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# Redescription of three species of *Anastrepha* (Diptera, Tephritidae) rediscovered in Brazil, with the establishment of a new synonym

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## Abstract

The descriptions of *Anastrepha matertela* Zucchi and *A. tenella* Zucchi were based exclusively on the holotypes (female). Based on additional specimens collected in Brazil since their original descriptions, both species are redescribed and illustrated. A lectotype is designated for *Anastrepha bivittata* (Macquart, 1843), which also is redescribed and considered to be the senior synonym of *A. fumipennis* Lima, 1934.

**Key words:** Diptera, Tephritidae

## Introduction

The genus *Anastrepha* Schiner, 1868 comprises aproximately 270 known species distributed in the American tropics and subtropics (Norrbom *et al*. 2012), of which 115 are recorded in Brazil (Zucchi 2008). Although some species are frequently collected, particularly those that are economically important, others are recovered rarely. For various species of *Anastrepha*, the only taxonomic information is based on the type specimen, and for some of these species, the original descriptions are very brief.

Despite numerous surveys of the species of *Anastrepha* with traps or by fruit sampling in many Brazilian localities during the last decades, some species have been recovered rarely. Among these species are *A. matertela* Zucchi, 1979 and *A. tenella* Zucchi, 1979. Both species were collected originally in Cruz das Almas, state of Bahia. Although *Anastrepha* fruit fly surveillance in this municipality has been carried out since the 1980s, no specimens of these species have been reported. However, 35 years after the original descriptions of *A. matertela* and *A. tenella*, we here report the first subsequent specimens collected in Bahia and redescribe both species in greater detail.

*Anastrepha bivittata* (Macquart, 1843) is another poorly known species, presumed to occur in Brazil. It has been known only from the brief original description. We located and examined the single known syntype and here provide a comprehensive redescription. The data from these redescriptions will be used to treat all three of these species more adequately in an interactive system which is being developed for the species of *Anastrepha* (Norrbom *et al*. 2012).

## Material and methods

The morphological terminology follows White *et al*. (1999), and the methods used for the measurements of the wing, oviscape, and aculeus, and for image recording were as described in Uramoto & Zucchi (2010). Also, the following ratios were taken: vein M ratio (distance from bm-cu to r-m/distance from bm-cu to dm-cu); S-band distal section width ratio (width of S-band/width of cell $r_{2+3}$); cell c: pterostigma ratio (cell c length/

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pterostigma length); vein $R_1$ ratio (distance from wing base to apex of $R_1$/wing length); pterostigma ratio (length/width); ratio of costa length between apices of Sc and $R_1$/length between apices of $R_1$ and $R_{2+3}$; cell bcu ratio (length/anterior margin length along vein Cu); cell bcu posteroapical lobe length/length of vein $A_1$+$Cu_2$ (Norrbom *et al*. 2012).

The holotypes of *Anastrepha matertela* and *A. tenella*, deposited at Museu de Zoologia, Universidade de São Paulo (MZSP), São Paulo, SP, and the syntype of *Urophora bivittata*, deposited at Museum d'Histoire Naturelle, Lille, were reexamined. Voucher specimens are deposited at the "Escola Superior de Agricultura "Luiz de Queiroz" (ESALQ), Piracicaba, SP, Brasil, and at the National Museum of Natural History (USMN), Washington, D.C., USA.

### *Anastrepha bivittata* (Macquart)

Figs. 1–20

*Urophora bivittata* Macquart 1843: 379, Tab. 30, Fig. 3.
*Acrotoxa bivittata*: Loew 1873: 231 (classification).
*Anastrepha bivittata*: Bezzi 1909: 284 (list), 286 (in key); Hendel 1914: 15 (in key, list); Greene 1934: 134 (in key), 157; Lima 1934: 499; Stone 1942: 22 (unrecognized species); Foote 1967: 8 (catalog); Steyskal 1977: 33 (list of species not in key); Norrbom *et al*. 1999a: 77 (catalog, type data); Norrbom *et al*. 1999b: 322, 335 (classification).
*Anastrepha fumipennis* Lima 1934: 499. Stone 1942: 18 (in key), 90 (revision); Foote 1967: 11 (catalog); Steyskal 1977: 25 (in key); Norrbom *et al*. 1999a: 79 (catalog); Zucchi 2000: 22 (in key). **New synonymy**.

**Diagnosis.** This species can be recognized from all other species of *Anastrepha* by the following combination of characters: wing pattern mostly dark brown; cells br and bm entirely infuscated; aculeus tip nonserrate, slightly tapered to blunt apex.

**Description.** [Information in brackets from lectotype] Mostly orange. Setae dark brown to black. Body length 8.25–11.75 [9.9] mm.

Head. Yellow except ocellar tubercle brown. Facial carina, in profile, straight on dorsal 3/4, lower part protruding. 4–6 [4] frontal setae. 2 orbital setae. Ocellar seta weak, as long as ocellar tubercle. Antenna not extended to ventral facial margin. Palpus in lateral view dorsally curved, evenly setulose.

Thorax. Mostly dark orange; with following areas white to pale yellow: postpronotal lobe and lateral margin of scutum bordering it, not extending onto notopleuron; medial scutal vitta, slender anteriorly, extended to level of postpronotal lobe, posteriorly slightly broadened, extended lateral to acrostichal seta (similar in shape to *A. atrigona*, Norrbom 1991, fig. 3A); sublateral scutal vitta from transverse suture to posterior margin, including base of intra-alar seta; scutellum; dorsal margins of anepisternum and katepisternum; katepimeron; and most of anatergite and katatergite [pleuron of lectotype mostly covered by mold, markings not visible]. Scutum without brown markings. Subscutellum and mediotergite dark orange, mediotergite narrowly dark brown laterally. Mesonotum 2.65–3.90 [3.17] mm long. Postpronotal lobe, notopleuron, scutum and scutellum entirely microtrichose [scutum largely covered by debris in lectotype, but mostly if not entirely microtrichose]. Scutal setulae brown except on and bordering medial vitta. Chaetotaxy typical for genus [in lectotype both postpronotal, right presutural supra-alar and posterior notopleural, both postsutural supra-alar, except base of left one, left acrostichal, dorsocentral, and intra-alar, both postalar, except base of left one, absent, but sockets large]. Katepisternal seta *ca*. half as long and much weaker than anepisternal seta, yellowish.

Legs. Entirely yellow to orange. Fore femur with posterodorsal and ventral rows of well developed setae.

Wing (Figs. 1. a–h, 17, 18). Length 7.10–9.47 [7.28] mm, width 2.72–3.97 [2.93] mm, ratio 2.38–2.61 [2.48]. Apex of vein $R_1$ at 0.56–0.60 [0.60] wing length, proximal to level of anterior end of crossvein r-m. Cell c 0.98–1.20 [1.13] times as long as pterostigma; pterostigma 2.67–3.75 [3.13] times as long as wide. Vein $R_{2+3}$ nearly straight. Crossvein r-m at 0.74–0.78 [0.77] distance from bm-cu to dm-cu on vein M. Vein M very strongly curved apically; cell $r_{4+5}$ 0.64–0.75 [0.67] times as wide at apex as at level of dm-cu. Cell bcu with distal lobe long, length of bcu 1.52–1.75 [1.52] times as long as anterior margin, lobe 0.68–0.80 times as long as vein $A_1$+$Cu_2$. Pattern mostly dark brown. C-band often with elongate paler area posteriorly in cell c. S-band distal to r-m and anterior part of proximal arm of V-band (from anterior half or more of dm-cu) orange with narrow brown margins. C- and S- bands completely fused basally, cells br, bm and bcu entirely infuscated although bm and bcu

usually paler medially. Base of S-band without posterior extensions in middle of cell $cu_1$ or cell $a_1$. Hyaline mark distal to apex of vein $R_1$ variable, often triangular, small and not reaching vein $R_{2+3}$ [e.g., in lectotype], or triangular with vertex rounded and reaching vein $R_{4+5}$, or interrupted at $R_{2+3}$ (Figs. 1, 18). S-band with distal section of medium width, at apex of vein $R_{2+3}$ 0.51–0.69 [0.56] times width of cell $r_{2+3}$; not extended to apex of vein M. V-band with proximal arm connected to (usually) or separated from S-band anteriorly, but fused to varying extent to S-band in cell dm; extended basally along posterior wing margin almost to vein $A_1$+$Cu_2$ but not connected to base of S-band along wing margin. Distal arm absent or reduced to small spot anterior to vein M (Lima 1934, Est. LXV, fig. 10; Fig. 1h). Wing entirely microtrichose except posterobasal half of cell bc, sometimes basal half of cell bm [entirely microtrichose in lectotype], and most of alula [bare on anterior 2/3 in lectotype]; all of cells br, dm, bcu, $cu_1$, and $a_1$+$cu_2$ microtrichose. Area surrounding apex of lobe of cell bcu with microtrichia similar in density to area anterodistal to it along vein $Cu_1$.

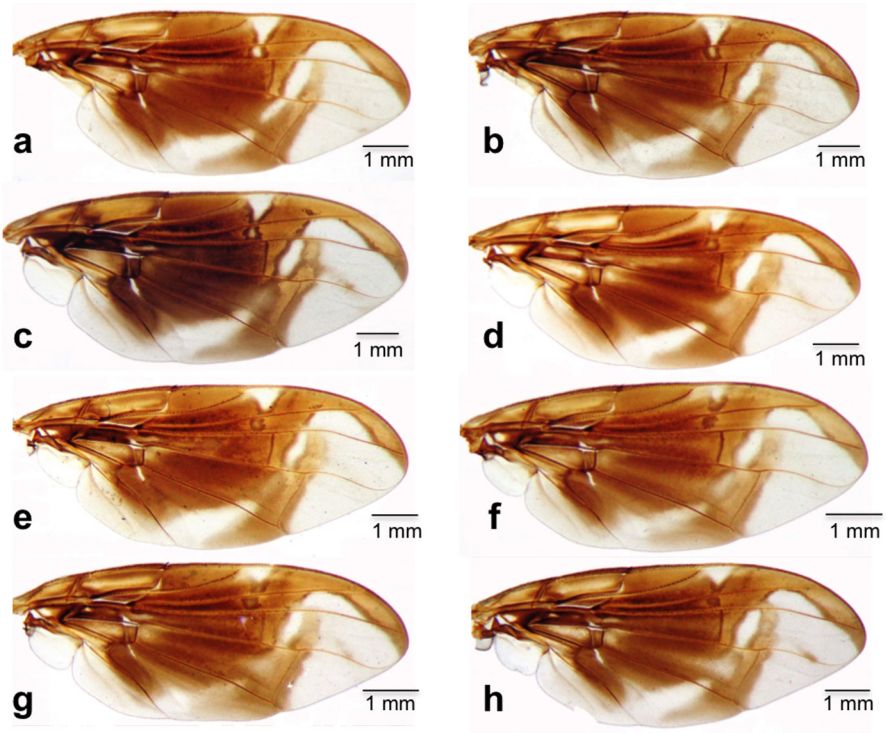
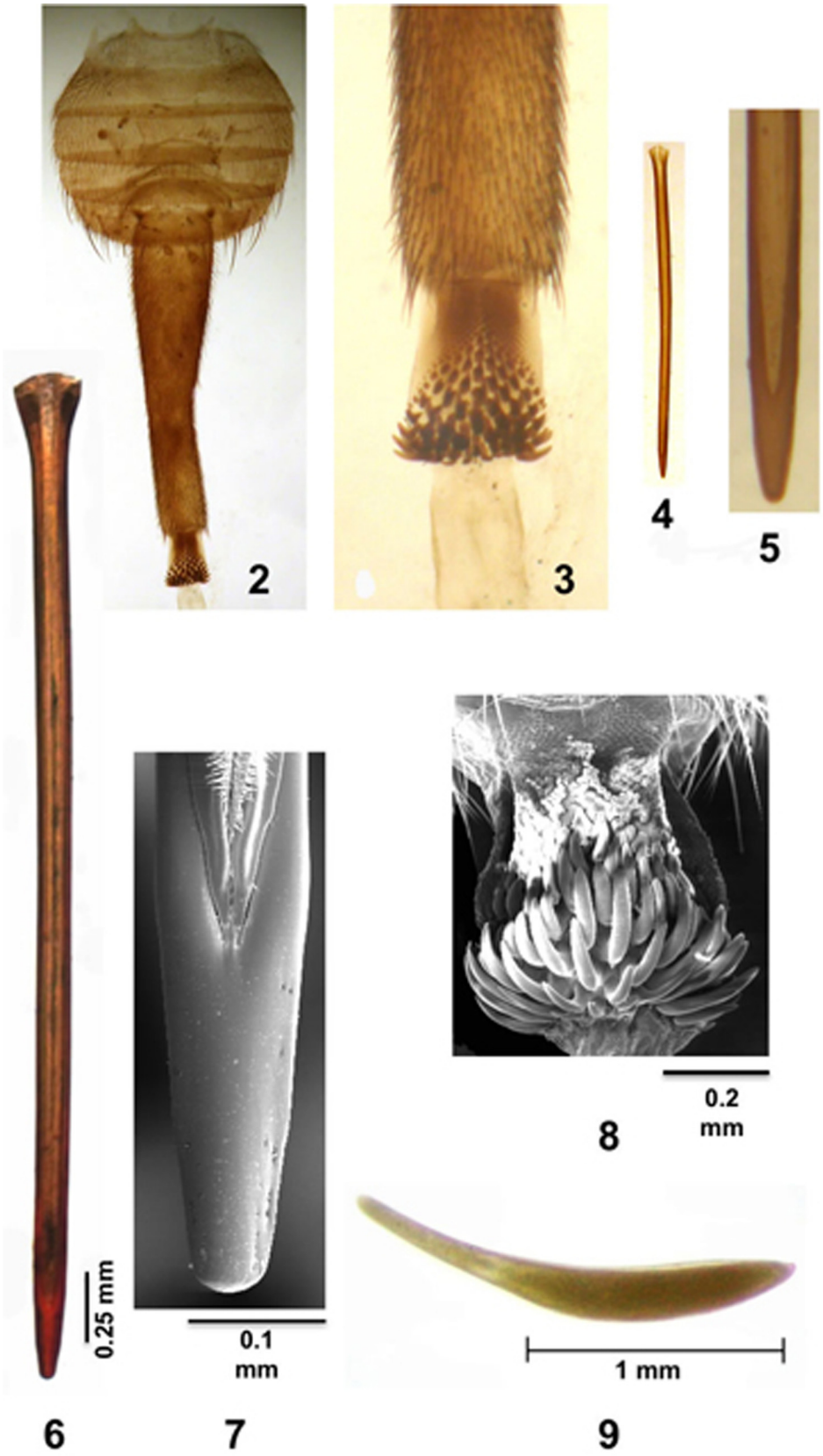



**FIGURE 1.** a–h. *Anastrepha bivittata*. Wings (Brazil: Linhares, ES).

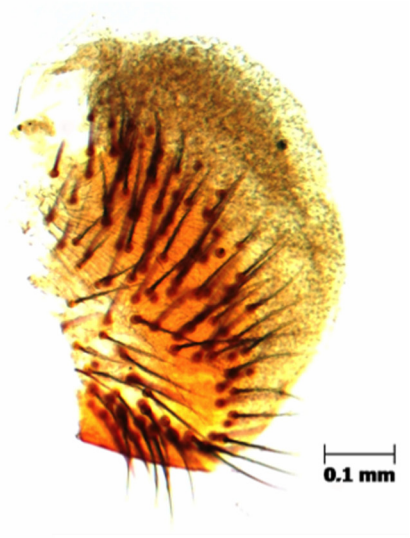
Abdomen (Figs. 2, 19, 20). Entirely orange, without brown markings.

Male terminalia. Epandrium (Fig. 10) with posterodorsal margin with moderate medial V-shaped indentation. Lateral surstylus medium (Fig. 11), extended beyond prensisetae by approximately 1.5 times length of prensiseta; in lateral view elongate, triangular and strongly tapered apically; in posterior view, apex acute, medial margin concave, lateral margin concave. Proctiger (Fig. 12) with ventral and lateral sclerotized areas connected. Phallus 5.22 mm long, 1.49 times as long as mesonotum; glans (Fig. 13) 0.61 mm long.

Female terminalia. Oviscape (Figs. 2, 19, 20) 3.10–4.20 [3.28] mm long, 1.03–1.17 [1.03] times as long as mesonotum, entirely orange; spiracle at basal 0.27–0.33 [0.33]. Eversible membrane (Figs. 2, 3, 8) with about 30 long, slender, hook-like dorsobasal denticles in triangular pattern. Aculeus (Figs. 4, 6) 3.13–4.26 [3.43] mm long, 0.96–1.07 [1.05] times oviscape length; base 0.21–0.28 [0.21] mm wide; shaft 0.095–0.14 [0.12] mm wide at midlength; tip (Figs. 5, 7) 0.22–0.30 [0.23] mm long, 0.07 [0.07] times aculeus length, 0.09–0.12 [0.11] mm wide, 2.09–2.73 [2.09] times as long as wide; in ventral view gradually tapered (angle changes very slightly near midlength), nonserrate, extreme apex relatively blunt; 0.06 mm wide in lateral view, 0.55 times ventral width. Spermathecae elongate ovoid (similar to Norrbom 1991, Fig. F), normally sclerotized. Egg white, slightly curved, 1.71 mm long in straight line, posterior third slender (Fig. 9).




**FIGURES 2–9.** *Anastrepha bivittata*: 2, abdomen (lectotype); 3 (lectotype) and 8 (SEM), eversible membrane; 4 (lectotype) and 6, aculeus, ventral; 5 (lectotype) and 7, aculeus tip, ventral; 9. egg (Brazil: Linhares, ES).



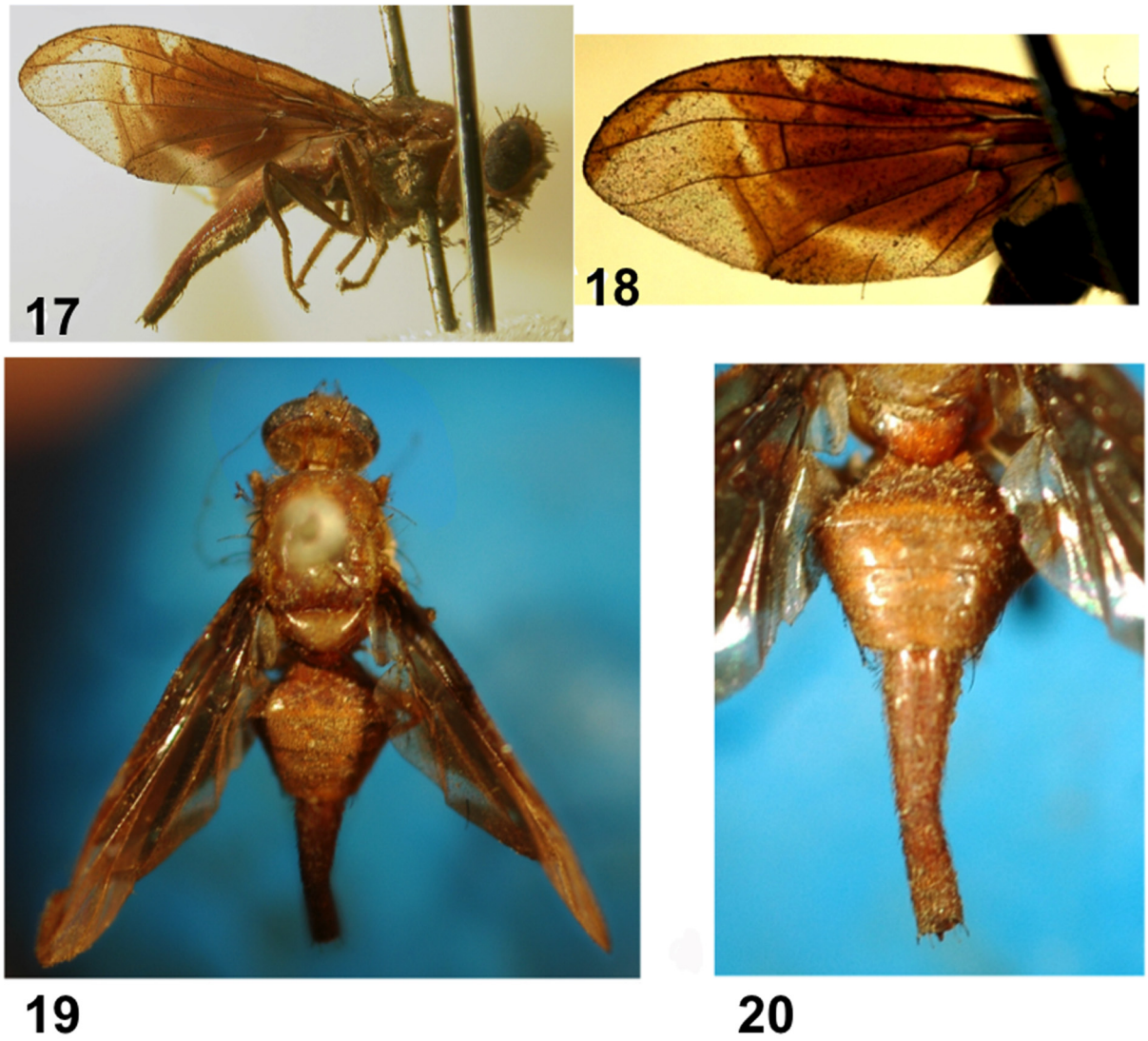

**FIGURES 10–13.** *Anastrepha bivittata* (male terminalia): 10–11, epandrium and surstyli, (posterior and lateral); 12, proctiger; 13, glans (Brazil: Linhares, ES).

**Hosts.** The only reported host plant is *Geissospermum laeve* (Vell.) Miers (Apocynaceae) (Uramoto *et al*. 2008).

**Distribution.** Brazil (Espírito Santo, Rio de Janeiro).

**Type data.** *Urophora bivittata* was described from an unstated number of female specimens from "Patria inconnue [country unknown]; je la dois á l'obligeance de M. de la Fresnaye [I owe it to the kindness of Monsieur de la Fresnaye]." Bezzi (1909) suggested that it may have originated in Brazil and may be deposited in the Museum National d'Histoire Naturelle, Paris (as "? Museo Parigi", which Greene (1934) mistakenly interpreted as the "Museum at Para, Brazil"), however, no specimens were located there during visits by Norrbom or other tephritid specialists. Although the types of many species described from Macquart's personal collection, which is deposited in the Museum d'Histoire Naturelle, Lille, have apparently been lost, a single female in relatively good condition is present (Norrbom *et al*. 1999a) in a box labeled "B Tephritidae" and "Dipteres, C. Macquart, B", in the third column beneath a blue bordered label with "U. bivittata" in Macquart's writing (Figs.15–17). This female (Figs. 18–21), here designated as lectotype to fix and stabilize the concept of this name, was examined briefly by Norrbom in 1990 and more extensively in 2006. It was mounted on a slender pin, which was deteriorating, and therefore was double-mounted on a block of styrofoam..


**FIGURES 14–16.** *Anastrepha bivittata*: 14, Macquart Collection (MHNLi) Box 2 Tephritidae; 15, lectotype in Box 2; 16, Macquart's label.




**FIGURES 17–20.** *Anastrepha bivittata* lectotype female: 17, lateral habitus; 18, wing; 19, dorsal habitus; 20, abdomen, dorsal.

*Anastrepha fumipennis* was described from two female syntypes in the Fundação Instituto Oswaldo Cruz, from Brazil: Rio de Janeiro: Manguinhos, collected 24 Apr 1917 and 7 Apr 1930; one from vial 475, with wing slide 1059, and the other from vial 837, with wing slide 1710 and the abdomen on slide 1887. The FIOC collection was examined by Zucchi in 1978, and only the syntype in vial 837 and the abdomen slide 1887 were found.

**Other specimens examined.** BRAZIL: Espírito Santo: Linhares, Mata Atlântica (Reserva Natural da Vale), McPhail trap, 9.IV.2002, D. S. Martins 1♀ (ESALQ). Idem, 11.III.2003, D. S. Martins, 2♀ (ESALQ). Idem, 18.III.2003, D. S. Martins, 1♀ (ESALQ). Idem, 22.II.2005, D. S. Martins, 1♀ (ESALQ). Idem, 25.IV.2006, D. S. Martins, 1♀ (ESALQ). Idem, 12.II.2008, D. S. Martins, 1♀ (ESALQ). Idem, 23.VIII.2010, D. S. Martins, 2♀ (ESALQ). Idem, 13.VIII.2013, D. S. Martins, 1♀ (ESALQ). Idem, 22.IV.2006, D. S. Martins, 1♂ (ESALQ).

**Comments.** The description of *Urophora bivittata* is brief and not very detailed, but it is accompanied by a dorsal habitus illustration including the wing, and a lateral view of the head (Tab 30, Fig. 3). Loew (1873) considered this species to probably belong in *Acrotoxa* Loew, now considered a synonym of *Anastrepha*, and it has been treated as an unrecognized species of the latter genus by subsequent specialists. Allowing for the usual inaccuracies in Macquart's illustrations (e.g., in the wing venation), the habitus is consistent with the species that has been known as *A. fumipennis* Lima. The wing pattern in particular is similar, including the entirely infuscated basal cells and the absence of the distal arm of the V-band, and the long, tubular oviscape is consistent with *Anastrepha* species. Lima (1934), in placing the description of *A. fumipennis* immediately after *A. bivittata*,

recognized this similarity, but considered them distinct based on oviscape length (shorter than the abdomen in *A. bivittata*, longer than abdomen in *A. fumipennis*). Examination of the lectotype female of *A. bivittata*, however, showed there to be no significant differences, and we therefore consider *A. fumipennis* to be a junior synonym of *A. bivittata*. We have not reexamined the syntypes of *A. fumipennis*, but Lima's description is sufficiently detailed to recognize their identity.

### *Anastrepha matertela* Zucchi

Figs. 21–24

*Anastrepha matertela* Zucchi, 1979:37 (description, wing, aculeus tip, Brazil, Bahia, Cruz das Almas); Zucchi, 1978 (in PhD thesis); Norrbom *et al*., 1999a:337 (in catalog); Norrbom *et al*., 1999b:80 (classification); Zucchi, 2000: 24 (in key); Uchôa & Pontes, 2011 (record in the state of Mato Grosso); Norrbom *et al*., 2012 (interactive key).

**Diagnosis.** This species can be recognized from other species of *Anastrepha* by the following combination of characters: subscutellum and mediotergite with dark brown mark on lateral margin; V-band proximal arm connected anteriorly to S-band along vein $R_{4+5}$ or in cell $r_{2+3}$; V-band distal arm broadly connected to proximal arm; aculeus 2.10–2.19 mm long; broadened at cloacal opening and gradually tapering distally, with medial constriction, serrated part 0.66–0.77 times length of aculeus tip. *A. matertela* resembles *A. fraterculus* (Wiedemann), but it differs in having the aculeus and the aculeus tip longer and the serrate part more than 0.6 times length of aculeus tip, with more numerous serrations.

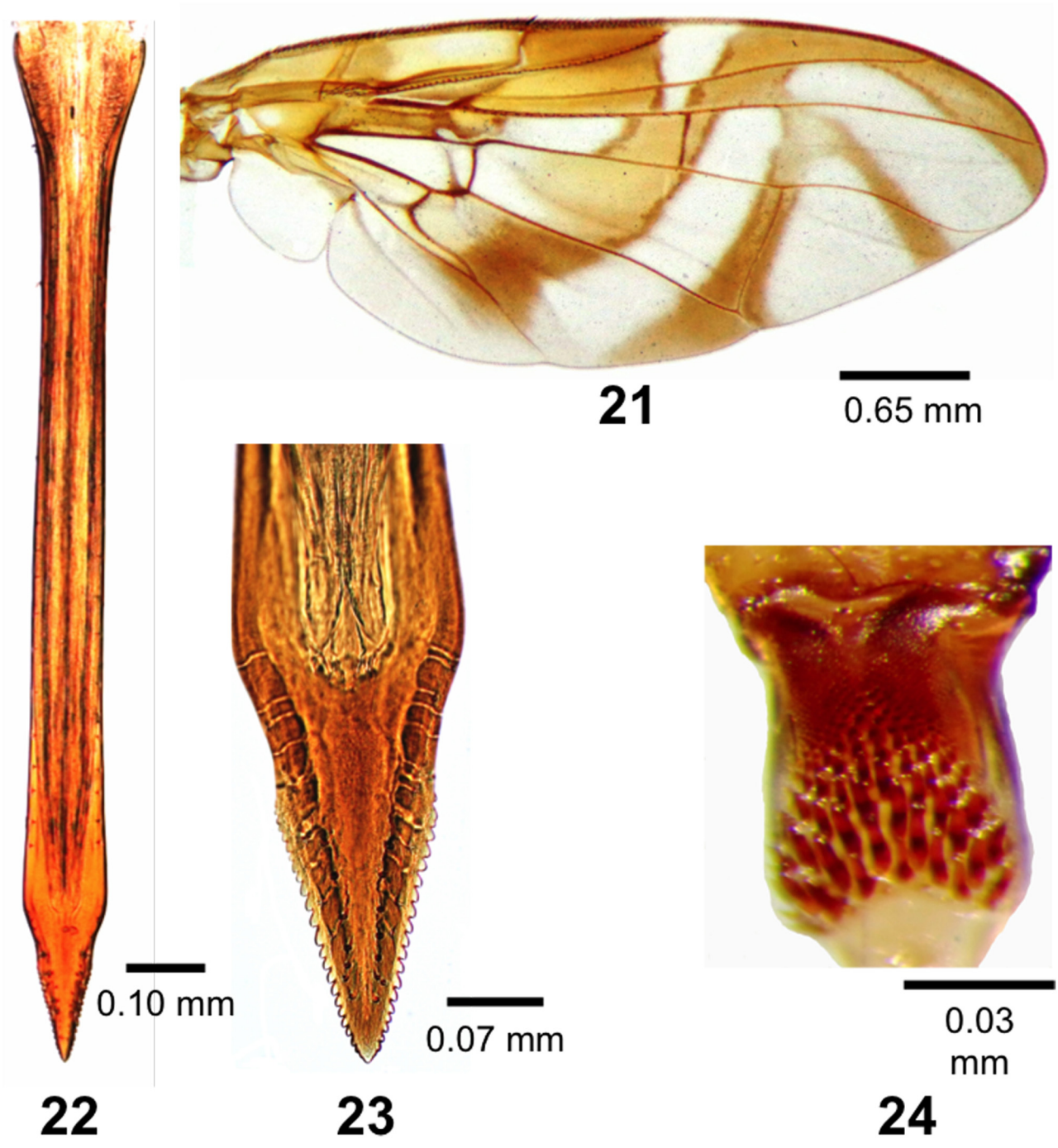
**Description.** Mostly yellow to orange. Setae dark brown.

Head. Yellow to orange except blackish ocellar tubercle. Facial carina, in profile, concave. 4–5 frontal setae; 2 orbital setae (1 in 1 of 6 specimens), posterior seta slightly more slender than anterior one; ocellar setae weak, small. Antenna not extended to ventral margin of face. Palpus in lateral view dorsally curved, evenly setulose.

Thorax. Integument mostly yellow to orange with following areas white: postpronotal lobe; medial vitta, slightly broaded posteriorly, but not extended laterally beyond acrostichal seta; paired sublateral scutal vitta from transverse suture to posterior margin, including base of intra-alar seta; and entire scutellum; dorsal margins of anepisternum and katepisternum. Postpronotal seta on posterior half of postpronotal lobe. Scuto-scutellar suture without darker band or spot. Subscutellum and mediotergite with dark brown mark on lateral margin. Mesonotum 3.5– 4.1 mm long; 2.5–2.7 mm wide. Postpronotal lobe, scutum and scutellum entirely microtrichose. Scutal setulae yellowish. Setae dark brown. Acrostichal, dorsocentral and intra-alar setae well developed. Katepisternal seta yellowish, moderately developed but weaker than postocellar seta. Legs entirely yellow to orange. Fore femur with posterodorsal and ventral rows of well developed setae.

Wing (Fig. 21). Length 7.56–8.58 mm, width 3.22–3.50 mm, ratio 2.34–2.45. Veins dark brown. Apex of vein $R_1$ at 0.53–0.5 wing length, proximal to level of anterior end of crossvein r-m. Cell c 1.07–1.11 times as long as pterostigma; pterostigma 3.21–3.72 times as long as wide. Ratio of costa length between apices of Sc and $R_1$/ length between apices of $R_1$ and $R_{2+3}$ 0.52–0.59. Crossvein r-m at 0.64–0.67 distance from bm-cu to dm-cu on vein M. Vein M moderately curved apically, not reaching S- band; cell $r_{4+5}$ 1.02–1.12 times as wide at apex as at level of dm-cu. Vein $R_{2+3}$ not sinuous. Cell bcu with distal lobe moderately long, length of bcu 1.63–1.75 times as long as anterior margin, lobe 0.86–0.95 times as long as vein $A_1$+$Cu_2$. Pattern mostly orange and moderate brown. Cell c mostly or entirely infuscated to subhyaline. C-band mostly orange; most of pterostigma moderate brown. C-band broadly extending to vein M in cell br along cell bm; covering base of cell $r_{2+3}$; orange area posterior to pterostigma broad, extending distally into cells $r_1$ and $r_{2+3}$ except narrow anterior margin distally in cell $r_1$ and narrow distal margin in both cells. C-band and S-band connected along vein $R_{4+5}$. Basal hyaline area between C-band and S-band extended to vein $R_{4+5}$. Cell bm entirely hyaline. Cell $r_1$ basomarginal hyaline spot triangular to rectangular, its apex aligned proximal to crossvein r-m. S-band mostly orange; base without posterior extensions in middle of cell $cu_1$ or in cell $a_1$; distal margin of band brown posteriorly in cells $r_{4+5}$, dm and $cu_1$; distal section brown along costal margin, distal part of cell $r_{2+3}$ and in cell $r_{4+5}$. S-band distal section at apex of vein $R_{2+3}$ 0.64–0.67 times width of cell $r_{2+3}$; without marginal hyaline band or spots in cell $r_{2+3}$ or near apices of $R_{2+3}$ or $R_{4+5}$. Subapical hyaline area in radial cells distal to r-m extending anteriorly to vein $R_{2+3}$. V- band

proximal arm as dark as apical half of S-band; extending 0.74–0.79 distance from apex of vein $Cu_1$ to apex of vein $A_1$+$Cu_2$; connected anteriorly to S-band along vein $R_{4+5}$ or in cell $r_{2+3}$. V-band distal arm complete; broadly connected to proximal arm. Apex of V-band not extended to vein M, hyaline area present between band and vein M. Area surrounding apex of lobe of cell bcu with microtrichia similar in density to area anterodistal to it along vein $Cu_1$. Area between S-band and V-band entirely microtrichose in cells dm and $cu_1$.




**FIGURES 21–24.** *Anastrepha matertela* Zucchi: 21, wing; 22, aculeus, ventral; 23, aculeus tip, ventral (holotype); 24, eversible membrane, denticles (Brazil: Linhares, ES).

Abdomen. Pale brown. Tergites without markings, entirely microtrichose; setulae pale brown.

Female terminalia (Figs. 22–24). Oviscape entirely yellow to orange brown; straight; entirely microtrichose; 2.53–2.75 mm long; length ratio (oviscape length/mesonotum length) 0.68–0.79; spiracle at basal 0.35–0.40. Eversible membrane (Fig. 24) with about 30 strong, hooklike denticles (all sclerotized) in subtriangular pattern.

Aculeus (Fig. 22) 2.10–2.19 mm long; in ventral view parallel-sided (0.13–0.18 mm wide at midlength), extreme base expanded (0.25–0.28 mm wide), broadened at cloacal opening (0.13–0.20 mm wide). Aculeus length/oviscape length 0.76–0.87. Aculeus tip (Fig. 23) 0.29–0.32 mm long, 0.13–0.15 times aculeus length; width at base 0.16–0.18 mm; lateral margins gradually tapering, but with medial constriction (nonserrate part with margins concave); distal 0.21–0.24 mm with 17–23 small serrations, serrated part 0.66–0.77 times length of tip; serrations not extending onto dorsal side basally, and separated by less than width of serration.

**Host.** Unknown.

**Distribution.** Known only from Brazil, states of Bahia and Mato Grosso.

**Type Data.** Holotype female, Brazil: Bahia: Cruz das Almas (Chapadinha), 10.vii.1977, McPhail trap, A. S. Nascimento (MZSP) (examined).

**Other specimens examined.** BRAZIL: Bahia: Una, Fazenda Aparecida, McPhail trap, 2002, M. A. L. Bittencourt (coll.), 4♀ (ESALQ), 1♀ (USNM).

### *Anastrepha tenella* Zucchi

Figs. 25–29

*Anastrepha tenella* Zucchi, 1979:40 (description, wing, aculeus tip, Brazil, Bahia, Cruz das Almas); Zucchi, 1978 (in PhD thesis); Norrbom *et al*., 1999a:337 (in catalog); Norrbom *et al*., 1999b:83 (classification); Zucchi 2000: 22 (in key); Norrbom *et al*. 2012 (interactive key).

**Diagnosis.** This species can be recognized from other species of *Anastrepha* by the following combination of characters: aculeus 1.49–1.50 mm long; in ventral view, lateral margins broadened at midlength and gradually tapering distally; aculeus tip 0.40–0.45 mm long, 0.27–0.28 times aculeus length, 0.09 mm wide; aculeus tip with 12–13 serrations, including 7 small sized serrations distally, and 5–6 poorly defined serrations basally.

**Description.** Mostly yellow to orange. Setae dark brown.

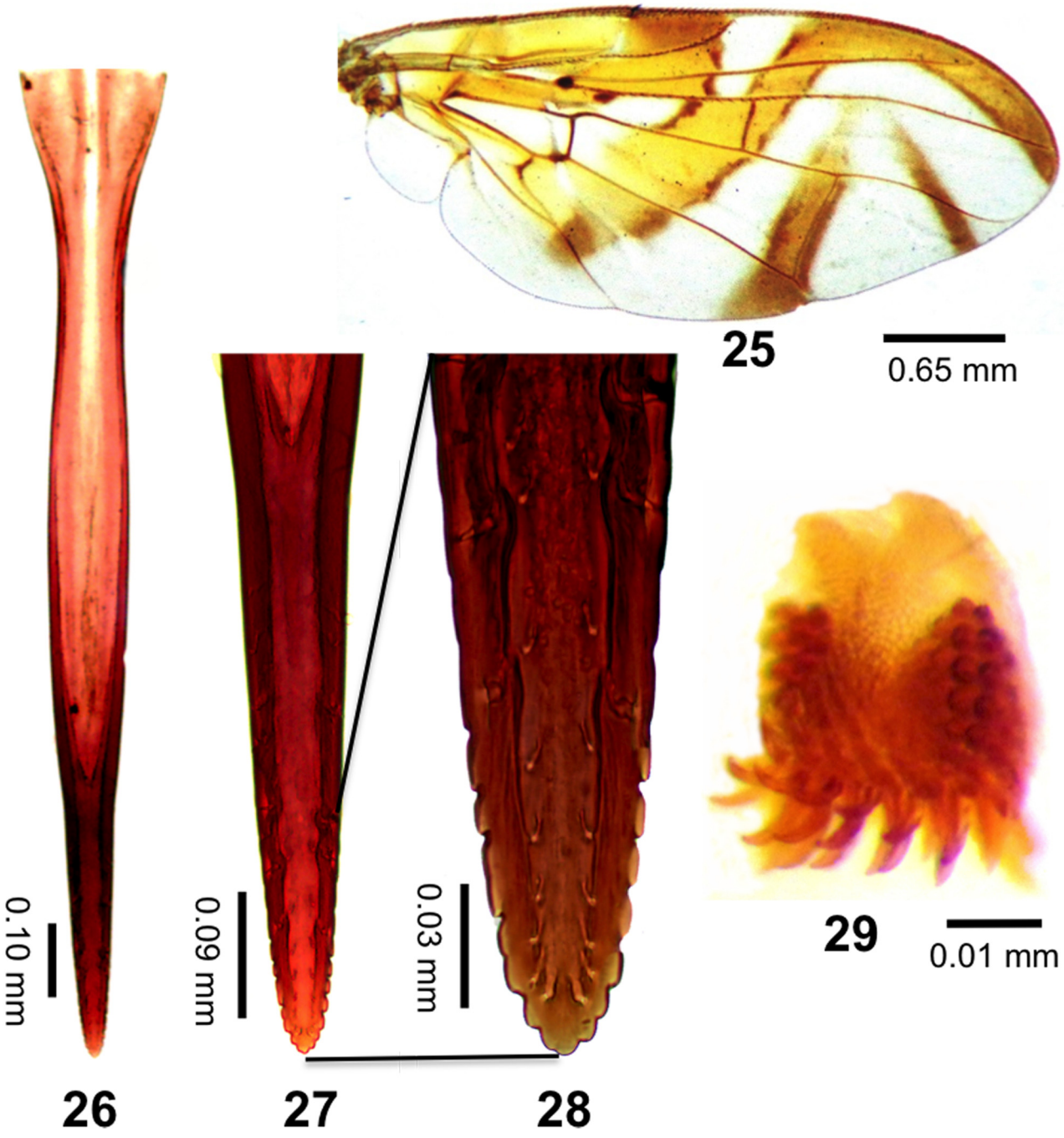
Head. Yellow to orange except blackish ocellar tubercle. Facial carina, in profile, concave. 3–4 frontal setae; 2 orbital setae, posterior seta slightly more slender than anterior one; ocellar setae weak, small. Antenna not extended to ventral margin of face. Palpus in lateral view dorsally curved, evenly setose.

Thorax. Integument mostly yellow to orange with following areas white: postpronotal lobe; medial vitta with posterior end ovoid (including acrostichal setae); paired sublateral scutal vitta from transverse suture to posterior margin, including base of intra-alar seta; and entire scutellum; dorsal margins of anepisternum and katepisternum. Postpronotal seta on posterior half of postpronotal lobe. Scuto-scutellar suture without darker band or spot. Subscutellum and mediotergite entirely yellow to orange. Mesonotum 2.5–2.96 mm long; 2.1 mm width. Postpronotal lobe, scutum and scutellum entirely microtrichose; scutal setulae yellowish. Setae dark brown. Acrostichal, dorsocentral and intra-alar setae well developed. Katepisternal seta yellowish, well developed but much smaller and weaker than anepimeral seta. Legs entirely yellow to orange. Fore femur with posterodorsal and ventral rows of well developed setae.

Wing (Fig. 25). Length 6.50–6.51 mm, width 2.82 mm, ratio 2.31. Veins dark brown. Apex of vein $R_1$ at 0.54 wing length, proximal to level of anterior end of crossvein r-m. Cell c 1.34 times as long as pterostigma, pterostigma 2.81–3.10 times as long as wide. Ratio of costa length between apices of Sc and $R_1$/length between apices of $R_1$ and $R_{2+3}$ 0.45. Crossvein r-m at 0.64 distance from bm-cu to dm-cu on vein M. Vein M moderately curved apically, not reaching S-band; cell $r_{4+5}$ 0.82–0.91 times as wide at apex as at level of dm-cu. Vein $R_{2+3}$ not sinuous. Cell bcu with distal lobe moderately long, length of bcu 1.56–1.57 time as long as anterior margin, lobe 0.68–0.71 time as long as vein $A_1$+$Cu_2$. Pattern mostly orange and moderate brown. Cell c mostly or entirely infuscated to subhyaline. C-band mostly orange; most of pterostigma moderately brown. C-band broadly extending to vein M in cell br along cell bm; covering base of cell $r_{2+3}$; orange area posterior to pterostigma broad, extending distally into cells $r_1$ and $r_{2+3}$, except anterior margin distally in cell $r_1$ and narrow distal margin in both cells. C-band and S-band connected along vein $R_{4+5}$. Basal hyaline area between C-band and S-band extended to vein $R_{4+5}$. Cell bm entirely hyaline. Cell $r_1$ basomarginal hyaline spot triangular to quadrate, its apex aligned proximal to crossvein r-m. S-band mostly orange; base without posterior extensions in middle of cell $cu_1$ or in cell $a_1$; distal margin of band brown posteriorly in cells $r_{4+5}$, dm cell $cu_1$; distal section brown along costal margin, distal part of cell $r_{2+3}$ and

in cell $r_{4+5}$. S-band distal section at apex of vein $R_{2+3}$ 0.54–0.57 times width of cell $r_{2+3}$; without marginal hyaline band or spots in cell $r_{2+3}$ or near apices of $R_{2+3}$ or $R_{4+5}$. Subapical hyaline area in radial cells distal to r-m extending anteriorly to vein $R_{2+3}$. V-band proximal arm as dark as apical half of S-band; extending 0.52 distance from apex of vein $Cu_1$ to apex of vein $A_1$+$Cu_2$, not connected anteriorly to S-band. V-band distal arm complete; connected to proximal arm. Apex of V-band not ext ended to vein M, hyaline area present between band and vein M. Area surrounding apex of lobe of cell bcu with microtrichia similar in density to area anterodistal to it along vein $Cu_1$. Area between S-band and V-band entirely microtrichose in cells dm and $cu_1$.

Abdomen. Pale brown. Tergites without markings, entirely microtrichose; setulae pale brown.




**FIGURES 25–29.** *Anastrepha tenella* Zucchi: 25, wing; 26, aculeus, ventral; 27–28, aculeus tip, ventral; 29, eversible membrane (holotype) (Brazil: Linhares, ES).

Female terminalia (Figs. 26–29). Oviscape entirely yellow to orange brown; straight; entirely microtrichose; 2.0 mm long; length ratio (oviscape length/mesonotum length) 0.8; spiracle at basal 0.38. Eversible membrane (Fig. 29) with 35–50 denticles (all sclerotized) in triangular to semicircular or suboval pattern. Aculeus (Fig. 26) 1.49–1.50 mm long; in ventral view extreme base expanded (0.21 mm wide); lateral margins broadened at midlength and distal gradually tapering. Aculeus length/oviscape length 0.75. Aculeus tip (Figs. 27, 28) 0.17–0.18 mm long. Aculeus tip length/aculeus length 0.27–0.28; width at base 0.09 mm, 4.45–4.78 times as long as wide; lateral margins gradually tapering; distal 0.17–0.18 mm with 12–13 serrations (7 small sized serrations distally, and 5–6 poorly defined serrations basally); serrate part not extending onto dorsal side basally, serrated part 0.40–0.45 times length of tip. Spermathecae sclerotized.

**Host.** Unknown.

**Distribution.** Known only from Brazil, state of Bahia.

**Type Data.** Holotype female, Brazil: Bahia: Cruz das Almas, McPhail trap, no collection date, A. S. Nascimento (coll), (MZSP) (examined).

**Other specimen examined.** BRAZIL: Bahia: Itaberaba, McPhail trap, 02.VI.2009, M. C. A. Nunes, 1♀ (ESALQ).

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