

The *Aedes (Aedimorphus) Domesticus* Group (Diptera, Culicidae).  
I. New species, descriptions of *Aedes bambiotai* and *Aedes bancoi*.<sup>1,2</sup>

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ABSTRACT

*Aedes bambiotai* n. sp. and *Ae. bancoi* n. sp. are described using male and female specimens that were collected in primary forest areas of the Central African Republic and the Republic of Ivory Coast. They are related to species of the Domesticus Group as defined by Edwards (1942).

Key words : Ethiopian Region - Taxonomy - *Aedes Aedimorphus* - Domesticus Group - *Aedes bambiotai* - *Aedes bancoi*.

RÉSUMÉ

Ces deux espèces forestières, *Aedes bambiotai* n. sp. et *Ae. bancoi* n. sp. ont été collectées en Afrique centrale et en Afrique de l'Ouest. Elles sont apparentées au groupe Domesticus (Edwards, 1942) dont elles ont toutes les caractéristiques. Ce groupe compte maintenant 7 espèces.

Mots-clés : Région éthiopienne - Taxonomie - *Aedes Aedimorphus* - Groupe Domesticus - *Aedes bambiotai* - *Aedes bancoi*.

INTRODUCTION

Recent field collections of mosquitoes in Ivory Coast produced a series of six species of *Aedes (Aedimorphus) Domesticus* Group. Two of these species confirm previous observations of two suspected new species collected in 1970 and 1973 in Central African Republic (Geoffroy, 1982).

The external ornamentation of the male and female adults exhibit very few differences from other species of the group. However, male terminalia differ greatly.

Adults are found in low forest vegetation, while the immatures are usually collected from small, limpid water holes or depressions in the soil, often lined with dead leaves. The immature and adult habitats of these ground pool species are similar for both countries.

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## METHODS

The measurements of proboscis, palpus, legs and terminalia are taken from holotypes only. Body measurements are in millimeters, except terminalia and egg which are in microns ( $\mu$ ). The adults and eggs were examined with the help of a scanning electron microscope. Nomenclature used in these descriptions follows Harbach and Knight (1980).

Holotypes and half of the paratypes are deposited in the Smithsonian Institution, Washington, D.C. 20560 USA. The other half of the paratypes are deposited in ORSTOM Faunistic Center in Bondy, 93140 France.

### *Aedes (Aedimorphus) bambiotai* n. sp.

Specimens were captured while sweeping low vegetation in degraded primary forest, close to the village of Danzia, on May 2, 1970, in the Bambio region of the Central African Republic. Later, in June and July 1986, similar collections were made using the same technique in degraded primary forest of Banco and Adiopodoume near Abidjan, as well as in the primary forest of Tai National Park of the Republic of Ivory Coast. Hence, the specific name is a noun in apposition derived by combining the two very distinct geographic localities, Bambio and Tai.

## MALE

**Head** : Proboscis and antennae blackish; pedicel bare, dark brown; palpus blackish, with lower face lighter; middle of third palpomere with small light spot; palpus longer than proboscis by approximately length of palpomeres; lengths : proboscis 2.18, Palpomeres 3, 4, 5 : 1.85, 0.28, 0.28; posterodorsal aspect on sides of coronal suture with area of light narrow and erect forked scales in mosaic of light and brownish flat scales; broad flat silvery white ocular scales at margin of ocular line and spot of flat blackish scales on sides; silvery white scales not quite meeting in middle front which is covered by dark brown scales.

**Thorax** : Scutum reddish brown, sparsely covered with narrow brown dark scales; anterolaterally with large spot of oblong or lozenge shaped broad flat silvery white scales, approximately 0.38 x 0.15 mm, situated between scutal angle and the anterior middle line; paratergite bare; lobes of scutellum covered with broad flat silvery white scales; pleuron yellowish brown with 3 spots of silvery white scales on upper and lower mesokatepisternum (MkSU) and upper mesepimeron (MeSU); small spot of similar scales present on upper proepisternal area (PeSU).

**Wing** : Length: 2.83; veins covered with blackish brown scales; base of costa with small spot of silvery white scales; capitellum of halter blackish brown, pedicel lighter.

**Legs** : Black.

**Foreleg** : Coxa with small basal spot of silvery white scales, followed by some dark brownish scales; femur blackish with small apical silvery white spot; tibia with dorso-apical silvery white spot no longer than 0.17 length of segment; tarsus black, without

row of acute setae on posterior surface of first and second tarsomeres like *Ae. domesticus* Theobald, 1901, or *Ae. ovazzai* Hamon and Adam, 1959; lengths : F 1.50, T 1.68, t1 1.00, t2 0.38, t3 0.20, t4 0.08, t5 0.18.

**Midleg** : Femur with apical spot of silvery white scales and internal surface lighter; apex of tibia with silvery white spot of scales no longer than 0.14 length of segment; tarsus black; lengths : F 1.75, T 1.95, t1 1.45, t2 0.65, t3 0.38, t4 0.13, t5 0.18.

**Hindleg** : Femur with apical silvery white spot 0.11 length of segment; preapical spot of silvery white scales longer than wide, positioned on basal 0.66; anterior and posterior surfaces progressively lighter towards base; light acute scales on the inside surface of tibia and base of first tarsomere; lengths : F 1.75, T 1.97, t1 1.63, t2 0.95, t3 0.70, t4 0.45, t5 0.20.

**Abdomen** : Terga III-VI with basal bands of silvery white scales; tergum VII with latero-basal spots; tergum VIII completely silvery white; sterna with broad basal bands of silvery white scales.

**Terminalia** (Fig. 1): Close in general shape to that of *Ae. longiseta* Edwards, 1936, but showing very clear differences in the gonostylus, basal mesal lobe and aedeagus.

**Gonocoxite**: Small [length (L) 300 mu, width (W) 145 mu]. Sternal surface partially covered with scales and strong setae inserted on lateral surface; dorsal surface with small thick setae (30 mu); apex of basal mesal lobe with 2 short setae, terminal one thicker.

**Gonostylus** : Club-shaped, short and stout, markedly expanded apically (L 175, W.min. 20, max. 65), apical expanded part with small lateral appendage, (L 18-20), very slender, with an apical short seta of 9 mu; between leaf (27 mu) and appendage are 8 to 10 very distinct and typically small flattened apically hooked setae with mean length of 11 mu; internal 0.5 of expanded apical part with 7 simple setae, each about 18 mu.

**Aedeagus** : Short and relatively simple (90 mu), each side with 5 to 6 denticles which are smaller than those in *Ae. longiseta*; paramere slender and shaped differently than that of *Ae. longiseta*; tergum IX has 2 apicolateral areas of 6 setae each, arranged in several lines.

## FEMALE

The external ornamentation of the female is very similar to the male, but differs by the following details :

**Head** : Vertex with erect forked dark brown and narrow golden yellow scales; broad silvery white scales adjoining eye, with spot of flat dark scales towards sides; palpus, antenna and proboscis blackish; palpus 0.38, proboscis 2.13.

**Thorax** : General ornamentation similar to male; however, size of anterolateral pair of silvery white scale patches on scutum smaller (0.15 x 0.10), with narrow golden yellow scales anteromesally.

**Wing** : Similar to male; length : 3.20.

**Legs** : Similar to male; apex of ventral surface of tibia III and base of first tarsomere with acute light scales.

Length: F1 1.58, T1 1.68, t11 1.00, t12 0.43, t13 0.25, t14 0.15, t15 0.15  
F2 1.75, T2 1.90, t21 1.25, t22 0.55, t23 0.38, t24 0.18, t25 0.15  
F3 1.78, T3 1.88, t31 1.45, t32 0.75, t33 0.65, t34 0.38, t35 0.25

**Abdomen** : Black, terga without bands; with basolateral silvery white scales on tergum VI and two basolateral spots of similar scales on tergum VII; sterna II-VII with basal band of light and silvery white scales.

**Terminalia** (Fig. 2. A: Ventral aspect, B: Dorsal aspect, C: Spermathecal capsules, D: Sternum VIII, E: Tergum VIII): 3 spherical spermathecal capsules, 1 large and 2 slightly smaller ones (diameters 75, 65 and 57  $\mu$ ). Tergum IX bilobed with 5 to 6 setae, (30  $\mu$ ) on each lobe. Insula tongue-like covered with microsetae. Lower and upper vaginal lip narrow, covered with microsetae. Postgenital lobes (60  $\mu$ ) with 2 basal, 2 median and 3 to 4 apical setae (70  $\mu$  for apical). Cercus (175 x 50  $\mu$ ), covered with small setae and numerous setae on dorsal and lateral surfaces.

### EGG (Fig. 3)

Eggs of this species are spindle shaped with a chorionic decoration closely resembling that described by Reinert (1972) for *Ae. domesticus*. [identification uncertain - females of this group currently cannot be separated]. The eggs of *Ae. bambiotai* are very small (L 478, W 108), in comparison with those of presumptive *Ae. domesticus* of the Adiopodoume forest (L 965, W 273) or those of Reinert (L 885-855, W 255-242). The ultrastructure of the chorion shows a general pattern of a network of hexagonal cells. Both ends with clearly visible reticulation of hexagonal and polygonal cells on 0.18 of the length. Ventral surface with eclipsed reticulation, composed of small transverse cells, about 3.00 as long as wide. Dorsal surface with well visible reticulations of long longitudinal cells, often without cross vein reticulations. Colour metallic black.

### MATERIAL

#### Type data :

Holotype male labeled CI.RF1-01, 23/06/86; 33 paratype males labeled CI.RF7-1 to 27, 28/06/86, CI.RF12-1 to 6, 4/07/86.

Allotype female labeled CI.RF6-70, 27/06/86; 5 paratype females labeled CI.RF6-1 to 5, 27/06/86.

#### Other material examined :

One male from Central African Republic, labeled RCA 2559, 02/05/70.

### *Aedes (Aedimorphus) bancoi* n. sp.

Males of this species were captured sweeping low vegetation in the forest near Berberati in Central African Republic on September 15, 1973 and later, in June and July 1986 with the same technique in the forest of Banco near Abidjan and Tai National Park of Ivory Coast Republic. The female, larva, pupa and egg are unknown. The specific name is a noun in apposition derived from the holotype locality.

**Head** : Interocular space and both sides of coronal suture with broad flat silvery white, light brownish and narrow pale yellow scales; Numerous yellow scales share the occipital region with erect forked, brownish scales; Vertex covered with silvery white scales, except spot of broad and flat brownish scales on each side of eyes; pedicel bare and brown; proboscis and palpus blackish; Middle of first palpomere with light scales; lengths : proboscis : 2.13, palpomeres 3: 1.66, 4: 0.25, 5: 0.25.

**Thorax** : General color reddish brown, covered with dark brown microtrichia; dorso-central, posterior and supraalar setae highly developed; scutum with well developed anterolateral ovoid spot of broad flat silvery white scales, approximately 0.14 x 0.21 mm in size; paratergite bare; pleuron with 3 small patches, upper and lower mesokatepisternal and upper mesepimeral of broad flat silvery white scales; with similar scales on proepisternum; lobes of scutellum covered with broad flat silvery white scales.

**Wing** : length : 2.75; veins covered with blackish brown scales; base of costa with small spot of silvery white scales; capitellum of halter dark brown, pedicel lighter.

**Legs** : Black.

**Foreleg** : Coxa with basal spot of silvery white scales followed by a few blackish scales; femur black with ventral surface lighter and small apical spot of silvery white scales; tibia black with apical silvery white spot on dorsal surface, 0.14 length of tibia; tarsus black; lengths : F 1.68, T 1.70, t1 1.05, t2 0.35, t3 0.20, t4 0.10, t5 0.20.

**Midleg** : Coxa without scales; femur black, ventral surface lighter, with dorsoapical spot of silvery white scales, 0.10 length of femur; tibia black with line of light scales on ventral surface and dorsoapical spot of silvery white scales, 0.10 length of tibia; tarsus black; lengths : F 1.88, T 1.95, t1 1.38, t2 0.55, t3 0.33, t4 0.10, t5 0.18.

**Hindleg** : Coxa without scale; femur with preapical spot of silvery white scales 0.75 from base, size, L 0.17, W 0.66 of femur; femur internal surface whitish on basal 0.66; external surface with anterior black, posterior lighter between base and preapical spot, and black between silvery white preapical and apical spot; apical spot about 0.11 length of femur; tibia black with dorsoapical spot of silvery white scales approximately 0.28 length of segment, internal surface black with decoration of golden yellow thin acute scales on apical 0.28; line of similar scales on basal 0.33 of first hind tarsomere; tarsus black; lengths : F 1.80, T 1.95, t1 1.50, t2 0.83, t3 0.65, t4 0.38, t5 0.25

**Abdomen** : Black. Terga III-VI with complete basal bands of silvery white scales; tergum VII with basolateral patches of similar scales and VIII completely silvery white; sterna with basal bands of lighter and silvery white scales.

**Terminalia** (Fig. 4): Closely resembles *Ae. leptolabis* Edwards, 1936, but principally differing by the shape and ornamentation of the gonostylus and aedeagus. For comparison we give a representation of typical *Ae. leptolabis* (Fig. 5), specimens labeled RCA-2801-BG, captured in Botembi forest of Central African Republic.

**Gonocoxite** : Small size (325 mu). Sternal surface covered with scales, tergal surface with relatively short thick setae (20 to 40 mu) forming lines towards ventrolateral margin; apical 0.5 of ventrolateral margin with about 10 setae of 175 mu length; basal mesal lobe with 2 principal setae 25 mu, stouter than other setae.

**Gonostylus** : slender, short and apically club-shaped (L 200 mu. W min. 10 mu.); apicolateral appendage (21 mu) slightly curved and very well separated; much longer than that of *leptolabis*; apex of gonostylus with 3 thin hooked setae (17 mu) between appendage and leaf.

Aedeagus : Short (85  $\mu$ ), simply shaped with 5 to 6 strong denticles on each side, as opposed to *leptolabis* which has very often longer, more curved apical denticles; tergum IX with 2 groups of 6 to 8 apicolateral setae on several lines.

## MATERIAL

### Type data :

Holotype male labeled CI.RF12-44, 04/07/86.

5 paratype males labeled : CI.RF7-17, 28/06/86, CI.RF12-43, 04/07/86, CI.RF12-58, 04/07/86, CI.RF12-59, 04/07/86, CI.RF12-60, 04/07/86.

### Other material examined :

One male of Central African Republic, labeled RCA-1494-BG, 15/09/73.

## DISCUSSION

These two species are members of the Domesticus Group, Edwards (1942) which presently comprises seven species : *Ae. domesticus*, *Ae. leptolabis*, *Ae. longiseta*, *Ae. ovazzai*, *Ae. tauffliebi* Rickenbach and Ferrara, 1965, *Ae. bambiotai* n. sp. and *Ae. bancoi* n. sp.. They share the same combination of external characters and they form a very homogeneous group of remarkably similar mosquitoes, especially the females, which for the moment, cannot be separated with absolute certainty.

On the contrary, the males are very easy to separate with help of the terminalia. For complete illustrations of this group, we give in Fig. 6 the drawing of gonostylus of *Ae. domesticus*, specimen BGRF3/5CI, *Ae. ovazzai*, specimen BGRF12/40CI, *Ae. longiseta* specimen BGRF12/42CI and *Ae. tauffliebi*, specimen RCA-2169-BG.

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## LEGEND

Fig.1. *Ae. bambiotai*. General aspect of gonocoxite.

Fig.2. *Ae. bambiotai*. Lateral aspect of egg.

Fig.3. *Ae. bambiotai* Female terminalia. a)b)c)d)e)

Fig.4. *Ae. bancoi*. General aspect of gonocoxite.

Fig.5. *Ae. leptolabis*. General aspect of gonocoxite.

Fig.6. Gonostylus of *Ae. domesticus*, *Ae. ovazzai*, *Ae. longiseta*, *Ae. tauffliebi*.

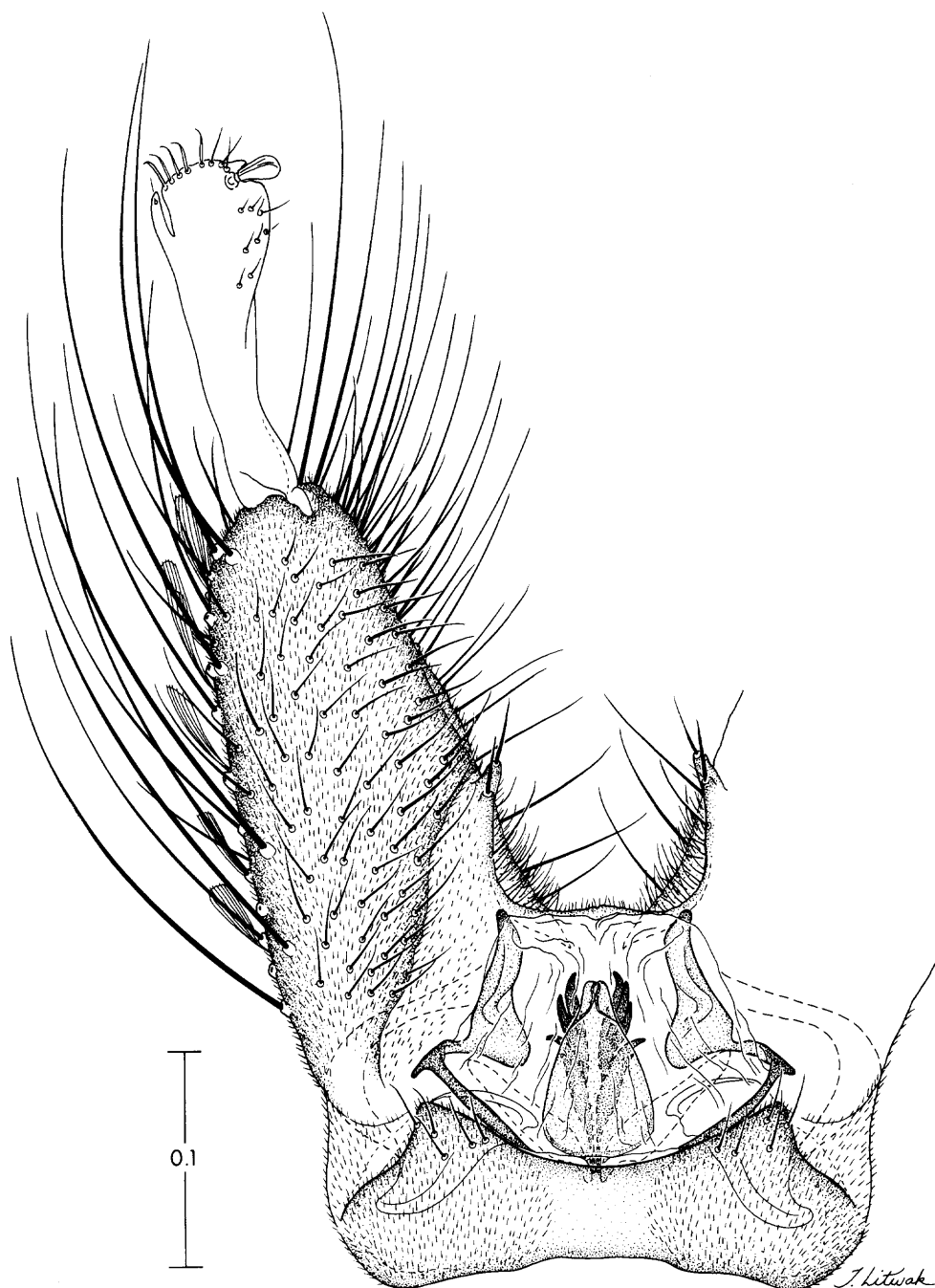
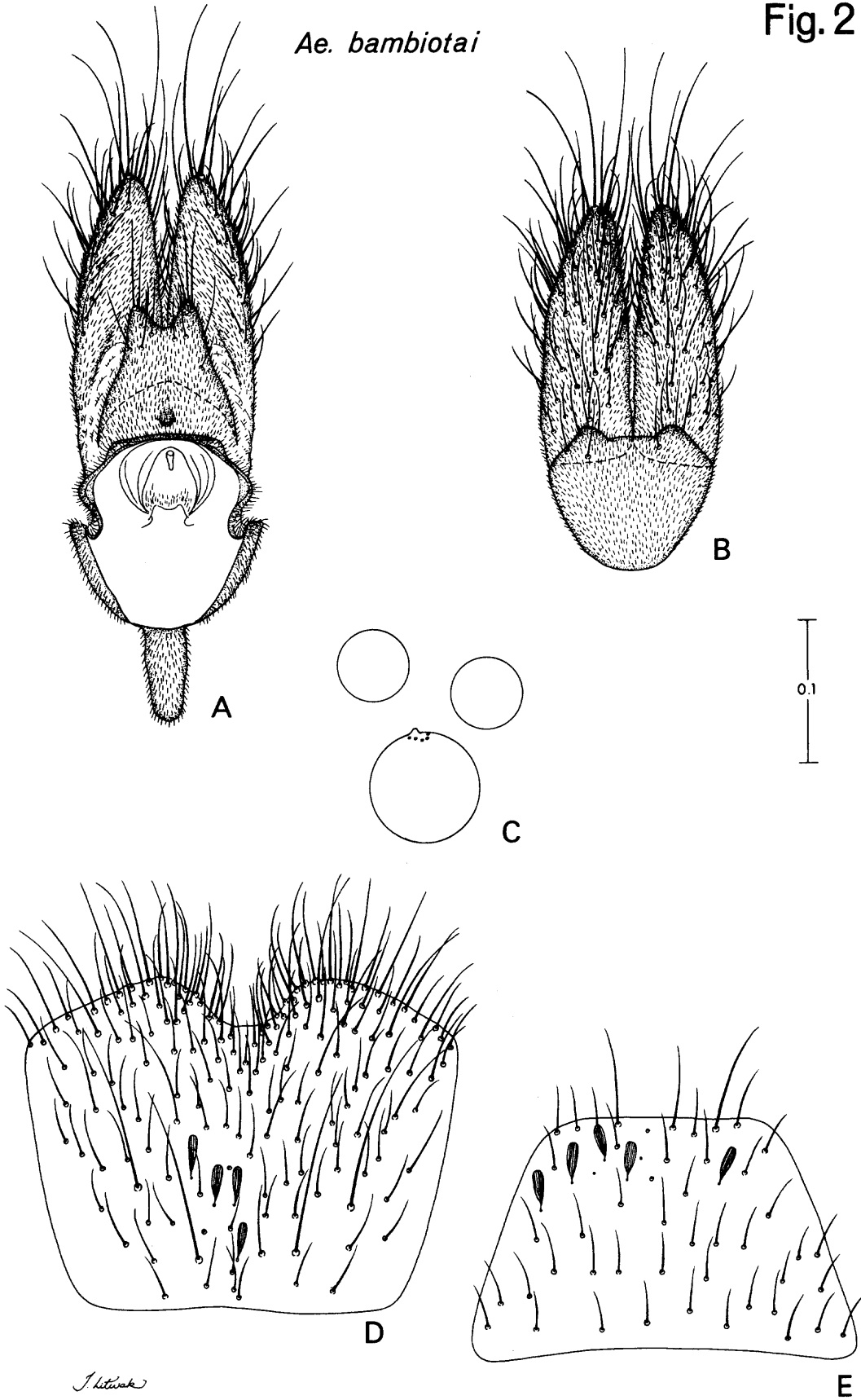


Fig.1



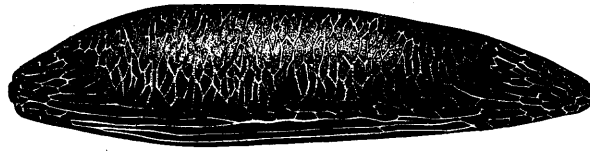
Fig. 2

*Ae. bambiotai*



*J. Kitawaka*

Fig. 3



— 0.1 —

*Ae. bambiotai*

Fig. 4

*Ae. bancoi*

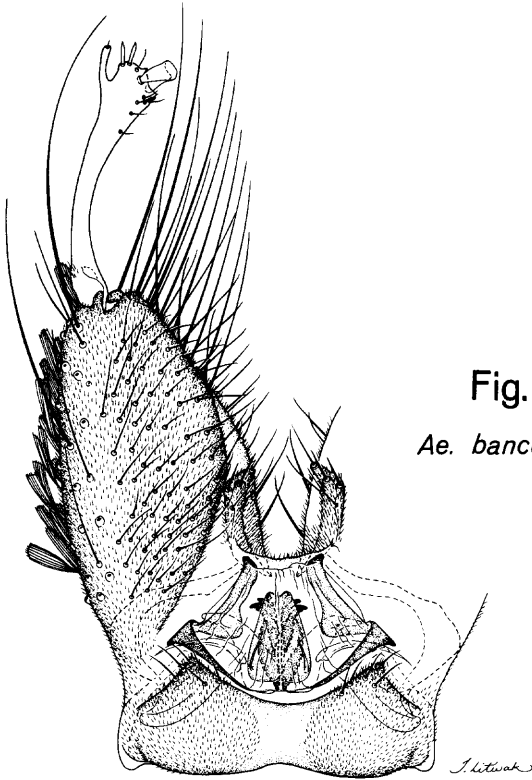


Fig. 5

*Ae. leptolabis*

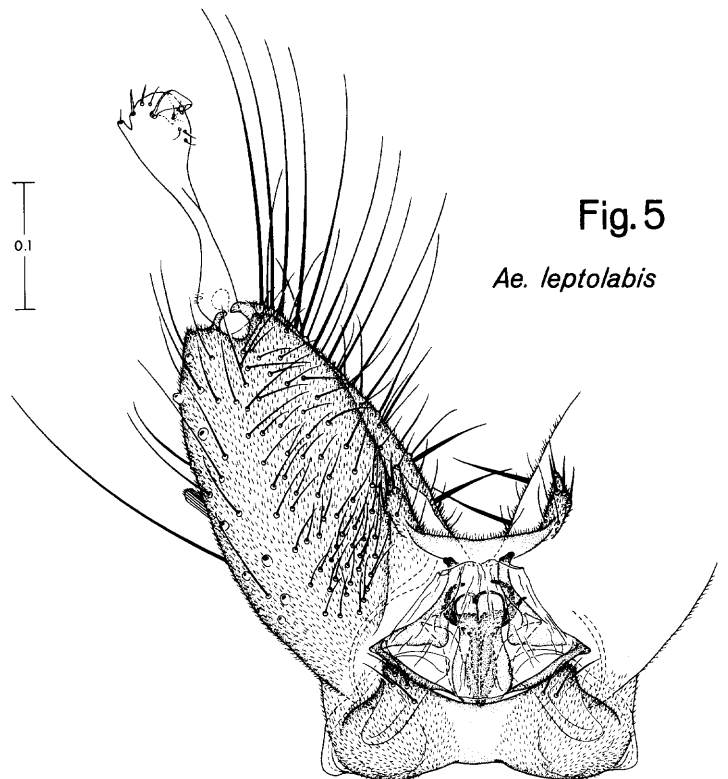
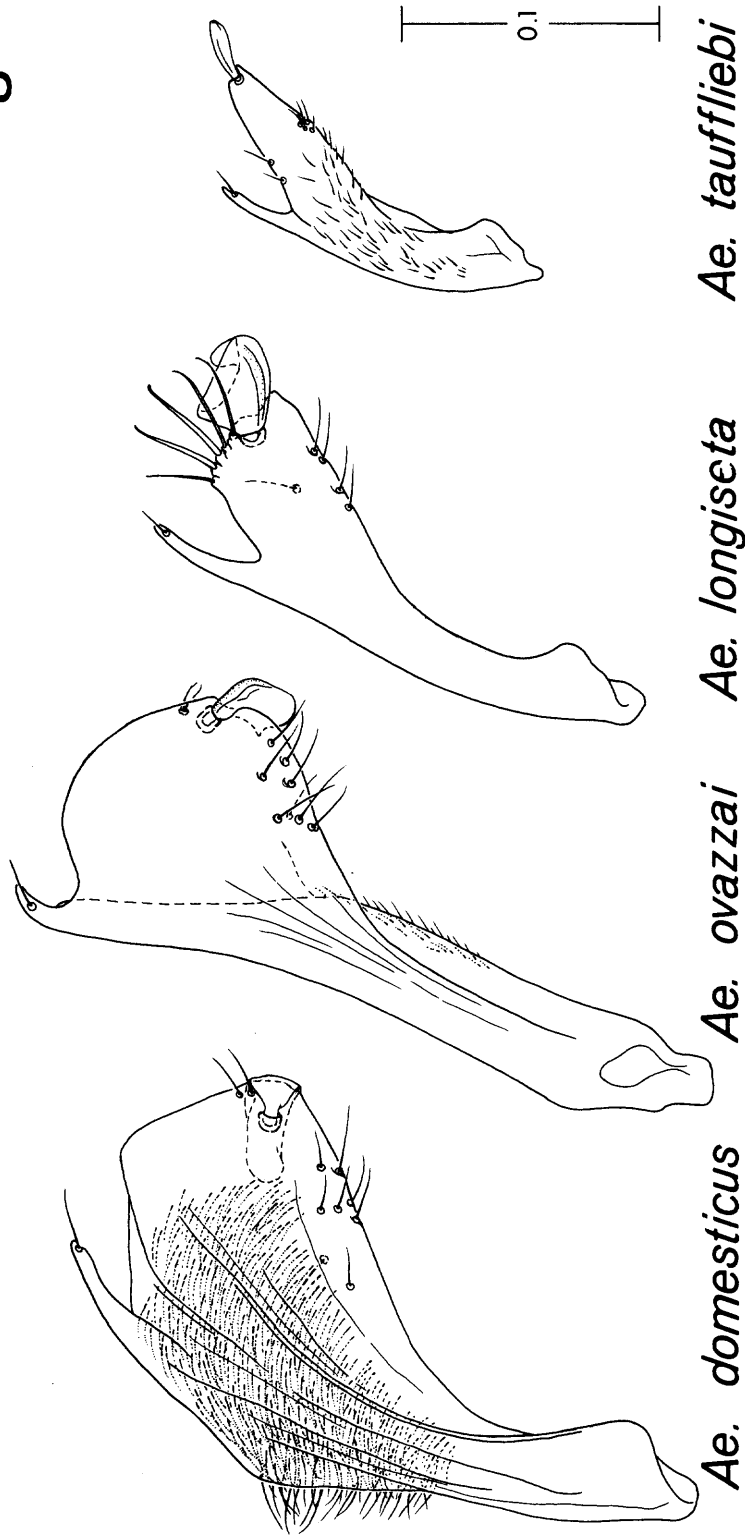


Fig. 6



*Ae. tauffliebi*

*Ae. longiseta*

*Ae. ovazzai*

*Ae. domesticus*