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Male and Female Genitalia of *Toxorhynchites amboinensis* (Diptera: Culicidae)

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ABSTRACT. Male and female genitalic components of *Toxorhynchites (Toxorhynchites) amboinensis* are illustrated. An additional series of illustrations provide interpretive composites of the male and female genitalia.

The following illustrations are intended as an aid to users of a series of biosystematic studies of *Toxorhynchites*. Descriptions and illustrations of genitalia usually are based on slide-mounted preparations and are difficult to interpret on a two-dimensional basis.

This study was initially planned to provide us with a better understanding of the genitalia of *Toxorhynchites*, which, superficially, are remarkably uniform throughout their nearly world-wide distribution. A series of acetate overlays were prepared and provided a two-dimensional interpretation of views of the genitalia as various components of the slide-mounted preparations were brought into focus. Since this technique was very successful for our purposes, the following illustrations were prepared as an interpretive aid.

Live males and females of *Toxorhynchites (Toxorhynchites) amboinensis* (Doleschall) were obtained from the Pacific Biomedical Research Center, University of Hawaii. The origin of this colony is detailed in Steffan et al. (1980).

The genitalia were dissected in physiological saline, cleared in a 10% potassium hydroxide (KOH) solution, washed in water and transferred to glycerol. The genitalia were studied during all phases of preparation, and initial drawings were made from the glycerol preparations. Specimens then were mounted in Euparal, following the techniques described in Belkin (1962), for final detailed examination. Illustrations of the various genital components were transferred to acetate overlays. When a satisfactory sequence of drawings was achieved, the final series of composites were drawn.

Interpretation of internal anatomical features follows Jones and Wheeler (1965). Terminology essentially follows Harbach and Knight (1980); however, we are following McAlpine (1981:10) and Mackerras (1970:4) in the use of terms relating to orientation and relationship of parts of structure; i.e., basal

medial lobe rather than basal mesal lobe. We have added the abbreviations AG and TM, respectively, for the terms Accessory Gland and Transverse Muscles on the female genitalia which were not included in Harbach and Knight (1980).

ACKNOWLEDGMENTS

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Fig. 1. Dorsal (prerotational sense) view of *Toxorhynchites (Toxorhynchites) amboinensis* (Doleschall) male genitalic components. a. gonocoxites, gonostylus and sternum IX; b. aedeagus; c. paraprocts; d. basal pieces and parameres; e. tergum IX.

Abbreviations

BML - basal medial lobe

BP - basal piece

Ce - cercus

DAB - dorsal aedeagal bridge

Gc - gonocoxite

GC - gonostylar claw

Gs - gonostylus

Par - paramere

Ppr - paraproct

VAB - ventral aedeagal bridge

IX-S - sternum IX

Fig. 1.

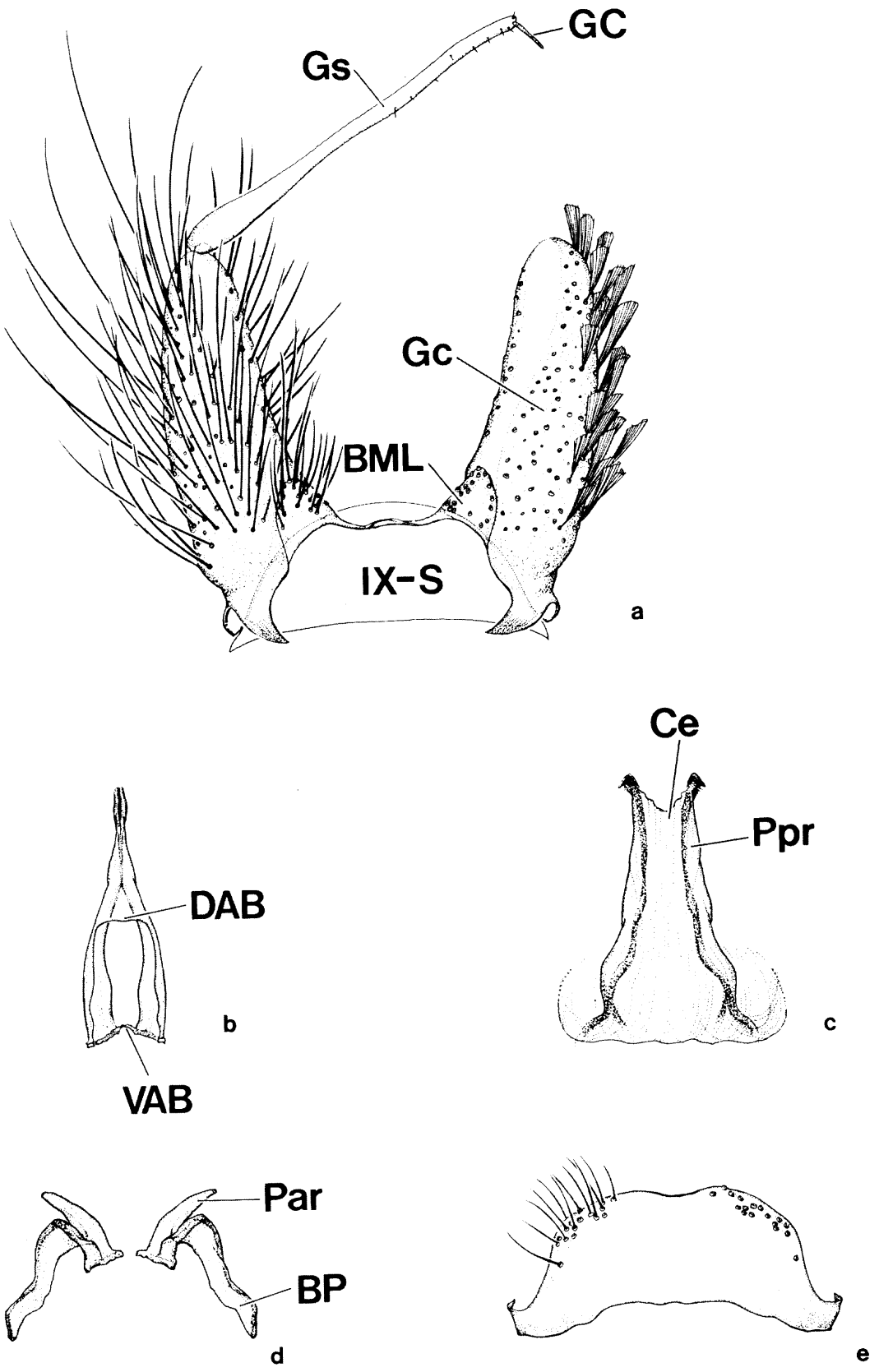


Fig. 2. Dorsal (prerotational sense) view of male genitalia of *Tx. (Tox.) amboinensis* showing buildup of genitalic components. a. gonocoxites and gonostylus; b. addition of parameres and basal pieces; c. addition of aedeagus; d. addition of paraprocts and cercus; e. addition of tergum IX.

Fig. 2

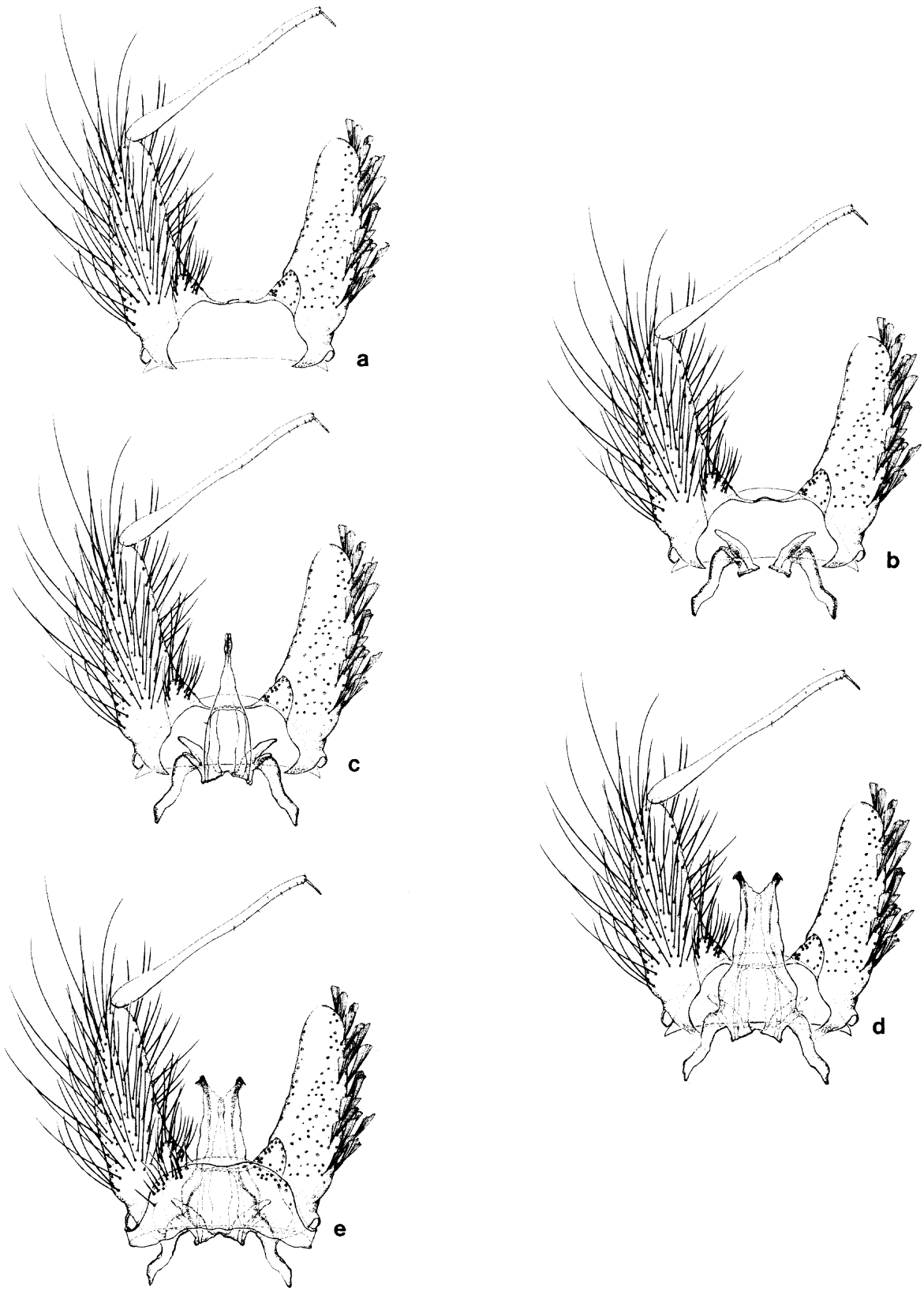


Fig. 3. Male genitalic components of *Tx. (Tox.) amboinensis*. a. gonocoxite and gonostylus, medial view; b. aedeagus, lateral view; c. paraproct and cercus, lateral view, with detail showing cercal setae; d. paramere and basal piece, medial view; e. sternum IX and tergum IX, lateral view.

Abbreviations

BML - basal medial lobe

BP - basal piece

Ce - cercus

Cse - cercal seta(e)

Gc - gonocoxite

GC - gonostylar claw

Gs - gonostylus

Par - paramere

Ppr - paraproct

IX-S - sternum IX

IX-Te - tergum IX

Fig. 3

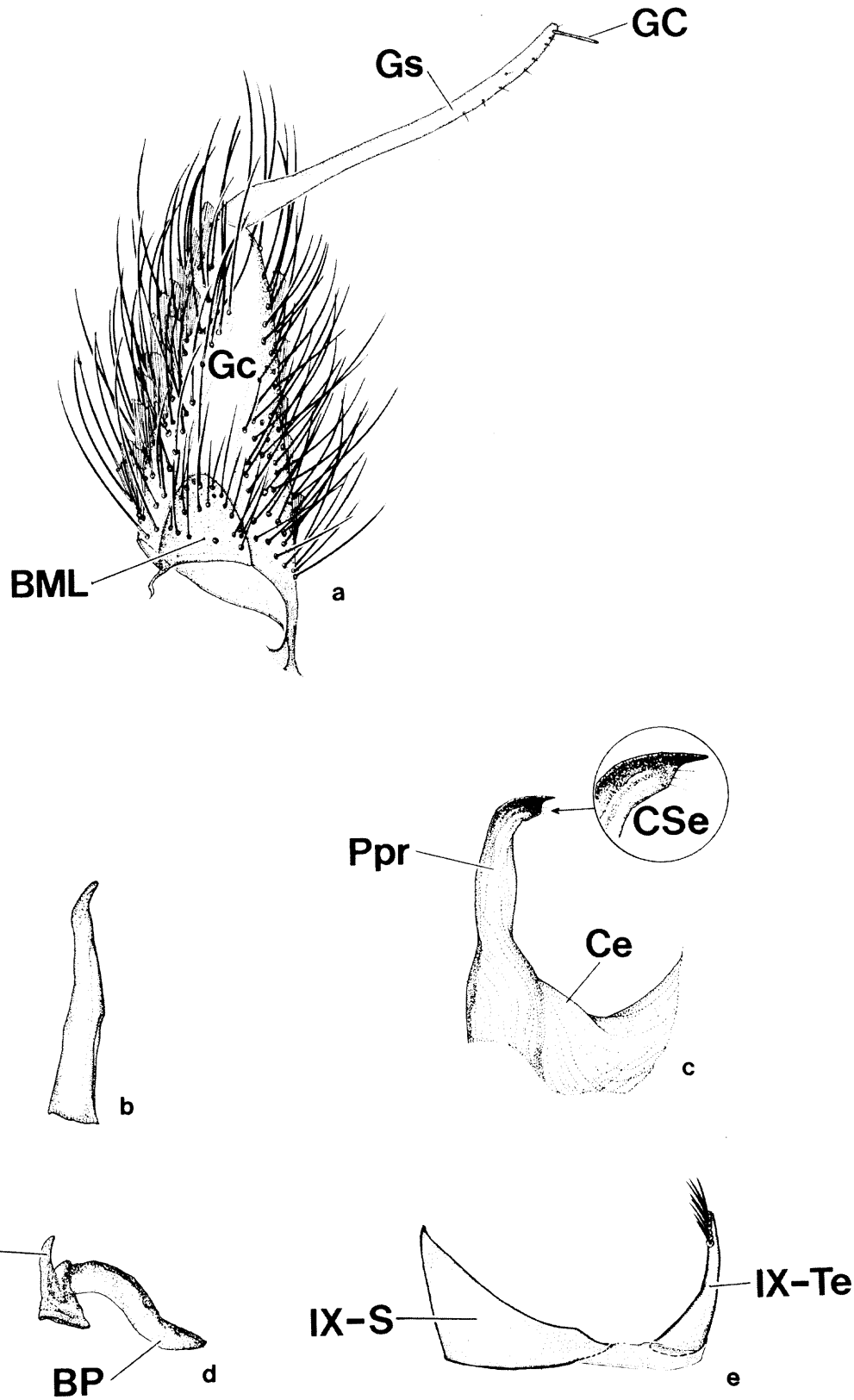


Fig. 4. Lateral view of male genitalia of *Tx. (Tox.) amboinensis* showing breakdown of genitalic components (all structures paired; left gonocoxite - prerotational sense - removed for clarity). a. male genitalia, *in situ*; b. sternum VIII and tergum VIII removed; c. sternum IX and tergum IX removed; d. paraprocts and cercus removed; e. aedeagus removed; f. parameres and basal pieces removed.

Abbreviations

VIII-S - sternum VIII

VIII-Te - tergum VIII

Fig. 4

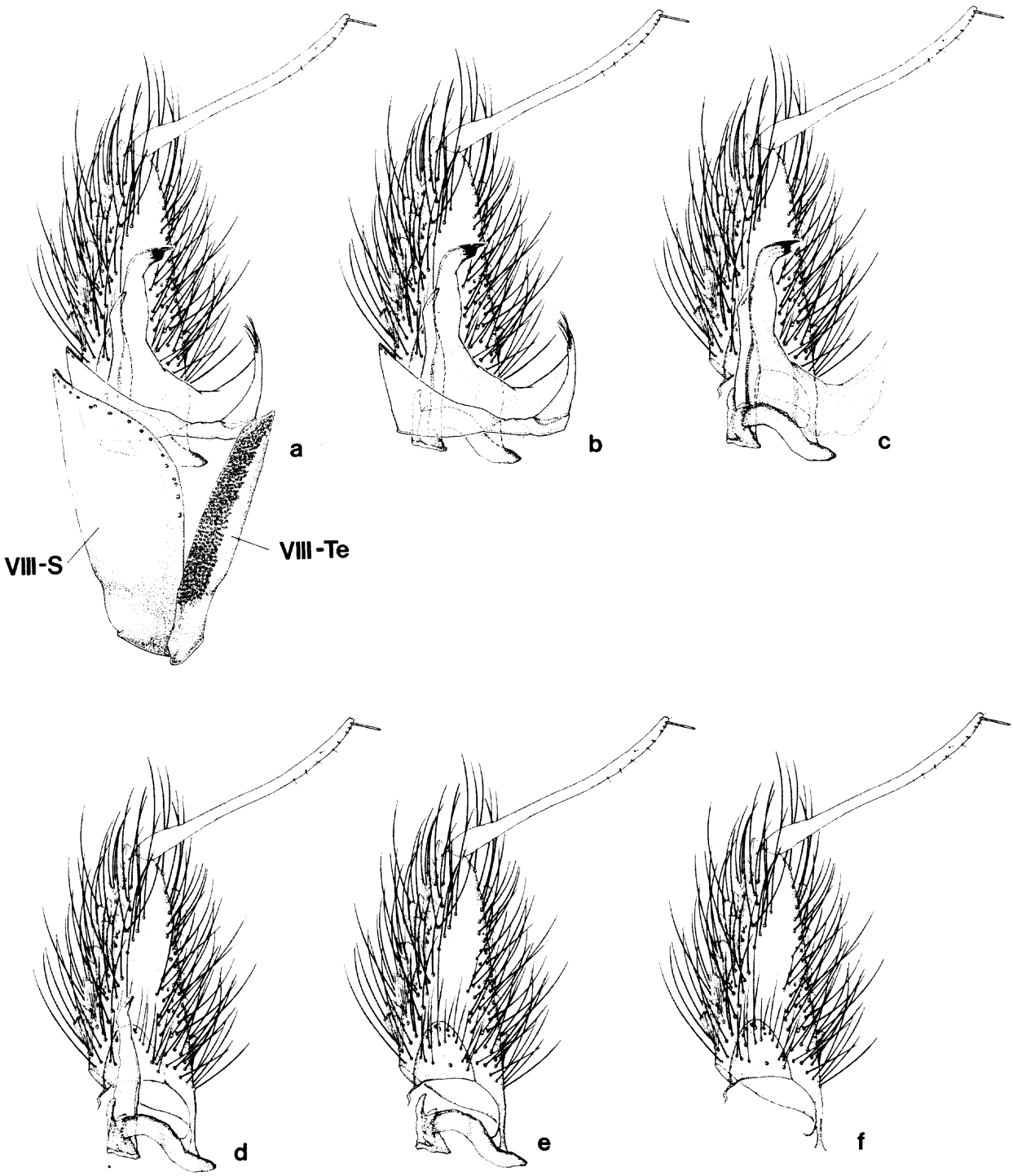


Fig. 5. Female genitalic components of *Tx. (Tox.) amboinensis*, ventral view. a. cerci, proctiger and tergum IX, *in situ*; b. postgenital lobe; c. upper and lower vaginal lips and insula, *in situ*.

Abbreviations

Ce - cercus

I - insula

LVL - lower vaginal lip

PGL - postgenital lobe

Pr - proctiger

UVL - upper vaginal lip

IX-Te - tergum IX

Fig. 5

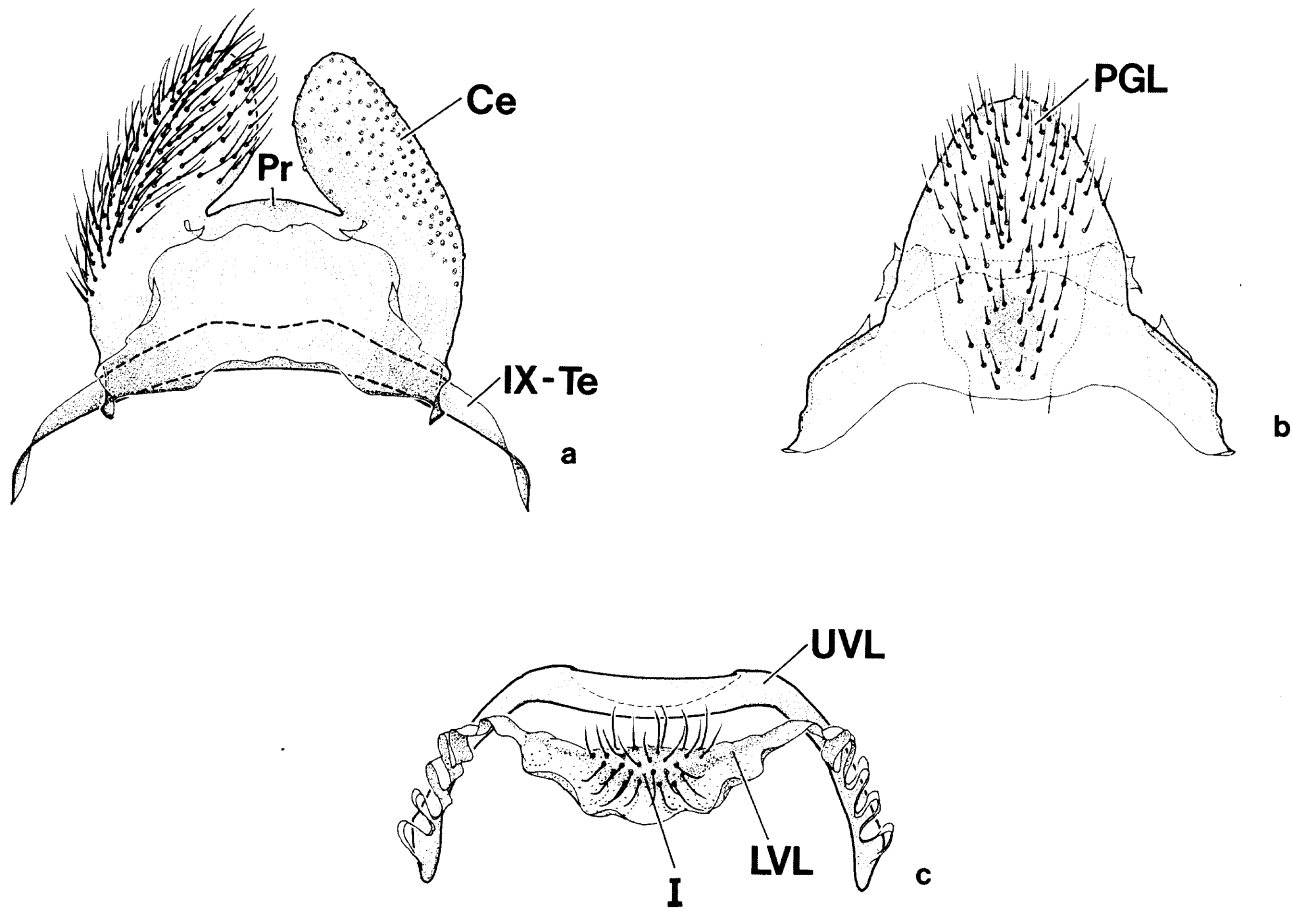


Fig. 6. Female genitalia of *Tx. (Tox.) amboinensis* showing buildup of genitalic components. a. cerci, protiger and tergum IX, ventral view; b. addition of postgenital lobe, ventral view; c. addition of upper and lower vaginal lips and insula, ventral view; d. female genitalia *in situ*, dorsal view.

Abbreviations

Ce - cercus

Go - gonotreme

I - insula

LVL - lower vaginal lip

PGL - postgenital lobe

Pr - proctiger

UVL - upper vaginal lobe

IX-Te - tergum IX

Fig. 6

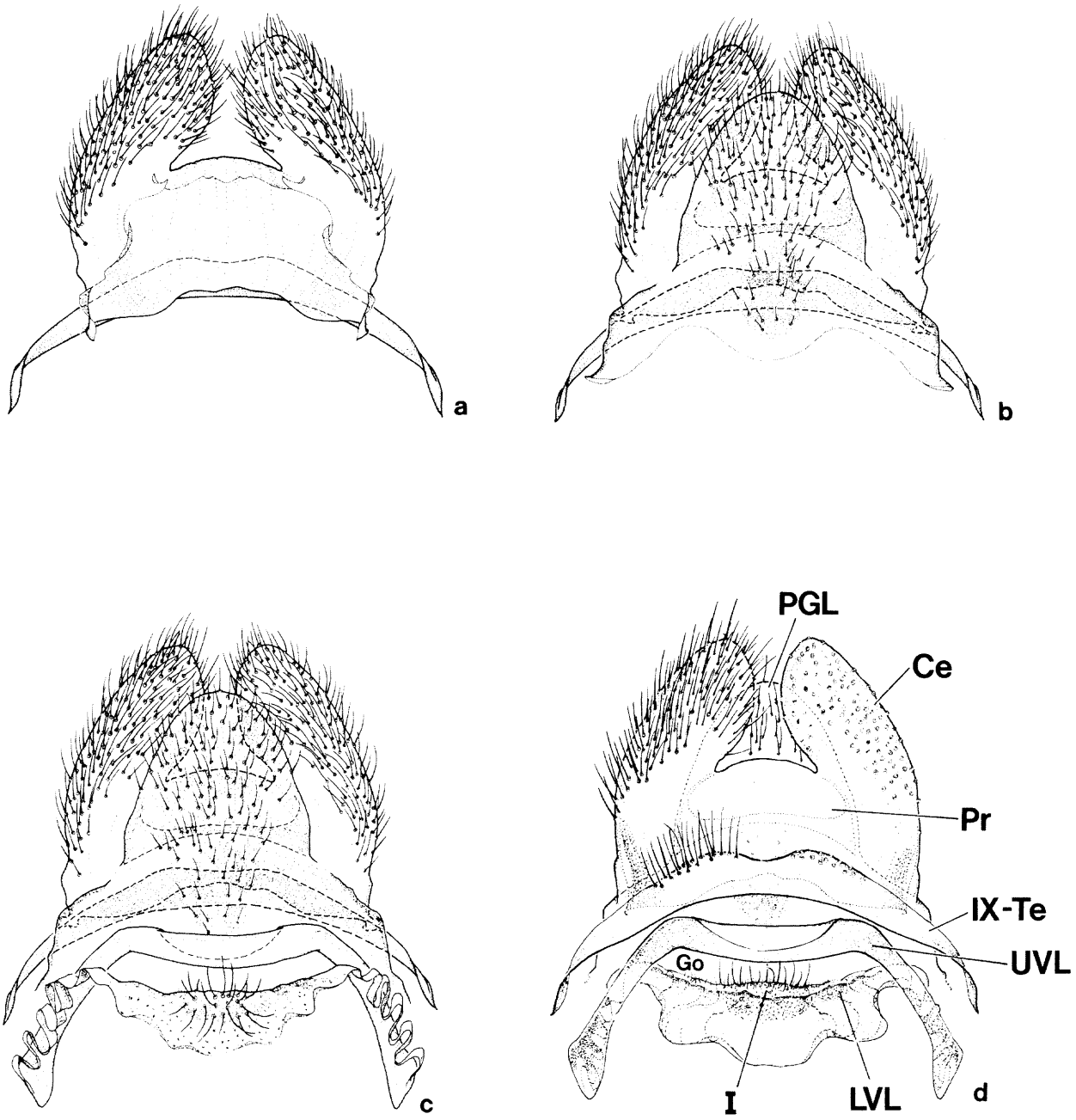


Fig. 7. Lateral view of female genitalic components of *Tx. (Tox.) amboinensis*. a. cercus, proctiger and tergum IX; b. postgenital lobe; c. upper and lower vaginal lips, insula and gonotreme.

Abbreviations

Ce - cercus

Go - gonotreme

I - insula

LVC - lower vaginal lip

PGL - postgenital lobe

Pr - proctiger

UVL - upper vaginal lip

IX-Te - tergum IX

Fig. 7

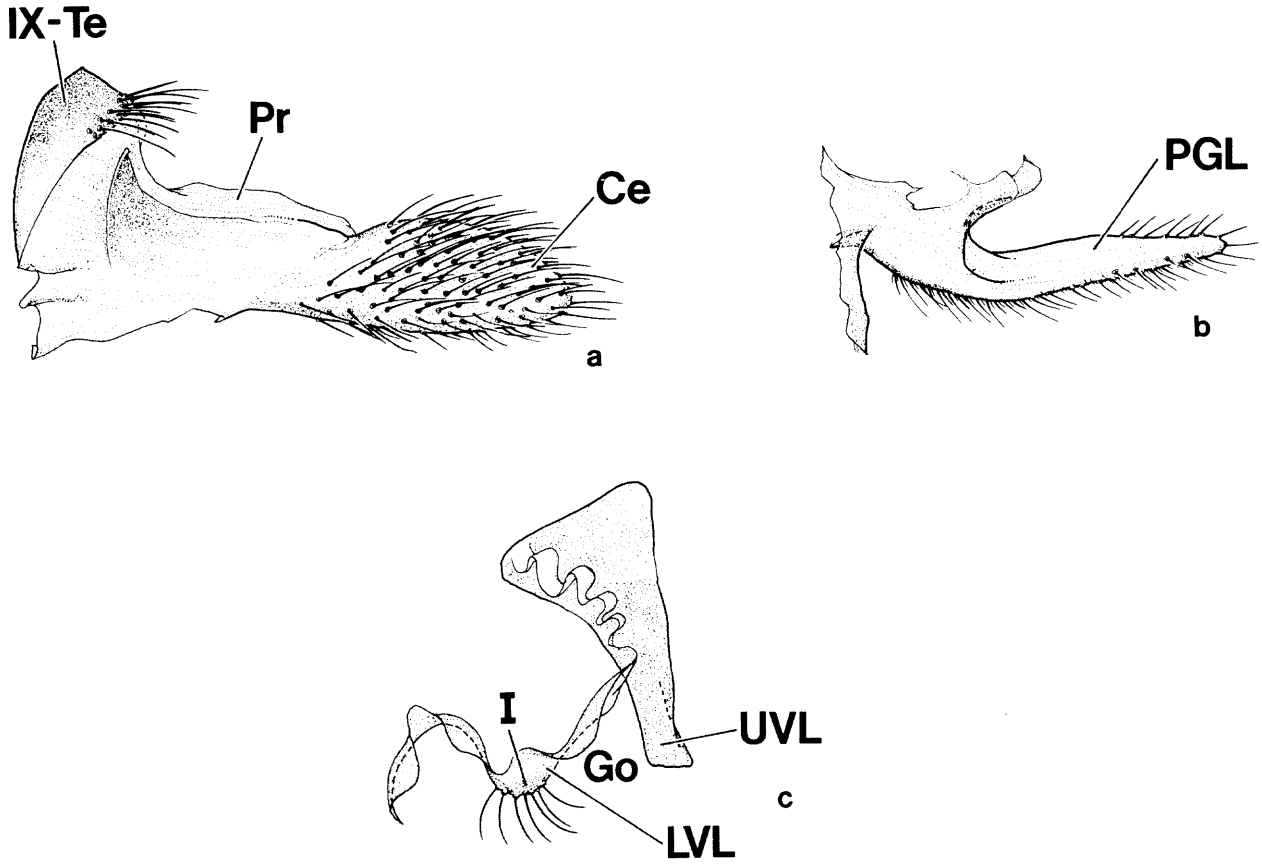


Fig. 8. Lateral view of female genitalia of *Tx. (Tox.) amboinensis* showing buildup of genitalic components. a. cercus, proctiger and tergum IX; b. addition of postgenital lobe; c. addition of upper and lower vaginal lips and insula.

Fig. 8

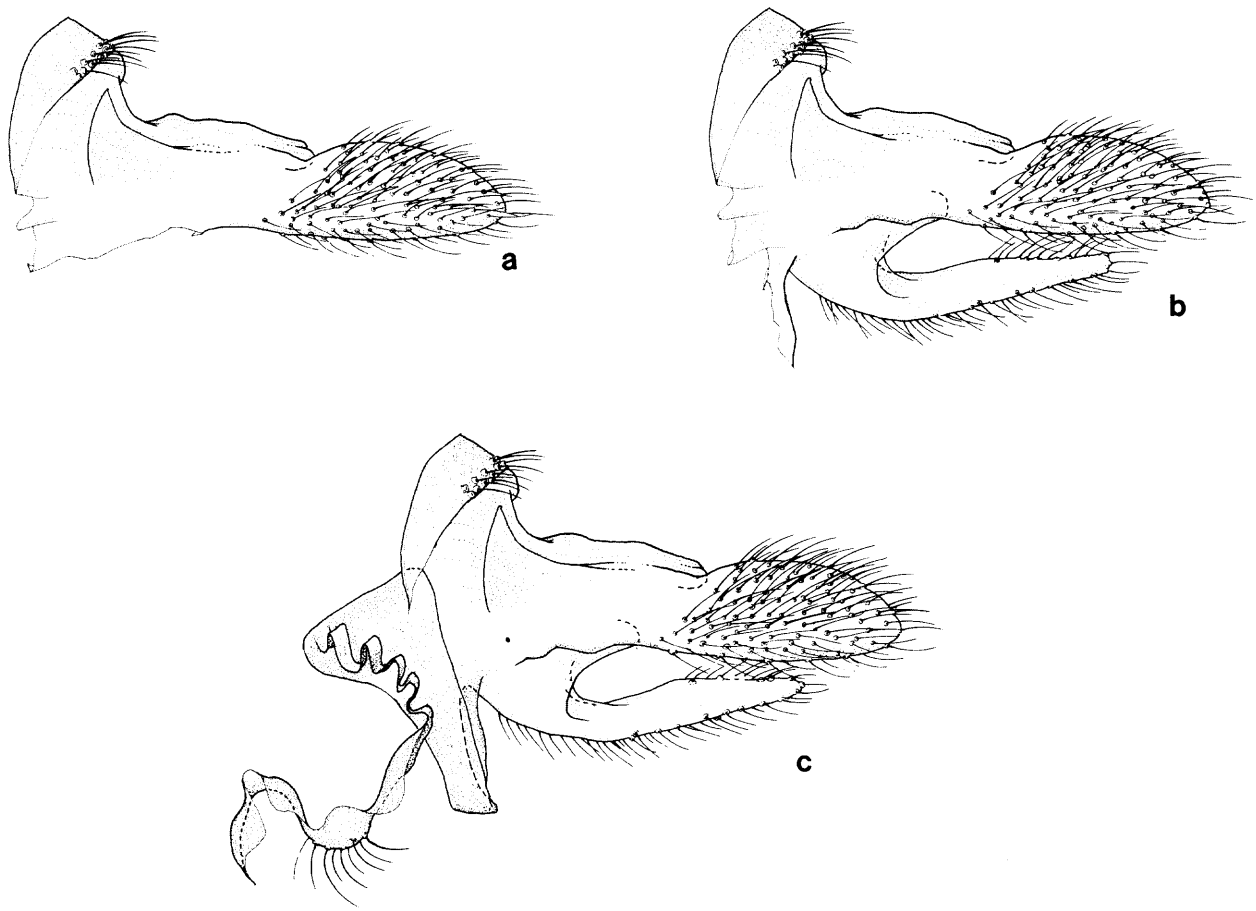
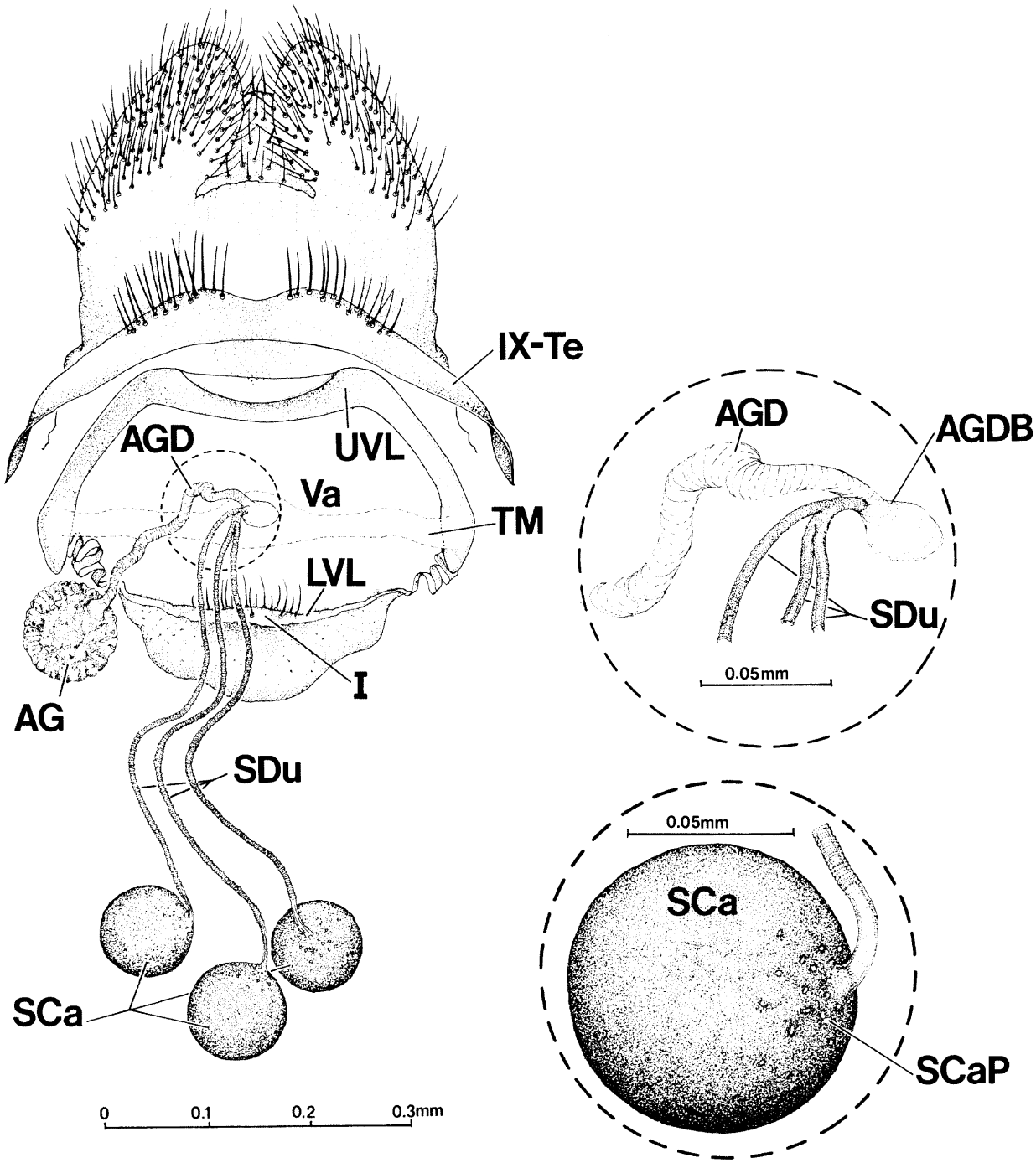


Fig. 9. Dorsal view of morphology of female genitalia of *Tx. (Tox.) amboinensis*, with detail of junction of spermathecal and accessory gland ducts and detail of spermathecal capsule.

Abbreviations

AG - accessory gland
AGD - accessory gland duct
AGDB - accessory gland base
I - insula
LVL - lower vaginal lip
SCa - spermathecal capsule
SCaP - spermathecal capsule pore
SDU - spermathecal duct
TM - transverse muscles
UVL - upper vaginal lip
VA - vagina
IX-Te - tergum IX

Fig. 9


IX-Te
AGD
UVL
Va
TM
LVL
I
AG
SDu
SCa
0 0.1 0.2 0.3mm
AGD
AGDB
SDu
0.05mm
0.05mm
SCa
SCaP