recover this species.

It is unique from all Indonesian *Dacus* by lacking postsutural yellow vittae on the mesonotum. Otherwise apparently fitting most of the characteristic of *dorsalis*.

The status of this species is questionable. The type has apparently been lost. One specimen in the Zoological Museum, Amsterdam under this label contains the wrong data. It is a ♀, in very poor condition, no head or wings and seems to be labeled "Brittenron (spelling?) 2-4-18, v.d. Good, exlambok". This is probably a specimen of *dorsalis*.

Dacus (Bactrocera) occipitalis (BEZZI)

Chaetodacus occipitalis Bezzi, 1919, Philipp. J. Sci. 15:423.
Type-locality: Manila, Luzon, Philippines.

Distribution: Java, Malaysia Berat, Philippines.

Hosts: Probably wide host range. Specimens have been reared from Citrus, Mango, *Psidium guajava* L. and Jack fruit, in the Philippines and from *Melastoma malabathricum* L. in Malaya. It is attracted to Cue lure in Indonesia.

Specimens attracted to Cue lure on Java seems to fit *occipitalis*, from the Philippines. It has not previously been recorded from Indonesia. The only character I find for separating the males from *dorsalis* is that the costal band, in *occipitalis* overflows into cell R_3 along the underside of vein R_{2+3} for all or most of its length. This would appear to be a trivial character and certainly some variation in the extent of dark coloring in cell R_3 will occur in *dorsalis* as well as other *Dacus* but the fact that those population attracted to Cue lure consistently have the wider band while those coming to Methyl Eugenol have the narrow band indicates they must be distinct species. Nevertheless the status of *occipitalis*, as well as *cognatus* and related taxa needs to be clarified by extensive biological studies.

Dacus (*Bactrocera*) *pedestris* (BEZZI)

Chaetodacus pedestris Bezzi, 1913 Philipp. J. Sci. (D) 8:322.

Type-locality: Mt. Makiling, Luzon, Philippines.

Distribution: Ceylon, Indonesia, Malaysia, Philippines.

Hosts: A wide range of fleshy fruits. It is attracted to Methyl Eugenol.

This is very close to *dorsalis* Hendel and its true status may still be questionable; biological details and probably genetic studies may be needed to clarify its status. It is typically a more melanistic species. The only apparent structural differences between it and *dorsalis* are in the female ovipositors. When viewed from above *in situ*, the ovipositor base of *pedestris* is slightly longer than the fifth tergum, whereas in *dorsalis* it is about $3/4$ as long. The extended ovipositor measures approximately 6.0 mm. in *pedestris* and 4.5 mm. in *dorsalis* (refer to HARDY 1969:423. Figs. 1b-c and 15a-b). The males can consistently be separated by the area around anterior (mesothoracic) spiracle being yellow to rufous, with a tinge of brown in *dorsalis* and largely or entirely black in *pedestris*.

I have seen specimens from Java, Sumatra and Lombok.

Dacus (*Bactrocera*) *pusillus* new species (Fig. 4).

Fitting in a complex of species with *diaphanus* (Hering) and *ochromarginatus* Drew, both from Papua New Guinea, by having the humeri and notopleural calli joined by a broad yellow band (Fig. 4). it is quite different

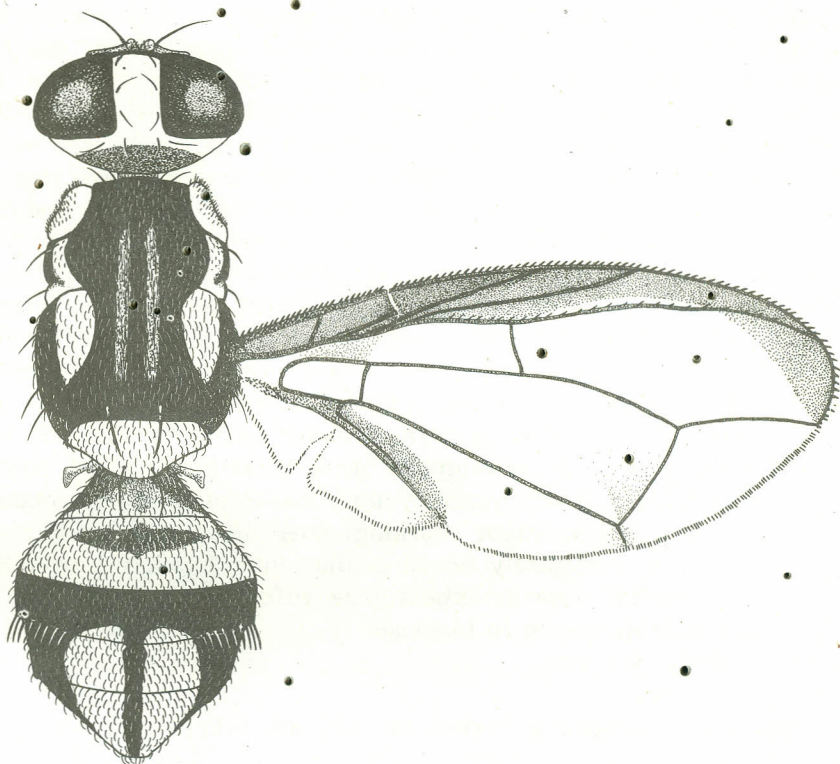


Fig. 4. *Dacus pusillus*

from either of these species. The dark brown costal cells, complete filled with microtrichia, as well as the distinctive wing and body markings will readily separate this. Because of the mesonotal markings and the brown costal cells, filled with microtrichia, it is unique from all species previously known from the oriental region.

Male. A very small species, one of the smallest known *Dacus*. *Head:* Front yellow, except for brownish discoloration medianly, with a narrow brown vitta extending from ocellar triangle to discolored area in middle of front. Two pairs inferior fronto-orbitals. Facial black spots oblong, about two time higher than wide and extending to oral margin. First two antennal segments mostly yellow; third yellow at base, otherwise brown, tinged with rufous. *Thorax:* Polished black except for yellow marks and with a pair of submedian brownish red vittae which are lightly gray pollinose extending from point about opposite middle of humeri to almost the ends of the

lateral yellow vittae. The pale markings are lemon-yellow, they covered the entire scutellum, except for a very narrow black basal band; the two postsutural vittae are broad anteriorly, sharply pointed posteriorly, the outer margins are parallel and inner margins oblique; the vittae are rather short, ending well before inner postalar bristles. The vittae connect with a broad mark which continues over notopleural callus onto humerus (fig. 4). Yellow mark on upper sternopleuron nearly quadrate in shape, almost equal in width to lower margin of mark on mesopleuron. Propleuron with a tinge of rufous on anterior portion. *Legs*: Yellow with coxae and hind tibiae black and the front tibiae lightly brownish, mid mostly brown, tinged yellow-rufous. *Wings*: Hyaline except for costal band and cubital streak. Costal band dark brown from wing base to vein M_{1+2} filling costal cells, apex of R_5 and most of cell R_3 (Fig. 4). Both costal cells filled with microtrichia. *Abdomen*: Yellow, except broadly black on sides of first tergum; second tergum with incomplete black basal band; third tergum, most black with a pair of submedian yellow marks on posterior margin, continuous with the yellow-rufous markings over 4-5. Targe 4-5 broadly black on sides with a moderately broad median vitta extending over 3-5. Sterna 1 and 5 reddish brown, others pale rufous with light tinge of brown. Genitalia reddish brown to blackish.

Length of body, 4.0 mm.

Female unknown.

Holotype male, Lengkong Forest, ca. 120 km S.E. Bogor, West Java, 600 m. collected in dense jungle at Cue lure, April 24, 1975 (A.T. Hardy).

Type in Museum Zoologicum Bogoriense.

Dacus ritsemae WEYENBERGH

Dacus ritsemae Weyenbergh 1869 Archives Neerlandaises 4:360 pl.6, figs. 1-5. Type locality: Soerabaija (Surabaya), Java.

The type ♀ has been lost, a search made in the Dutch museums has been fruitless and the original description and figures are so sketchy that it is impossible to place this species. It probably is (was) a *Bactrocera* but must be treated as a *nomen dubium*.

Dacus (Bactrocera) silvaticus new species (Fig. 5).

Resembling *sumatranus* n.sp., and *mulyonoi*, n.sp., from Lombok, because of the predominantly black legs, narrow, pointed, postsutural vittae and by the markings on the abdomen. It is readily differentiated by the broad costal band and cubital streak in the wings and by having

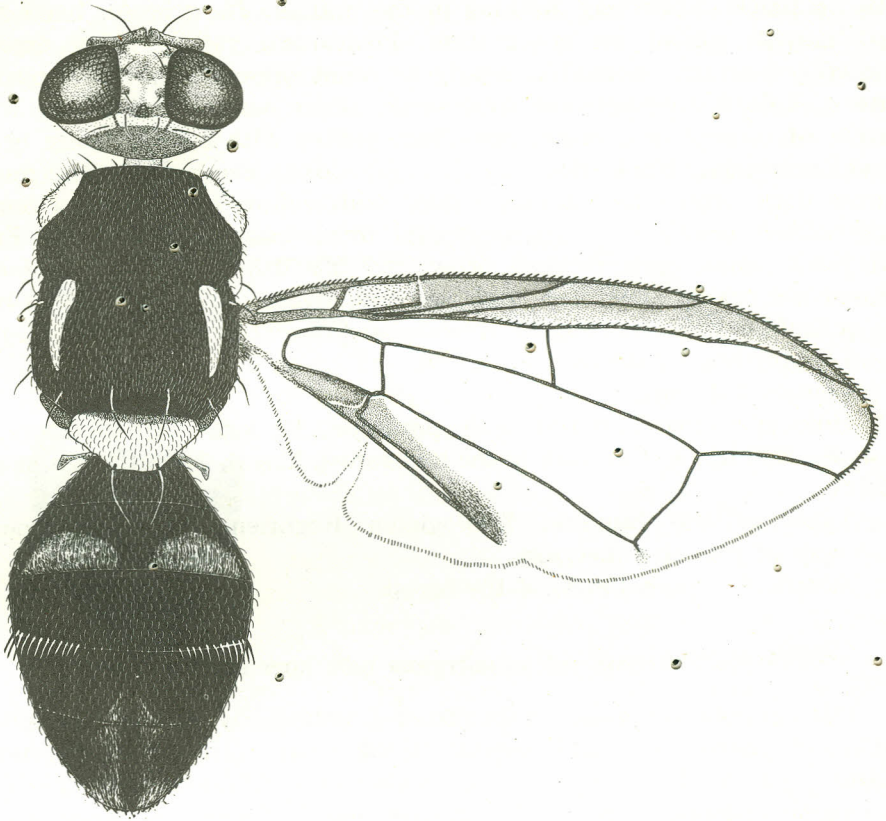


Fig. 5. *Dacus silvaticus*

second costal cell almost entirely filled with microtrichia and first costal cell with microtrichia along upper edge. Because of the broad costal band and black apices of femora it would resemble *limbifer* (Bezzi), but is differentiated by the presence of microtrichia in the first two costal cells, the pointed mesonotal vittae, costal band not quite filling cell R_3 , as well as other details as brought out in the key above and the description following.

Male. Head: Similar to most *Bactroera* with two inferior fronto-orbital bristles, a brown spot at base of each frontal bristle and a median brownish discoloration on front. Face yellow with large, shining black spots filling the antennal furrows to oral margin and with a discoloration of brown across lower median half of face between the black spots but

with no black connecting marking in the middle. *Thorax*: All black with faint grayish pollen on mesonotum. Postsutural yellow vittae tapered, pointed posteriorly, extending nearly to point opposite the outer postalar bristles. Yellow sternopleural spot small, slight narrower than the lower margin of mesopleural mark. Scutellum yellow with a moderately broad, convex margined, black, basal band. *Legs*: Coxae black, front and middle femora dark brown to blackish, tinged with yellow basally. Hind femora dark reddish brown to black on apical third, clear yellow basally. Front and hind tibiae dark reddish brown to blackish and mid tibiae dark colored on basal halves, yellowish apically. *Wings*: As above, costal band not quite filling cell R_3 (Fig. 5). *Abdomen*: Colored as in *sumatranus*.

Length: body 7.0 mm.

Female unknown.

Holotype male and one male paratype, 12 km. N.W. Bohorok, N. Sumatra, 200 m., at Cúe lure in the rain forest, May 9, 1975 (D.E. and A.T. Hardy).

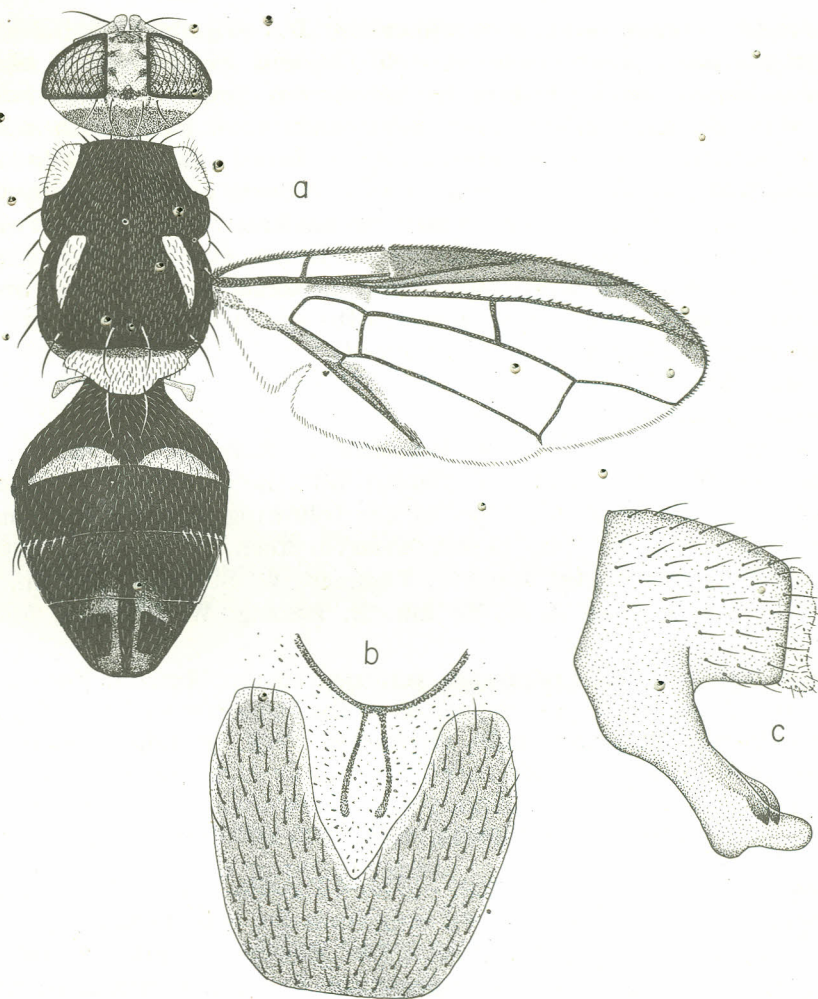
Type in the Museum Zoologicum Bogoriense and paratype in University of Hawaii collection.

Silvaticus, equals Latin, of the forest.

• ***Dacus (Eactrocera) sumatranus* new species (Fig. 6a-c).**

Fitting near *mulyonoi* n.sp. from Lombok, by having legs mostly black and costal band and cubital streak narrow. It differs by having median portion of face extensively blackened, continuous with the black coloring in antennal furrows. Front and middle femora all black and all tibiae black. Abdominal markings differ as shown in figures 3 and 6a. In *mulyonoi* the face is yellow with two large black spots, front femora yellow on anterovental margins, mid femora yellowish to rufous at bases and apices and mid tibiae yellow on apical halves. Also the second tergum is yellow except for an incomplete narrow basal band and a mark of black at each lateral margin.

Male. Predominantly shining black species. *Head*: Mostly black, occiput with narrow yellow margins. Front rufous with conspicuous dark marks at bases of bristles and most of median portion brown to blackish. Two pairs inferior fronto-orbital bristles. Face narrowly yellow on sides, median portion typically shining black; in some specimens dark reddish brown tinged with black in median portion. Antennae mostly dark brown to blackish, rufous on apex of second segment. *Thorax*: With a pair of faint grayish pollinose submedian vittae. Postsutural yellow vittae short, pointed, ending about half way between inner postalar and anterior

Fig. 6. *Dacus sumatranus*

spraalaris. (Fig. 6a). Yellow spot on sternopleuron small, about equal in width to lower margin of mesopleural mark. Scutellum yellow with a moderately broad black base, the basal mark is convex on hind margin and almost equal to $\frac{1}{4}$ the length of scutellum. *Legs*: Black except for yellow tarsi and yellow basal $\frac{2}{3}$ - $\frac{3}{5}$ of hind femora. *Wings*: Hyaline with narrow costal band and cubital streak. Costal cells bare except at upper apex of second. Costal band not enlarged apically and not extending below vein

R_{2+3} except at apex; ending in upper cell R_5 (Fig. 6a). Cubital streak poorly developed brown only in cell Cu and basal portion of M_4 . *Abdomen*: Mostly black or dark reddish brown, tinged blackish. Second tergum with elongate, pale yellow, submedian mark along each side on posterior margin, this is separated by a broad black median mark connecting with the all black third tergum. Fourth tergum broadly black on sides, mostly dark reddish brown to blackish medianly and with a median longitudinal black vitta which continues over the fifth tergum. Tergum five broadly black on sides and with tergal glands reddish brown, rufous submedianly. Sterna dark brown, fifth and sixth shaped as in figure 6b. Epandrium black, genitalia as in figure 6c.

Length: body 5.5-6.0 mm., average 5.5 mm.

Female unknown.

Holotype male, 12 km, N.W. Bohorok, N. Sumatra, 200 m. at Cue lure, May, 4 1975 (D.E. and A.T. Hardy). 53 male paratypes, all collected at Cue lure by the same collectors at the following localities in Sumatra: same as type; Katambe, Mt. Leuser Reserve, Aceh, N. Sumatra, 200 m., May 1, 1975; Panti Forest Reserve, Pasaman, W. Sumatra, 280 m., May 7-8, 1975 and Lombah Anai, 63 km. N. Padang, W. Sumatra, May 9, 1975.

Type and series of paratypes returned to the Museum Zoologicum Bogoriense. Other paratypes deposited in the collections of U.S. National Museum, British Museum (Nat. History), B.P. Bishop Museum and University of Hawaii.

Dacus (*Bactrocera*) *transtillum* (HERING)

Strumeta transtillum Hering, 1952, *Treubia* 21 (2):265, Fig. 1. Type locality: Idjen, E. Java. Known only from the type female.

Fitting in the key near *apicalis* (de Mejeze) because of the three postsutural yellow vittae on the mesonotum. It is differentiated by having a black band over middle of face; costal band almost interrupted in basal portion of 5th costal section (cell R_3) beyond apex of vein R_{2+3} and expanded in apical portion of cell R_3 to fill upper half of cell R_5 ; also m crossvein is covered by a distinct brown spot (refer to Hering, 1952:270, Fig. 1).

The genitalia of this species have not been studied and its placement may not be correct.

This seems to superficially resemble *Dacus* (*Javadacus*) *montanus* n.sp. but differs by having a black band over the face, rather than face polished black, except for yellow sides; by the brown mark over m cross vein; by the larger expansion of costal band at apex of wing, filling more

than half of apex of cell R_5 (refer HERING, Fig. 1) rather than just upper portion of R_5 (Fig. 7); median vitta of mesonotum extending from suture to hind margin, rather than being rather short (Fig. 7); scutellum dark colored, not yellow and cubital streak faint beyond apex of cell Cu, rather than well developed.

Hering made no mention of the presence or absence of the supraalar bristle and the resemblance is probably superficial.

Dacus (*Bactrocera*) *umbrosus* FABRICIUS

Dacus umbrosus Fabricius, 1805, Syst. Antliat. 274. Type-locality: Sumatra. For synonymy refer to HARDY in DEEFINADO AND HARDY, 1977:52.

Distribution: Indonesia, Borneo, Malaysia, Philippines, Micronesia, New Guinea, New Hebrides, Palau.

Host: Species of *Artocarpus*. Attracted to Methyl Eugenol.

This species is no doubt widespread over Indonesia. It is readily recognized by having three brown transverse bands over the wings. For descriptions and figures refer to DREW (1974:88); to HARDY AND ADACHI (1954:184) and HARDY (1973:52 and 1974:42).

Undescribed *Bactrocera*

Two apparently new species of *Bactrocera*, from Sumatra, are included in the key (Couplet 38) but are not being described at this time. They fit in the *occipitalis-cognatus* complex of species but the females need to be associated and biological information needs to be obtained in order that they can be properly placed.

Dacus Group of Subgenera

Characterised by fifth sternum of male only gently concave on hind margin (Fig. 11c) and posterior lobe of surstylus elongate, longer than width of surstylus (Fig. 11d) (readly seen *in situ*). Most of the species of this group have the paired yellow vittae of mesonotum continuous beyond the suture, i.e., a prominent presutural yellow mark is present (Fig. 10).

Most of the species are attracted to Cue lure.

Subgenus *Dacus* FABRICIUS

Dacus Fabricius, 1805, Syst. Antliat. p. 272. Type-species, *armatus* Fabricius, by designation of Hendel. 1927:24.

According to DREW's diagnosis (1972:12) the typical subgenus is differentiated from other subgenera of this group by having only one pair of scutellars in combination with having anterior supraalars, lacking prescutellars and having the abdominal terga fused. It is closest to *Pacifodacus* Drew and Drew differentiates this taxon by the terga not being fused.

One Indonesian species apparently belongs here.

Dacus (*Dacus*) *limbipennis* MACQUART

Dacus limbipennis Macquart, 1843, Mem. Soc. Agric. Lille, 374 t. 29, f. 9, 1842. Type-locality: Java.

This species is known only from the type male in the Paris Museum. The reference to it, from Malaya, by Perkins (1938:140) was an error. I have studied the type.

Differentiated from other *Dacus* known from Java or Sumatra by the subgeneric characters, in combination with the all brown costal cells and very broad costal band.

The following descriptive notes are based upon the type.

Bristling as noted under subgeneric characters. Antennae moderately elongate, first segment shorter than second and third slightly longer than face. Face with a large black, round spot on each side. Two pairs interior fronto-orbitals and one pair superior fronto-orbitals. Mesonotum largely dark brown to black, rufous on sides, with a pair of yellow, sublateral vittae and apparently with a narrow, postsutural, median vitta. Hind portion of mesonotum rufous, also rufous behind each humerus. Scutellum entirely yellow. Legs yellow, apices of front and middle femora tinged slightly with brown. Wings with anterior margin broadly brown, including first and second costal cells, all of cells R_2 , R_3 , and most of R_5 . The broad costal band expands at the apex filling most of cell R_5 . Cubital streak moderately developed. Crossvein m not infuscated. Abdomen with the first tergum largely brown, yellow at apex. Second largely yellow, brown at base and on sides. Other terga mostly yellow, tinged with brown more distinctly brownish on sides and clear yellow at apex of 5th. The abdominal terga appear to be fused, and on this basis I am putting this into the subgenus *Dacus*.

Javadacus new subgenus

Fitting in the *Dacus* group of subgenera, as defined by Drew (1972:5). In Drew's key (p.8) it runs imperfectly to *Asiadacus* Perkins by

having only two scutellar bristles and lacking anterior supraalar bristles. It differs by having prescutellar bristles. By the lack of anterior supraalars and having prescutellars it would fit near *Papuodacus* Drew but differs by having only two, not four, scutellar bristles.

Following the present subgeneric concepts in the *Dacus* this has to be treated as a new subgenus, even though the presence of two versus four scutellar bristles may be of questionable value in differentiating subgenera. In *Dacus* (*Zeugodacus*) it is accepted that a few species (not even species groups) may possess only two scutellars, rather than the normal four: based upon the evidence that *Dacus cucurbitae* Coquillett, which typically has two scutellars arose from an ancestral species which had four scutellar bristles. Aberrant specimens are some time seen which may have a rudiment of a third scutellar and rarely a fourth. Also *D.* (*Zeugodacus*) *ascitus* n. sp., *bogorensis* n.sp. and *tenuifinis* n.sp. have but two scutellar bristles.

Type of subgenus, *Dacus* (*javadacus*) *montanus* n.sp.

***Dacus* (*Javadacus*) *montanus* new species (Fig. 7):**

Superficially resembling *D.* (*Zeugodacus*) *bogorensis* n.sp. but not related and differing by lacking anterior supraalar bristles; mesopleural yellow mark joined with humerus and costal band extremely narrow, almost interrupted in basal half of 5th costal section (cell R_3). It also differs in other details as brought out in the description.

Male. Head: Front yellow, with a brown to blackish spot at base of each bristle and black marks on vertex and ocellar triangle; median portion discolored with brownish. One superior fronto-orbital and two inferior fronto-orbitals; two specimens on hand have an extra lower fronto-orbital on right side. Face polished black through middle from bases of antennae to oral margin, yellow down sides. Third antennal segment brown to blackish, tinged with rufous ventrally and at base. First two segments rufous, tinged with brown. Palpi rufous. Labella yellow, mentum marked with black. *Thorax:* Shining black in ground color. Mesonotum with two broad gray pollinose, prestural, median vittae and three postsutural yellow vittae. The lateral vittae are broad, straight-sided, not tapered posteriorly and extend slightly beyond bases of inner postalar bristles, and the lateral marks extend anteriorly slightly beyond suture; a prominent prestural yellow mark is present on each side. Median vitta pointed anteriorly, not extending quite to suture and slightly rounded, nearly truncate posteriorly, ending well before prescutellar bristles. The yellow of notopleural callus not connected with the yellow prestural mark in front of each lateral postsutural vitta and mesopleural yellow mark continuous to humerus,

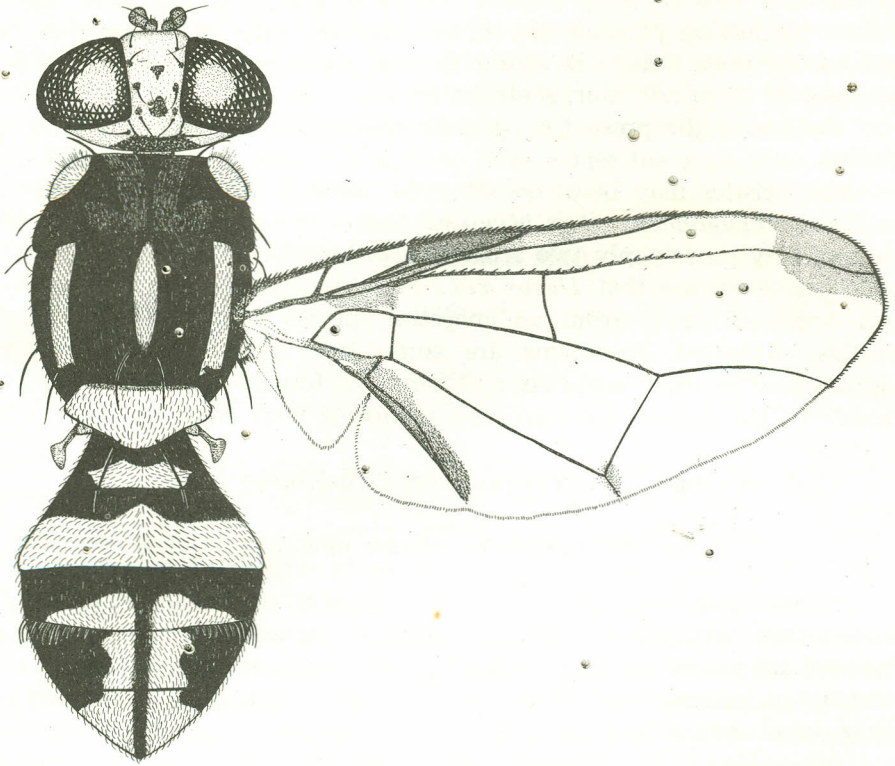


Fig. 7. *Dacus montanus*

occupying the entire dorsal margin of mesopleuron. Humeri and scutellum yellow except for a narrow black basal margin on the latter. Dorsum of thorax entirely yellow pilose, yellow portion of mesopleuron with yellow pile, pleura otherwise gray pilose. Front portion of propleuron yellow to rufous. hind portion and entire area around mesothoracic spiracle black. *Legs*: Coxae and apical halves-2/5 of all femora glossy black; bases of femora and tibiae and tarsi mostly yellow; hind tibiae tinged brown to black. *Wings*: Hyaline with the costal cells entirely clear and devoid of microtrichia except in the upper apical portion of the 2nd section. Costal band very narrow, almost evanescent in basal half of 5th costal section (cell R_3), (Fig. 7) enlarged into a prominent apical spot filling upper apical portion of R_5 . The cubital streak is prominent and also a faint brownish mark is present at lower apex of cell 2nd M_2 . *Abdomen*: Yellow with broad black bands at bases of terga 1-3, with sides of 3-5 broadly black

and with a median brown vitta extending over 3-5. Sterna 1, also 4-5 black; 2-3 rufous, tinged brown to blackish. Fifth sternum nearly two times wider than long, posterior margin gently concave. Epandrium brown to blackish.

Length: body and wings 5.5.-5.75 mm.

Female unknown.

Holotype male, Cibodas, W. Java, on the slopes of Gunung Gede 1400 m. Collected at Methyl Eugenol lure, June 24-25, 1975 (D.E. Hardy and A.T. Hardy). One paratype male, same data as type; two males, same locality and collectors, March 26 1975 and two from Telaga Warna, W. Java 1300 m. March and June 1975 (D.E. Hardy and A.T. Hardy).

Type and two paratypes returned to the museum Zoologicum Bogoriense, Bogor, Java. Other paratypes in the collections of the U.S. National Museum and the University of Hawaii.

Subgenus *Pacifodacus* DREW

Dacus (Pacifodacus) Drew, 1972, J. Australian ent. Soc. 11:12. Type species, *Asiadacus triangularis* Drew, by original designation.

Fitting very near *Dacus (Dacus)* by having one pair of scutellars and with anterior supraalars but lacking prescutellar bristles. It is differentiated from typical *Dacus* by having the abdominal terga not fused.

The species of this subgenus are similar to the aberrant species of *Zeugodacus* with only two scutellars but differ by lacking prescutellars.

Only two species are known from Indonesia.

Dacus (Pacifodacus) drewi new species (Fig. 8).

In Drew's key to the species from the Pacific (1972:199-201) it fits near *abdopallescens* Drew, from Papua New Guinea and appears closely related to this species. It differs by having the first two costal cells hyaline, not with the second pale fulvous; costal band expanded into a large apical spot filling upper 3/5-4/5 of cell-R₅, rather than not expanded at apex; abdominal terga conspicuously marked with black (i.e. basal bands present on 1-3, black lateral margins and a narrow black median vitta over 3-5), rather than nearly all orange brown, lacking black markings; facial spot large, oblong, extending to oral margin, not small elongate and not extending to margin; mesonotum shining black except for the yellow markings, not with brown markings; apices of all femora broadly discolored with brown and basal 2/3 of hind tibiae reddish brown, not fulvous with no dark markings.

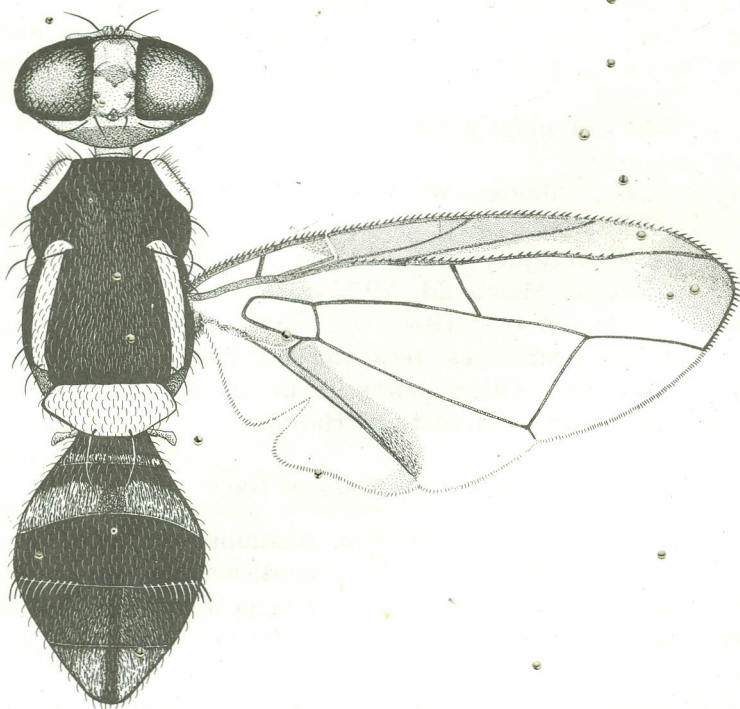


Fig. 8. *Dacus drewi*

Male. Head: Front with two pairs inferior fronto-orbitals and one pair superior fronto-orbitals and with small brownish spots at bases of setae, these are sometimes lacking on lower inferior fronto-orbitals. Facial black spots extending from oral margin half the length of antennal furrow. Median portion of face discolored with brownish but the lateral spots are not joined. Antennae yellow, tinged with brown. *Thorax:* Mostly shining black with a pair of submedian gray vittae, more distinct before suture. Lateral yellow vittae rather broad, straight sided, extending from before suture to beyond inner postalar bristles. The presutural yellow mark is not connected with the yellow of the notopleural callus, a very slight interruption of reddish brown is present. The yellow mark on upper sternopleuron is slightly wider than lower margin of the mark on mesopleuron. Scutellum yellow with a very narrow black basal band. *Legs:* With brown to blackish coxae and trochanters and otherwise yellow, except for the brown discolorations on apical portions of femora,

especially on the ventral margins; also basal 2/3 of hind tibiae reddish brown. *Wings*: Hyaline except for costal band and cubital streak. Second costal cell with microtrichia in apical half. Costal band extends below R_{2+3} , through upper edge of cell R_3 and expands broadly in cell R_5 (Fig. 8). *Abdomen*: Black on bases and sides of terga 1-2; with a narrow black median vitta over terga 3-5. Third and fourth terga largely dark brown to black, tinged with rufous in the posteromedian portions. Fifth tergum mostly rufous except for the dark median vitta, also the extreme lateral margin tinged with brown. Sterna 1, 3-5 brown, tinged with rufous. Epandrium dark reddish brown to blackish.

Length: body of type and one paratype 5.5 mm.; one paratype 6.25 mm.

Female unknown.

Holotype male and two male paratypes, 12 km. n.w. Bohorok, N. Sumatra, 200 m, collected at Cue lure, May 4, 1975 (D.E. and A.T. Hardy).

Type and one paratype in the Museum Zoologicum Bogoriense, one paratype in the University of Hawaii collection.

It is a pleasure to name this species after my colleague, Dr. R.A.I. Drew of Brisbane, Australia who is the leading worker on the Dacinae of the Australia and the Pacific Region.

Dacus (Pacifodacus) infestus (ENDERLEIN)

Polistomimetes infestus Enderlein, 1920 Zool. Jb. 43:359. Type locality: Deli, Sumatra.

Differentiated from other known *Pacifodacus* by the very large, round, brown spot filling all of the apex of the wing (HARDY, 1973:22, Fig. 7d), extending into upper portion of cell 2nd M_2 . Also by having a complete black band over lower portion of face and the body almost entirely rufous.

One female on hand from "Boie, Java" is aberrant, one prescutellar bristle is present (the pin goes through the opposite side so the other bristle would be lost) and would thus fit in *Bactrocera*. I have keyed this species in both *Pacifodacus* and also under *Bactrocera*. The record from Java is new.

Subgenus *Paratridacus* SHIRAKI

Paratridacus Shiraki, 1933, Mem. Fac. Sci. Agric. Taihoku imp. Univ. 8 (2):109. Type-species, *Dacus yayeyamanus* Matsumura, by original designation, = *expandens* Walker (1859).

Melanodacus Perkins, 1937, Proc. R. Soc. Qd. 48 (9):57. Type-species, *Dacus niger* Tryon, by original designation.

This belongs in the *Dacus* group of subgenera which have two pairs of scutellar bristles. It fits near *Austrodacus* Perkins by lacking pecten on the third abdominal tergum and is differentiated by having anterior supraalar bristles.

Only one species is known from Java or Sumatra.

Dacus (*Paratridacus*) *expandens* Walker

Dacus expandens Walker, 1859, J. Proc. Linn. Soc. Lond. Zool. 3:114.

Type-locality: Aru Island.

Distribution: Widespread through Oriental region, including most of Indonesia; also Queensland, Australia and Japan.

Hosts: *Garcinia* spp. For synonymy refer to HARDY in DELFINADO AND HARDY (1977:55).

This species is easily recognized by the subgeneric characters, in combination with the thorax entirely rufous and with only two postsutural yellow vittae; the abdomen nearly all rufous; wings with a broad costal band, filling cell R_3 , with costal cells brownish yellow and second costal cell filled with microtrichia. The female ovipositor is peculiar in shape, the piercer is trilobed at apex (ref. Hardy, 1951:141, Fig. 10a-b).

For other descriptions and figures refer to DREW (1973:18) and HARDY, 1959:171).

Subgenus *Zeugodacus* Hendel

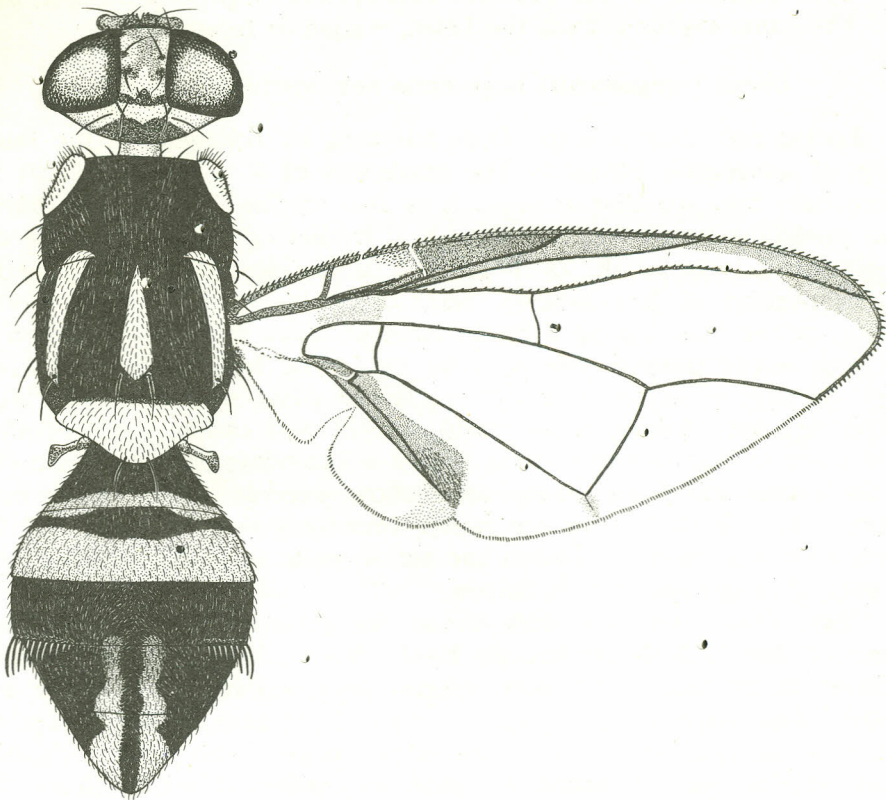
Dacus (*Zeugodacus*) Hendel, 1972, In Lindner, Fliegen palaearkt. Reg. 49:26. Type-species, *caudatus* Fabricius, by original designation.

Fitting in the *Dacus* Group of subgenera which have pecten on the third abdominal tergum of the male and anterior supraalar and prescutellar bristles present. It fits near *Paradacus* Perkins but that taxon is characterized by lacking prescutellar bristles.

Zeugodacus Species typically have four scutellar bristles, *D. ascitus* n.sp., *bogoriensis* n.sp., *cucurbitae* Coquillett, and *tenuifinis* n.sp., are exceptions to this and have only two scutellars.

Dacus (*Zeugodacus*) *ascitus* new species (Fig. 9)

Fitting in the small group of aberrant *Zeugodacus* which possess all of the characters of that subgenus except for having only two scutellar

Fig. 9. *Dacus ascitus*

bristles. It shows close relationship to *bogorensis* n.sp., from Java, but differs by having the upper median portion of face yellow and a narrow line of yellow extending above oral margin; front coxae and propleura black and front femora all black except for very narrow yellow bases; lateral vittae of mesonotum pointed posteriorly, sides gradually narrowed, extending beyond inner postalar bristles and median vitta extending beyond bases of prescutellar bristles (Fig. 9). Otherwise fitting description of *bogorensis*, I see no other characters for differentiating these.

Length of body 6.0 mm.

Female unknown.

Holotype male, Lembah Anai, 63 km north Padang, W. Sumatra, May 9, 1975 at Cue lure (D.E. Hardy).

Type returned to the Museum Zoologicum Bogoriense, Bogor, Java. The name *ascitus* is from the Latin, = alien or foreign.

Dacus (zeugodacus) bogorensis new species (Fig. 10).

Fitting near *ascitus* n.sp. from Sumatra, by belonging in the *Dacus* group of subgenera, fitting all the characters of *Zeugodacus* except for having only two scutellar bristles. It is also similar to *ascitus* in having three postsutural yellow vittae as well as by having the thorax, face and femora extensively black. *D. bogorensis* is differentiated by having the median portion of face entirely black from bases of antennae to oral margin, rather than having a broad band of black over lower portion of face and upper portion yellow. Also by having front coxae and lower propleura yellow tinged with brown; lateral vittae on mesonotum blunt posteriorly, not tapered, sides nearly straight and ending slightly before inner postalar bristles and median vitta not extending beyond prescutellar bristles. Also the front coxae are yellow except for brownish basal portions, the front femora are rather broadly yellow at bases and the lower portion of each propleuron and anterovental portion of mesopleuron are yellow, tinged faintly with brown.

Male. Head: Occiput dark brown to black with a broad yellow margin. Vertex and ocellar triangle black. Front yellow, with brown spots at bases of bristles; three pairs inferior fronto-orbitals, the lower two situated close together near edge of front. Face glossy black except for yellow along eye orbits. Antennae brown, tinged with rufous. *Thorax:* Mostly shining black, mesonotum lightly gray pollinose before suture. The markings are pale yellow, almost cream colored mesonotal vittae as noted above (fig. 10). The pale presutural spot on each side nearly joined with the pale mark on notopleuron. Pale spot on upper sternopleuron short, equal in width to lower edge of mesopleural mark and not extending posteriorly under pteropleuron. The median vitta is wedgeshaped. Humeri and scutellum pale yellow. *Legs:* Yellow except for reddish brown bases of front coxae and all of other coxae; front and middle femora reddish brown to blackish on apical 2/3-3/4 and hind femora on apical 2/5; tibiae tinged with brown to blackish on bases. *Wings:* Hyaline except for narrow costal band and broad cubital streak. First two costal cells devoid of microtrichia except at upper apex of second. Costal band not extending into cell R_3 except at apex, ending in upper third of R_5 . Cubital streak broad extending about 2/3 across basal M_4 . *Abdomen:* Terga 1 and 2 largely yellow, black across bases. Terga 3-5 broadly blackened on sides and over base of 3, with a median black vitta (Fig. 10). Sterna 3-5 brown to black, sternum yellow. Epandrium black.

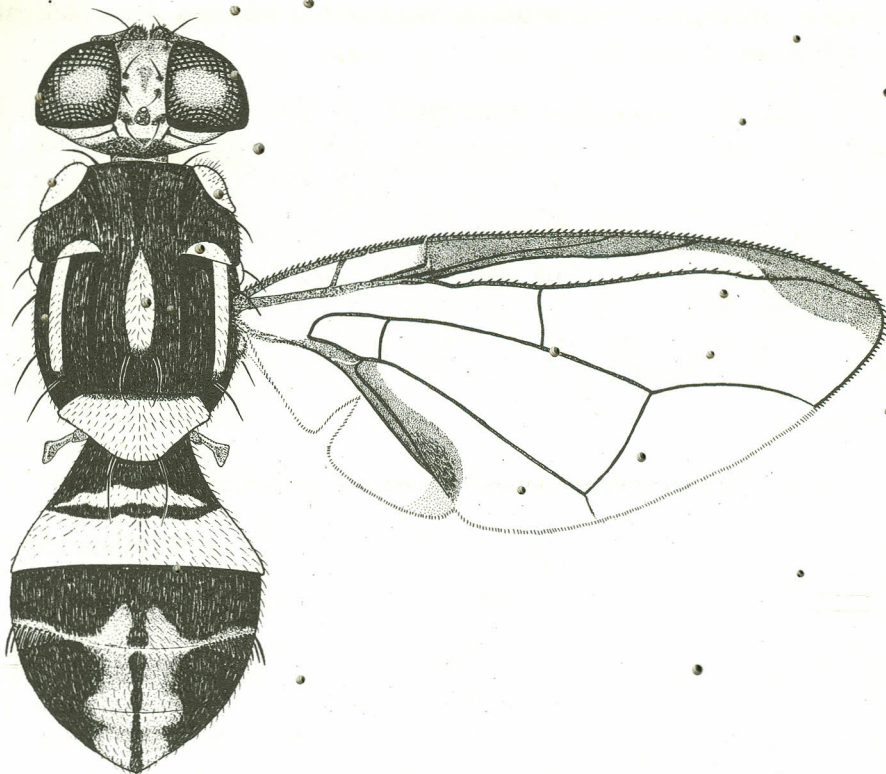


Fig. 10. *Dacus bogorensis*

Length: 6.5 mm.

Female unknown.

Holotype male Kebun Raya (botanical gardens), Bogor, W. Java, April 1975, collected at Cue lure (D.E. Hardy). Five male paratypes from Cimanggu, Bogor, Java, Dec. 1976 (S. Isnadi) and two male paratypes, Saraot, Lombok, 400 m., Oct. 1976 (E. Mulyono).

Type and one paratype in Museum Zoologicum Bogoriense, and one paratype in University of Hawaii collection.

Dacus (*Zeugodacus*) *caudatus* Fabricius

Dacus caudatus Fabricius, 1905, Syst. Antliat. p. 276. Type-locality: Java. *Bactrocera maculipennis* Doleschall, 1856, Naturk. Tijdschr. Ned. Indie 10:412. Typedocality: Java.

Distribution: Widespread over southeast Asia to India-Burma, Java, Malaysia, Taiwan, Thailand Viet Nam.

Host: Unknown.

This species is recognized from other *Zeugodacus* which have three postsutural yellow vittae and transverse black markings on the face, by having the face predominantly yellow with a crossband of black in the furrow, also by having three pairs of inferior fronto-orbital bristles and the median postsutural yellow vitta very broad, equal in width or slightly broader than the lateral yellow vittae; and costal band slightly enlarged at apex. Another characteristic feature is that the 4th and 5th sterna of the male are unusually large, broad, very conspicuous and dark brown to blackish in color. Sterna 2-3 are yellowish. Refer to HARDY (1973:60).

Dacus (*Zeugodacus*) *cucurbitae* COQUILLET

Dacus cucurbitae Coquillett, 1899, Ent. News 10: 129. Type-locality: Honolulu, Hawaii.

Dasyneura caudatus, of Walker 1849. List Dipt. colln. Br. Mus. 4:1073, not Fabricius, 1805.

Distribution: Widespread over Oriental Region, including China, Ryukyu Islands and Japan: over Pacific, Hawaii to New Guinea, Solomon and Bismark Islands; Once recorded at Darwin, Australia (apparently not established. Now present in east Africa and the Mauritius.

Hosts: A wide range of hosts and is one of the most serious pests of vegetable crops. It is a serious pest of a wide variety of cucurbitaceous plants and of tomato, peppers and other vegetables.

As discussed by DREW (1973:23) because of the male genitalia and the character of the 5th sternum of the male this properly fits in subgenus *Zeugodacus*. Because the species typically possesses only two scutellar bristles it has been consistently placed in the subgenus *Strumeta* = *Bactrocera*. Previous to this present study this was the only known species in *Zeugodacus* which has but two scutellars.

The species is readily recognized by the presence of the two scutellars, in combination with three postsutural yellow vittae; a brown mark over the m crossvein and the mesonotum mostly rufous, tinged with brown. It fits nearest to *ubiquitus* Hardy but is differentiated by the two scutellars, the comparatively pale mesonotum and narrow vitta.

Refer to DREW (*loc. cit.*) for a complete description.

***Dacus* (*Zeugodacus*) *exornatus* (HERING)**

Zeugodacus exornatus Hering, 1941, *Annls hist.- nat. Mus. natn. hung.* 34:55. Type-locality: Insel Dammer (Damar Island, Moluccas—since this was described in Hering's studies of New Guinea fruit flies the locality would have been the Dammar Island just off the south tip of Halmahera; not the Damar N.E. of Timor).

Distribution: Moluccas, Sulawesi and Sumatra. Presently known only from the type male in the Hungarian Museum of Natural History and one male from Panti Forest Reserve, Pasaman, West Sumatra, 280 m., May 7-8, 1975 (D.E. Hardy), and 3♂♂ Banyorang, S. Sulawesi, Sept. 1977 (S. Isnadi).

Specimens on hand from Sumatra and Sulawesi fit the original description, and also the redescription of DREW (1973:30) perfectly, there seems no question but that it is this species and *exornatus* is obviously rather widespread.

This species possesses most of the characteristics of typical *Zeugodacus*: three broad postsutural, yellow vittae on mesonotum, four scutellar bristles and scutellum all yellow; wings mostly hyaline with a narrow costal band, etc. It is completely atypical in lacking presutural yellow marks continuous with the lateral yellow vittae, the suture is entirely shining black and in this regard it is more like species of the *Bactrocera* group. Because of the predominantly black face it fits near *personatus* n.sp. from Java and is differentiated by having the polished black marking over the face confined to the Lower half-3/5, with the upper median portion below antennae yellow; by having the front femora almost entirely black and the mid and hind black at least on apical halves; also the costal band does not extend into cell R_3 except at apex.

DREW (*loc. cit.*) redescribed the species based upon the type male but the abdomen is missing from the type so the following description of the abdomen is based upon the male specimen from west Sumatra. First tergum black on base and on sides, with a large yellow mark occupying the apical 2/3 over the median portion. Second tergum with a band of black over the basal third and also with the lateral margins black on basal 2/3, the remainder clear yellow. Terga 3-5 broadly black on sides, with a narrow yellow vitta extending down middle, otherwise yellow. Sterna, 1, 3-5 dark brown to black.

***Dacus* (*Zeugodacus*) *pendleburyi* (PERKINS)**

Zeugodacus pendleburyi Perkins, 1938, *Proc. R. Soc. Qd.* 49(11):141.

Type-locality: Bukit Batu, Selangor, Malaya.

Distribution: Java?, West Malaysia, Thailand.

HERING (1952:266) recorded a specimen as this from Djampang, Tjiajunan, W. Java; designated as an allotype male. Hering placed it under *Paradacus* Perkins, this is not correct (refer to HARDY AND ADACHI, 1954:194 and HARDY, 1973:64). Hering was unable to be sure of the presence or absence of prescutellar bristles because of the placement of the pin. Perkins stated that prescutellars are present and I am assuming that *pendlebuyri* is a true *Zeugodacus* but I have not seen this species and cannot be absolutely sure that it is correctly placed.

Because of the presence of only two postsutural yellow vittae this species would be immediately differentiated from other *Zeugodacus* known from this region. It fits nearest to *tenuifinis* n.sp., from Sumatra, but differs by having four scutellar bristles; face with a large black spot on each side; postsutural yellow vittae very short, pointed posteriorly and extending scarcely passed a level with anterior supraalars; also no cubital streak is present in the wing.

Refer to original for a complete description.

Dacus (*Zeugodacus*) *personatus* new species (Figs. 11a-d).

This is closely related to *exornatus* (Hering) and runs to this species in DREW's key (1972b:203). It differs from *exornatus* by having the entire median portion of face polished black to bases of antennae, rather than upper median portion of face below antennae yellow; by having legs all yellow, rather than femora predominantly black; costal band extending below vein R_{2+3} for most of its length, rather than only at its apex; also mesonotum with a prominent presutural mark on each side continuous with the yellow marks of lateral vittae and of notopleural calli. In *exornatus* the presutural yellow spots are lacking (one of the few cases which I have seen in the *Dacus* group of subgenera).

Male. Head: Occiput yellow, tinged with brown on hind portion. Front pale yellow, cream-colored on lower portion with a brownish discoloration medianly which is often connected with the small dark spots at bases of upper inferior fronto-orbitals. Two pairs inferior fronto-orbitals, both with brown to blackish basal spots. Superior fronto-orbitals each located on a pale yellow background, no basal dark spots. A shining black band is continuous over vertex and ocellar triangle. Face polished black over entire median portion (Fig. 11 b), yellow down sides. Gena directly below eye margin brown to blackish in ground color and distinctly gray to pubescent. Third antennal segments black, rufous tinged basally. First two segments dark reddish brown. *Thorax:* Predominantly shining black with the pair of light gray submedian vittae, more distinct

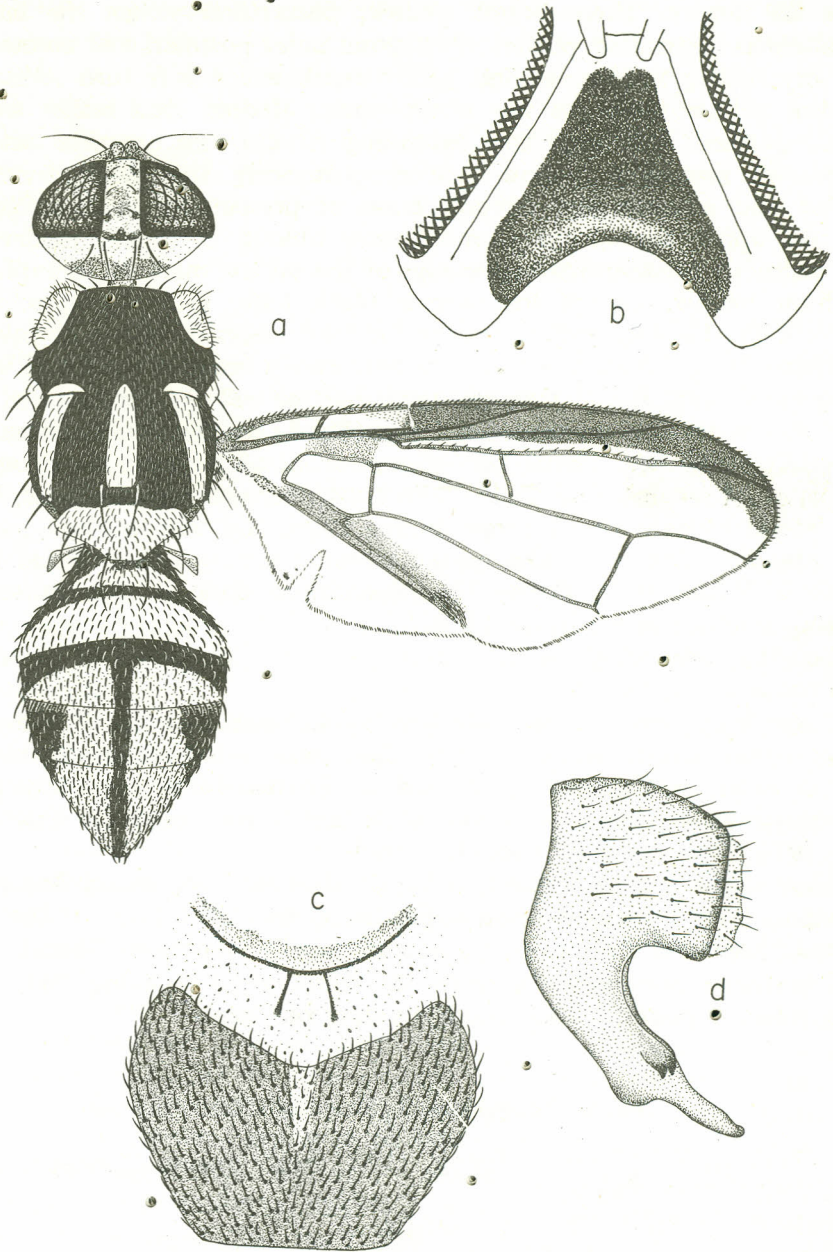


Fig. 11. *Dacus personatus*

before the suture. Three broad yellow, postsutural vittae, the laterals straight-sided, extending posteriorly beyond inner postalar and connecting anteriorly with a large presutural yellow mark which is in turn connected with the yellow mark on the notopleuron. Median vitta rather wedge-shaped, pointed anteriorly and extending to a point opposite anterior margins of presutural yellow marks; posteriorly the median vitta is rounded and extends just beyond bases of prescutellar bristles. Yellow mark on upper portion of sternopleuron oblong in shape, moderately large, distinctly broader than lower edge of the yellow mark on mesopleuron. Scutellum yellow, except for narrow black base; four strong scutellar bristles. *Legs*: Entirely yellow except for faint tinges of brown at bases of hind tibiae. *Wings*: Hyaline except for moderately broad costal band which extend below vein R_{2+3} , through upper half of cell R_3 for most of it is length and is scarcely expanded apically (Fig. 11 a). The cubital streak is moderately developed. Costal cells clear, devoid of microtrichia except at upper apex of second. *Abdomen*: Yellow with narrow basal bands on terga 1-3, lateral margins of all terga shining black and with a black median vitta extending over 3-5. The second sternum yellow, others black. Fifth and sixth sterna as in Figure 11c. Epandrium dark reddish brown to blackish. Genitalia as in Figure 11 d.

Length: body 6.0-6.5 mm.

Female unknown.

Type male and twenty male paratypes, Palabuhanratu, W. Java, in low land rain forest, near sea coast. Specimens collected mostly at Cue lure but some to Methyl eugenol and to Tri-Med lures (obviously there was contramination and the actual attractant is very probably Cue lure) April, 1975 (D.E. and A.T. Hardy).

Type and a series of paratypes in the Museum Zoologicum Bogorienses, Bogor, Java. Paratypes being deposited in the Collections of the U.S. National Museum, B.P. Bishop Museum and the University of Hawaii.

The name *personatus* is from the Latin word meaning "masked", referring to the polished black mark covering the face.

Dacus (*Zeugodacus*) *platamus* HARDY

Dacus (*Zeugodacus*) *platamus* Hardy, 1973, Pacif. Insects Monogr. 31:65.

Type-locality: Yala, Thailand.

Distribution: Thailand Java and Sumatra.

Specimens from north Sumatra and from west Java fit this species and constitute a new record for Indonesia.

Easily separated from all other known *Zeugodacus* from this area by the presence of black spot at apex of scutellum between the bristles. The costal band is rather broad, extending beneath vein R_{2+3} over its entire length. Abdomen mostly yellow with a complete basal band on 3rd tergum, a complete median vitta extending from 3 over 5 and with a large black spot on each side of terga 4 and 5. The femora each have a preapical black mark on posterior surface.

Dacus (*Zeugodacus*) *tau* WALKER

Dacus tau Walker, 1849, List Dipt. colln Br. Mus. 4:1074. Type-locality: Foochow, China.

For synonymy refer to HARDY in DELFINADO AND HARDY (1977:60).

Distribution: Widespread over Oriental Region.

Hosts: Wide range of hosts: several genera of cucurbits and an assortment of fleshy fruits such as jack fruit (*Artocarpus*), chico (*Sapodilla*) and wax apple (*Cugenta*).

There has been much confusion in treatment of this species in the literature and in treating the Indonesia populations it becomes obvious that we are probably dealing with a complex of species. The synonymy needs to be completely restudied and field biology studies are needed to straighten this out.

This name has been used for those species, widespread throughout Southeast Asia and the oriental region, into China, which have three postsutural yellow vittae, two round spots on face and the costal band expanded at apex to form a large brown spot occupying upper apical portion of cell R_5 and m crossvein lacking a brown mark. Typical *tau*, as represented by a large series of specimens in my collection from throughout the oriental region, has sterna 3-5 dark brown to blackish. Most of the specimens collected, at Cue lure, on Java are typically smaller and have the sterna pale colored, 2-5 is yellow to rufous with only a faint tinge of brown. The females have not been associated and the ovipositor characters have not been checked. Also a series of specimens from Bogor, west Java, collected in Kabun Raya (botanical gardens) reared from *Trichosanthes* and collected on the spadixes of *Spathiphyllum* (only males come to the flowers) appear to be typical *tau* in coloration and body size except that the female ovipositor is tri-lobed at the apex. This species was not attracted to Cue lure, baits were placed in the area where males were commonly collected on the flowers or where specimens were seen on *Trichosanthes* fruits, but they were never seen at the lures. It is probable that the above mentioned species, also the population with the yellow sterna represent two undescribed species but more biological details are needed.

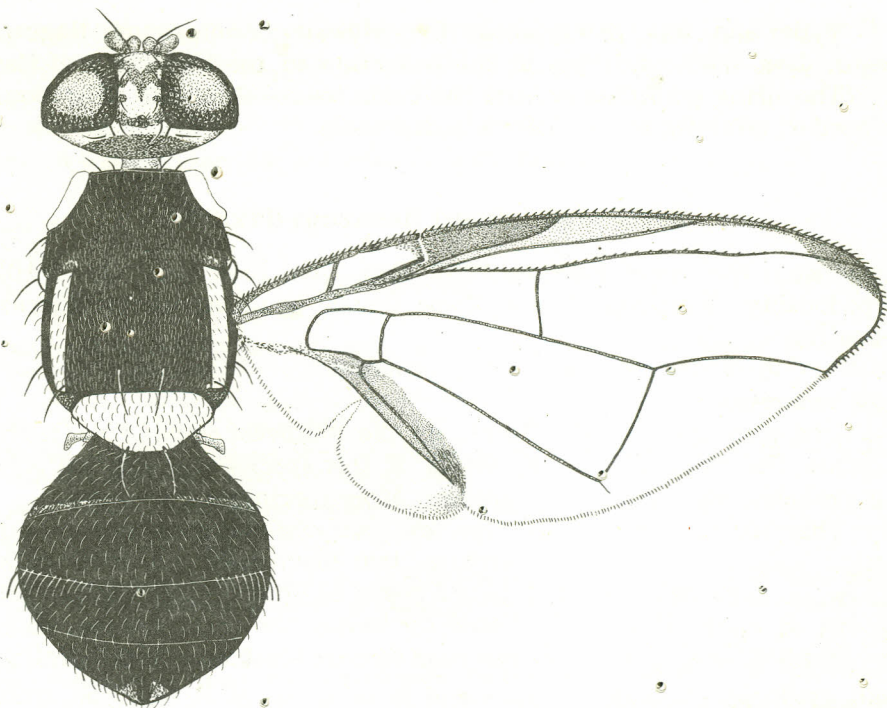
For descriptions of *tau* refer to HARDY (1973:70 and 1974:56).

Specimens from Sumatra collected at Cue lure (only males seen) appear to be typical *tau*.

Dacus (*Zeugodacus*) *tenuifinis* new species (Fig. 12)

Belonging in the *Dacus* group of Subgenera and fitting with the aberrant *Zeugodacus* which have only two scutellar bristles but differing by having only two postsutural yellow vittae on the mesonotum, by the all black abdomen and very narrow costal band. In general facies, except for genital characters, it resembles some of the *Bactrocera*, also like most of the species of the *Bactrocera* group it has only a tiny presutural yellow mark on each side in front of the lateral yellow vittae. I can see no relationship with any known species of either subgenus. It somewhat resembles *Zeugodacus terminifer* Walker, from Sulawesi, by the two postsutural yellow vittae, small size, mostly black face and legs, also by the narrowing of the costal band. *D. terminifer* is clearly differentiated however, by having four scutellar bristles, no costal band, the yellow mark on mesopleuron continuing to humerus, as well as by other details. The two are probably not related. It should be noted that one of the four specimens on hand (a paratype) has three scutellar bristles and this is evidently similar to the case of *cucurbitae* where one or sometimes two secondary scutellars are occasionally present.

Male. Head: Occiput shining black, with a yellow margin. Vertex and ocellar triangle black. Front yellow with large black spots at bases of bristles. Two inferior fronto-orbitals and one pair of superior fronto-orbitals. Face polished black medianly, yellow on sides, just above oral margin, and below bases of antennae. Third antennal segment mostly brown to blackish, reddish ventrally. First two segments rufous, tinged with brown. *Thorax:* Shining black, lightly gray pollinose before suture. The pale markings of the thorax are cream colored, nearly white. Postsutural pale vittae broad, straight-sided, extending well beyond inner postalar bristles and anteriorly each vitta extending slightly in front of suture as a tiny pale spot, not connected with notopleural marking. The tiny presutural mark is present on the type and one other specimen and apparently lacking on the two other paratypes. Pleura shining black except for the pale coloration on mesopleuron, upper sternopleuron and on the metapleuron. The pale mark on upper sternopleuron extends under edge of pteropleuron. Humeri and scutellum entirely white except for a narrow black basal border on the latter. The scutellum typically with two bristles but as noted above one paratype specimen has a third bristle developed on the left side. *Legs:* Coxae black; front femora nearly all black, tinged with rufous basally. Middle femora yellow on basal third, shining black on

Fig. 12. *Dacus tenuifinis*

apical $2/3$; hind femora black on apical $2/5$. Tibiae and tarsi yellow except for brown to blackish on basal $2/3$ of hind tibiae. *Wings*: Hyaline except for very narrow costal band and moderately developed cubital streak. Costal cells bare except for microtrichia in upper apex of second. Costal band nearly interrupted in basal half of fifth costal section and gradually expanding in apical half of fifth section and upper apical portion of cell R_5 ; the band fills the subcostal and cell R_1 and extends barely below the costa along the first half of the fifth costal section (R_3) (Fig. 12). *Abdomen*: Nearly all shining black, tinged with yellow to rufous on narrow apicolateral margins of second tergum and on apicolateral margins of fifth. Sterna and genitalia dark brown to black.

Length: body 5.0 mm.

Female unknown.

Holotype male and three male paratypes, Panti Forest Reserve, Pasaman, N. Sumatra, 280 meters, May 7-8, 1975-probably attracted to Cue lure (D.E. Hardy and A.T. Hardy).

Type and one paratype in the Museum Zoologicum Bogoriense, Bogor, Java. Two paratypes in the collection of the University of Hawaii.

The name *tenuifinis* is from the Latin *tenuis*=thin, plus *finis*=boundary or border; referring to the narrow costal band.

Dacus (Zeugodacus) timorensis (PERKINS)

Zeugodacus timorensis Perkins, 1939, Pap, Dep. Biol. Univ. Qd. 1(10):30. Type-locality: Koepong Timor. Type female in university of Queensland collection.

Distribution: Flores, Sumba, Timor, Lombok ?

Host unknown.

One male from Lemor Forest, on the southeast slope of Mt. Rindjani, Lombok fits most of the characters of this species and may be atypical but probably represent a new species. More specimens are needed.

This species fits in the species grouping which have three post-sutural yellow vittae on mesonotum, two black spots on face, scutellum yellow, no mark over m-crossvein and costal band not extending into cell R₃ except at apex. It is differentiated by having the front femora all black except for narrow bases; mid and hind femora black on apical halves; costal band gradually expanded at apex and facial spots small, less than width of third antennal segment.

The specimen from Lombok differs from typical *timorensis* by the longer and broader side vittae on mesonotum, extending to inner postalar bristles and scarcely narrowed posteriorly. In *timorensis* the vittae are rather short, pointed and end well before inner postalar (refer Fig. 22, DREW, 1973:34). Also in the Lombok specimen the abdomen is not so broadly blackened on sides of terga 3-5 and the middle tibiae are pale yellow with slight discoloration of brown basally and two closely placed pairs of lower inferior fronto-orbitals are present on the front. *D. timorensis* has the sides of terga 3-5 broadly blackened, the mid and hind tibiae entirely fuscous and only one pair of lower inferior fronto-orbitals.

Refer to DREW (1973:33) for redescription of type.

Dacus (Zeugodacus) ubiquitous HARDY

Dacus (Zeugodacus) ubiquitous Hardy, 1973, Pacif. Insects Monogr. 31:71. Type-locality: Pili, Mount Isarog, Camarines Sur (Luzon), Philippines.

Distribution: Java, Philippines, Thailand and New Ireland.

Host: Reared from *Trichosanthes* fruits on Java.

Somewhat resembling *cucurbitae* because of the brown mark over the m crossvein in the wing but easily differentiated by having the thorax predominantly black with the median postsutural yellow vitta broad, wedge shaped and also by the presence of four scutellar bristles.

For a detailed description refer to the original.

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