

**OCCASIONAL PAPER No. 299**

**Records of the  
Zoological Survey of India**

**A Morphotaxonomic Study of the Indian Species  
of *Forcipomyia* Meigen Biting Midges  
(Diptera : Ceratopogonidae)**

**PIJUSH KANTI SAHA  
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सत्यमेव जयते

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## INTRODUCTION

The genus *Forcipomyia* Meigen of the family Ceratopogonidae (Order Diptera) is a large genus accommodating hairy biting midges extent in different parts of the World. An insect of this genus has such other characteristics as scale like microtrichia covering its wings, with short costa and first radial cell small, narrow and often obliterated. Entomophagous species of this genus subsist by sucking hemolymph of other insects. Because of hairy body, many of these insects who feed on plant sap act as natural pollinators. On the other hand, there are records of larvae of *Foprcipomyia* species living in leaf-axils causing substantial damage in pineapple cultivation in South America.

The taxonomic studies of the Indian *Forcipomyia* started with Kieffer (1910) who described 17 species of the genus in India. Stray observations of Brunetti (1912), Edwards (1932), Macfie (1936a) and Sen and Dasgupta (1968) enriched our knowledge on the Indian *Forcipomyia* with addition of two more new species in the list of Indian *Forcipomyia*. Saswati et al (2002) described 3 more new species of *Forcipomyia* from West Bengal. Thus as per available data in literature on Indian *Forcipomyia*, to the date, a total of 22 species of Indian *Forcipomyia* is known.

Saha (1983) in his Ph.D. thesis of Calcutta University on Indian *Forcipomyia* midges, furnished a comprehensive account of many species, mostly making those as new to science. Those were, however, left unpublished. The present authors, including Saha himself teamed up to bring to light the unpublished work after an updated critical study covering extensive scrutiny of relevant data accumulated meanwhile in literature and at their ends. Study of original samples and samples collected by them of the species, specially of new ones dealt now helped them to complete their task successfully through their collective efforts over years because of occasional interruptions which were unavoidable.

We are unable to collect *Forcipomyia* species like *F. aerobates* Macfie which remain lodged in a state of phoresis to the wings of dragon flies. Nor we could follow much from Macfie's practically un-illustrated account of *F. aerobates* from Eastern India so as to comprehend and place it in relation to updated account available for other *Forcipomyia* species. We, therefore, refrain from including it in our present paper though we count it in our total list of Indian *Forcipomyia* known so far which consists of 41 new species and first record of 4 known species described in this paper and 22 previously described species amounting together 67 species of 9 subgenera of the ceratopogonid genus under study now.. However large tracts of India still remains practically unexplored in respect to biting midges of a very dominating ceratopogonid genus *Forcipomyia* and we are sure that with further organized studies in future, many ew remarkable species of this genus will be brought to light to the enrichment of our knowledge.

## MATERIALS AND METHODS

The imago stages of insects of the genus *Forcipomyia* (Family Ceratopogonidae, Order Diptera) extant in India form the study material of the present paper. The insect samples were collected/obtained, sorted, stored, preserved and dissected into several parts and processed by following the method of Wirth and Blanton (1959) and Wirth and Marston (1968) for critical study and analysis and their Types and the identified samples so long stored in the Zoology Department, Presidency College, Kolkata, are now duly deposited to the National Zoological collections at the Zoological Survey of India, Kolkata, for permanent storage as reference material.

The terminologies and abbreviations used in the present paper are as follows :

- 1) AP : Length proportions of antennal segments (III-XV).
- 2) AR (Antennal Ratio) : It is the combined length of the distal 5 segments divided by the combined length of the preceding 8 segments.
- 3) CR (Costal Ratio) : It is the ratio of the costal length divided by the wing length measured from the basal arculus.
- 4) CR<sub>1</sub> – First Radial Cell
- 5) CR<sub>2</sub> – Second Radial Cell
- 6) Cu<sub>1</sub> – Vein Cu<sub>1</sub>
- 7) HTC – Hind Tibial Comb
- 8) m<sub>3+4</sub> – Vein m<sub>3+4</sub>
- 9) PA : Length proportions of segments I-V of maxillary palp.
- 10) PP (Palpal Proportions) : Relative lengths of palpal segments.
- 11) PR (Palpal Ratio) : It is the ratio obtained by dividing the length of the third palpal segment divided by the greatest breadth of that segment.
- 12) R – Radial vein (Vein R<sub>1+2</sub>)
- 13) r<sub>1</sub> – Vein r<sub>1</sub> (Upper branch of radial vein)
- 14) r<sub>s</sub> – radial sector (= lower branch of radial vein R<sub>2+3</sub>)
- 15) RR (Radial Ratio) : It is the ratio obtained by dividing the 1<sup>st</sup> radial vein divided by second radial vein.
- 16) TR (Tarsal Ratio) : It is the ratio obtained by dividing the length of the basitarsus divided by the length of the tarsomere III.

**Key to the subgenera and to the Indian species of the genus *Forcipomyia***

1. TR between 1.3 and 2.3; costa extends well beyond middle; spermathecae of variable shapes, 1 or 2 in number; parameres absent in male genitalia ..... 2  
(Subgenus *Caloforcipomyia* Saunders)
- TR between 1.82 and 3.1; costa extends at or near middle of wing; spermathecae 2, usually ovoid; parameres present in male genitalia ..... 6
2. Broad brownish band present on all legs excluding almost entire length; haltere brownish; segments 4 and 5 of maxillary palpi incompletely fused; spermathecae with large opening ..... *subglauca*, n.sp.
- Brownish bands on legs otherwise; haltere hyaline; maxillary palpi segments 4 and 5 variable. .... 3
3. Maxillary palpi segments 4 and 5 separate; first and second radial cell open ..... 4
- Maxillary palpi segments 4 and 5 incompletely fused; first radial cells open or obliterated; second radial cell open ..... 5
4. Narrow, sub-basal band present on hind tibiae; spermathecae two, large and equal to each other; basistylar apodemes 'U' or 'V' shaped ..... *paraglauca*, n.sp.
- - Broad, though feeble, brownish band on mid tibiae extended two third distal length in addition to above; spermathecae two large, large and subequal ..... *longipalpis*, n.sp.
5. First radial cell almost obliterated; haltere hyaline; basistylar apodemes 'U' or 'V' shaped ..... *semiglauca*, n.sp.
- First radial cell slit-like, haltere hyaline; basistylar apodemes as inverted 'V' ..... *quasiglauca*, n.sp.
6. In females combined length of 8 basal flagellar segments grossly unequal to that of distal 5 segments; costa extending near middle of wing; two spermathecae with distinct necks .....  
(Subgenus *Rhynchoforcipomyia* Wirth and Dow) ..... *flavisimplex*, n.sp.
- In females, combined length of 8 basal flagellar segments (III-X) appreciably shorter than that of distal 5 segment ..... 7
7. Antennomere 10-11 setose.....(Subgenus *Schizoforcipomyia* Chan and Roux)  
..... *borbonica* Clastrier
- Antennomere 10-11 not as above ..... 8

8. Maxillary palpi segments 4 and 5 incompletely fused; small, unmarked brownish midges; TR usually greater than 1.0 ..... 9 (Subgenus *Euprojoannisia* Brethes)
- Maxillary palpi segments 4 and 5 separate; size, colour and TR variable ..... 21
9. Single spermatheca ..... 10
- Two spermathecae ..... 11
10. Light brownish species with 3-10 antennal segments oval to vasiform; haltere greyish; spermatheca light brownish with tapering neck ..... *palasunitheca*, n.sp.
- Brownish species with 3-10 antennal segments oval to elongate vasiform; haltere brownish; spermatheca dark brownish with tapering neck ..... *subunitheca*, n.sp.
11. Legs with light or dark brownish bands ..... 12
- Legs without any bands ..... 14
12. Sub-apical and sub-basal brownish bands present on femora and tibia of all legs ..... *pseudocalcarata*, n.sp.
- Bands on legs not as above. .... 13
13. Antennal segments 3 to 10 globular; maxillary palpi with segment 3 short and stout; sensory pit shallow and moderately sclerotized; haltere grayish; spermathecae brownish, globose, spherical ..... *sauteri* Kieffer
- Antennal segments 3 to 10 spherical to vasiform; maxillary palpi with segment 3 elongated, sensory pit strongly sclerotized; haltere brownish; spermathecae dark brownish, pyriform ..... *fermetitillans*, n.sp.
14. Legs uniformly brownish ..... *indoctacruris*, n.sp.
- Legs uniformly yellowish ..... 15
15. Antenna with basal flagellomeres globular to oval ..... 16
- Antennal with basal flagellomeres otherwise ..... 20
16. Spermathecae dark brownish ..... 17
- Spermathecae otherwise ..... 18
17. Maxillary palpi 3 short and stout, segment 4 thicker and subequal to segment 5; spermathecae oval without short neck ..... *exempliforma*, n.sp.

- Maxillary palpi 3 moderately elongated, swollen upto midlength; segment 4 thicker and almost double of segment 5, subspherical with short neck..... *subingrami*, n.sp.
18. Spermathecae with strongly sclerotized peripheral part..... *palusithec*a, n.sp.
- Spermathecae not as above ..... 19
19. Spermathecae brownish; haltere hyaline..... *subcalcarata*, n.sp.
- Spermathecae light brownish; haltere yellowish..... *grandiclara*, n.sp.
20. Basal flagellar segments of female antenna vasiform; maxillary palpi 3 with a deep sensory pit; hind tibial comb of 7 spines..... *flavencruris*, n.sp.
- Basal flagellar segments of female antenna globular to vasiform; maxillary palpi 3 with a shallow sensory pit; hind tibial comb of 6 spines ..... *propenavaiae*, n.sp.
21. Maxillary palpi 3 greatly swollen beyond middle, sensory pit being very deep extended almost down to base of the segment; slender, hyaline and peg-like sensory spines on surface near pore; TR usually less than 0.5 ..... 22
- (Subgenus *Microhelea* Kieffer)
- Maxillary palpi variable; segment 3 rarely swollen beyond midlength and devoid of peg-like sensory spines near sensory pore; TR usually more than 0.5 ..... 29
22. Dark or light brownish bands present on legs ..... 23
- Legs without any bands ..... *nudifascipes*, n.sp.
23. Only hind femora and tibia bear the bands ..... *paenefuliginosa*, n.sp.
- Bands on legs not as above ..... 24
24. Spermatheca light brownish, only feeble sclerotized ..... 25
- Spermatheca light brownish, strongly sclerotized ..... 26
25. Maxillary palpi 3 subrectangular, its ventro-distal corner with a prominent notch; spermatheca large and equal, almost equal without neck ..... *tenuifascicruris*, n.sp.
- Maxillary palpi 3 not as above, its ventro-distal corner without any visible notch; spermatheca small, almost equal but with short neck ..... *gracilatithec*a, n.sp.
26. Maxillary palpi with segment 3 elongated and narrow, slightly bulging medially ..... *angustipalpis*, n.sp.
- Maxillary palpi with segment 3 otherwise..... 27

27. Basal flagellar segments elongate oval to almost vasiform ..... *fuliginosa* (Meigen)  
 — Basal flagellar segments otherwise..... 28
28. Basal flagellar segments subglobular to oval; maxillary palpi 3 subtriangular with prominent ventro-distal corner; spermathecae oval, subequal and without neck..... *ovatithec*a, n.sp.  
 — Basal flagellar segments oval and elongated gradually; maxillary palpi 3 greatly enlarged and ventro-distal corner not prominent; spermathecae almost spherical, subequal with short neck ..... *similithec*a, n.sp.
29. Brownish or grayish, unadorned species, TR usually greater than 2.0; spermatheca one..... 30  
 — Showy colour pattern in wings and legs; TR usually less than 2.0; spermathecae two ..... 32
30. Male genitalia with club-shaped parameres extended caudally from basistylar apodemes.....(Subgenus *Synthyridomyia* Saunders)..... *flexoductithec*a, n.sp.  
 — Male genitalia without club-shaped parameres ..... 31  
 (Subgenus *Thyridomyia* Saunders)
31. Maxillary palpi short, segment 3 cylindrical devoid of sensory pit; segments 4 and 5 fused; haltere yellowish, hyaline; spermatheca oval, short, tapered neck..... *cineornata*, n.sp.  
 — Maxillary palpi short with segment 3 spindle-shaped having sensory pit at midlength; haltere with hyaline knob and brownish stalk; spermatheca spherical with short neck ..... *fererugosa*, n.sp.
32. Medium sized; second radial cell short and almost equal to or slightly longer than the first radial cell; parameres not joined or fused at base.....(Subgenus *Lepidohelea* Kieffer) ..... *chrysolopha* Kieffer  
 — Small to large sized; second radial cell short, usually shorter than the first radial cell; parameres usually joined or fused at base ..... 33  
 (Subgenus *Forcipomyia* s.str.)
33. Basal three-fourth of the hind tibia pale..... *variicrus* (Kieffer)  
 — Whole of the hind tibia dark brownish or light brownish or pale or more than three-fourth or one-half of the hind tibia dark brownish..... 34
34. Maxillary palpi 3 narrow, tubular and slightly dilated apicad..... *imparithec*a, n.sp.  
 — Maxillary palpi 3 broad in the middle, inflated, slightly directed basad ..... 35

35. Maxillary palpi 3 short, stout and greatly dilated along its entire length or so ..... 36  
 — Maxillary palpi 3 long, dilation in the basal half only ..... 37
36. Haltere hyaline; maxillary palpi 3 swollen except for a short tubular apical part; spermathecae grossly unequal, larger one with long, conical neck and smaller one without a neck ..... *lurida*, n.sp.  
 — Haltere moderately infuscated; maxillary palpi 3 entire swollen, oval; spermathecae subequal, elongate, oval and without a neck..... *palpipotens*, n.sp.
37. Basal flagellomeres globular to oval or so ..... 38  
 — Basal flagellomeres oval or elongated oval to vasiform ..... 39
38. Brownish bands on distal half of femora and proximal half of tibiae of mid and hind legs; fore legs fuscous but without bands ..... *fascilatipes*, n.sp.  
 — Brownish bands on distal half of femora and distal two-thirds of mid and hind legs; fore tibia with broad bands ..... *globofuscitheca*, n.sp.
39. First radial cell closed ..... 40  
 — First radial cell slit-like or narrowly open ..... 45
40. Legs fuscous throughout..... *holofuscicruris*, n.sp.  
 — Legs fuscous in part ..... 41
41. Brownish bands present only on hind legs ..... 42  
 — Brownish bands on legs not as above ..... 44
42. Basal flagellomeres barrel-shaped; maxillary palpi 3 short, pitcher-like with moderately sclerotized sensory pit at middle ..... *pseudobipunctata*, n.sp.  
 — Basal flagellomeres not as above; maxillary palpi 3 not pitcher like ..... 43
43. Basal flagellomeres oval to vasiform; spermatheca moderately sclerotized and without a distinct short neck ..... *albiradialis* Tokunaga  
 — Basal flagellomeres oval to vasiform; spermatheca very lightly sclerotized and with a distinct, short neck ..... *paenealbiradialis*, n.sp.
44. Haltere moderately fuscous; femora and tibiae with extremely broad brownish bands leaving narrow basal and apical yellowish area ..... *pulluspadicruris*, n.sp.  
 — Haltere hyaline; bands present on mid and hind legs but not as above; fore tibiae slightly fuscous with a band at middle ..... *bikanni* Chan and LeRoux

45. Spermatheca strongly sclerotized or so with a distinct neck.....46  
 — Spermatheca lightly sclerotized and without a distinct neck.....47
46. First radial cell narrowly open; spermatheca moderately sclerotized, equal and oval in shape ..... *fulvipes*, n.sp.  
 — First radial cell slit-like; spermatheca strongly sclerotized, unequal and elliptical in shape ..... *quasiabiradialis*, n.sp.
47. Maxillary palpi 3 swollen to two-third of its length from base with narrow tubular apical portion; feeble band on hind femora and tibia ..... *fulvotibialis*, n.sp.  
 — Maxillary palpi 3 narrow, elongated being dilated at base only; hind femora with narrow, apical band, tibiae feebly fuscous at base ..... *brevipalpis*, n.sp.

## SPECIES DESCRIPTIONS

### (a) Species of the subgenus *Caloforcipomyia* Saunders

#### 1. *Forcipomyia longipalpis* n.sp. (Figs. 1 A-F)

**Female : Head :** Light brownish. Eyes broadly contiguous along inner margins. Antenna testaceous. Maxillary palpi testaceous brown with segment 3 elongate.

**Thorax :** Brownish. Wing (1.71 mm x 0.64 mm) sparsely covered with yellowish scale-like macrotrichia; CR<sub>1</sub> and CR<sub>2</sub> open, elongate; haltere hyaline. Legs brownish, clothed with semi-appressed brown hairs, erect and semi-erect bristly hairs of variable length, and short, broad lanceolate, striated scales; HTC of 6 bristles.

**Abdomen :** Pale brownish. Spermathecae two, large, subequal, broadly oval without definite neck measuring 0.072 x 0.054 mm and 0.074 x 0.054 mm, respectively.

**Male :** Unknown

**Distribution :** India (West Bengal – Darjeeling).

**Type data :** Holotype female collected from Darjeeling on July 21, 1968; paratype 1 female, data same as holotype.

**Comments :** This species is allied to *F. squamiannulipes* Tokunaga and Murachi, (1959) and *F. glauca* Macfie (1934b). However distinctive banding pattern of legs of the new species is absent in the above two.

**Etymology :** The species name is derived from the longer maxillary palpi.

## 2. *Forcipomyia paraglauca* n.sp. (Figs. 2 A-I)

**Female : Head :** Brownish. Antenna testaceous. Maxillary palpi testaceous with segment 3 elongate, segments 4 and 5 fused in part.

**Thorax :** Pale brownish. Wing (1.88 mm x 0.70 mm), covered with narrow macrotrichia in all areas apart from the radial one; CR<sub>1</sub> slit-like, open, CR<sub>2</sub> open; haltere hyaline. Legs brownish yellow with appressed striated scales specially on tibiae, HTC of 6.2 bristles.

**Abdomen :** Brownish. Spermathecae two, large, unequal, hyaline, measuring 0.0113 mm x 0.073 mm and 0.101 mm x 0.060 mm.

**Male :** Genitalia as figured.

**Distribution :** India (West Bengal – Darjeeling).

**Type data :** Holotype female collected from Darjeeling on June 29, 1968; allotype male, paratype 3 females and 4 males, data same as holotype; additional samples from same locality sorted out in 1977-79 collection.

**Comments :** This species is very close to *F. glauca* Macfie, 1934b. However difference between the two lies in the extent of fusion of 4 and 5 palpal segment and also in the type of leg banding.

**Etymology :** The species name is based on the silvery appearance along with the extent of fusion of 4<sup>th</sup> and 5<sup>th</sup> palpal segments and type of leg banding.

## 3. *Forcipomyia quasiglauca* n.sp. (Figs. 3 A-G)

**Female :** Unknown

**Male : Head :** Dark brownish. Antenna dull brownish. Maxillary palpi light brownish; segment 3 elongate, segments 4 and 5 fused in part.

**Thorax :** Light brownish. Wing (2.13 mm x 0.65 mm) with narrow, striated scales in costal and radial areas; CR<sub>1</sub> slit-like, CR<sub>2</sub> elongate open; haltere hyaline. Legs with pale brownish femora and tibiae, having abundant semi-appressed, slender brown hairs; HTC of 6.6 bristles.

**Abdomen :** Dark brownish. Genitalia- sternum 9 with shallow median concavity, about 0.4 times as long as broad; basistyle ovoid, about 1.6 times broader than long; dististyle elongate, ending in hooked tip; aedeagus with strongly sclerotized, decurved basal arms and a long, slender and posteriorly produced sclerotized distomedian process with rounded tip.

*Distribution* : India (West Bengal – Darjeeling).

*Type data* : Holotype male, collected from Darjeeling on June 29, 1968; paratype 4 males, data same as holotype.

*Comments* : This species is related to another Forcipomyian n.sp. *F. semiglauca*, but difference in basistylar apodemes, wing size and PR values make the two species distinct.

*Etymology* : The species name is based on the silvery appearance along with the differences in basistylar apodemes.

#### 4. *Forcipomyia semiglauca* n.sp. (Figs. 4 A-G)

**Female** : Unknown

**Male** : *Head* : Dark brownish. Antenna pale. Maxillary palpi light brownish; segment 3 slender, segments 4 and 5 incompletely fused.

*Thorax* : Brownish. Wing (1.88 mm x 0.57 mm) with slender yellowish long, striped macrotichia covering the wing apart from costal and radial areas; CR<sub>1</sub> almost obliterated, CR<sub>2</sub> open widely; haltere hyaline. Legs brownish yellow; hind tibiae with deep brownish band at base; HTC of 6 bristles.

*Abdomen* : Brownish. Genitalia-sternum 9 with posterior margin almost straight, about 0.36 times as long as broad; basistyle brownish with pale, hooked tip slightly swollen; aedeagus with moderately sclerotized short, decurved basal arms, a long slender, gradually tapering unsclerotized distomedian process with rounded decurved tips.

*Distribution* : India (West Bengal – Darjeeling).

*Type data* : Holotype male, collected from Darjeeling on September, 1968; paratype 3 males, data same as holotype.

*Comments* : This new species recalls Brethes' species *F. glauca*, described by Macfie (1934), however, the mode of fusion of 4 and 5 palpal segments along with the presence of dark brownish band in hind tibia thoroughly differentiates it from *F. glauca* Macfie.

*Etymology* : The species name is based on the silvery appearance along with the mode of fusion of 4<sup>th</sup> and 5<sup>th</sup> palpal segments and dark brownish band on hind tibia.

#### 5. *Forcipomyia subglauca* n.sp. (Figs. 5 A-I)

**Female** : *Head* : Light brownish. Antenna pale. Maxillary palpi light brownish; segment 3 swollen at middle, segments 4 and 5 fused in part.

**Thorax** : Brownish. Wing (1.11 mm x 0.67 mm); hyaline, CR<sub>1</sub> slit-like, CR<sub>2</sub> open, elongated, haltere hyaline. Legs light brownish; femora and tibiae broadly brownish at middle, the hind tibial band darker; HTC of 5.5 bristles.

**Abdomen** : Light brownish. Spermathecae 2, large, elongate, oval, equal, hyaline, measuring 0.073 x 0.039 mm and 0.072 mm x 0.04 mm.

**Male** : Genitalia as figured.

**Distribution** : India (Arunachal Pradesh – Pasighat).

**Type data** : Holotype female, collected from Pasighat, Arunachal Pradesh, in August 1977, by light trap; allotype male, paratype 1 female, data same as holotype.

**Comments** : Specialities such as smallness in size, almost totally shaded femora-tibial parts of forelegs and two spermathecae of similar size differentiates the present species from our previous new species and known allies.

**Etymology** : The species name is based on the silvery appearance and smallness in size.

(b) Species of the subgenus *Euprojoannisia* Brethes

6. *Forcipomyia sauteri* Kieffer, 1912 : 27

[synonym: *Forcipomyia clara* Chan and LeRoux, 1971] (Figs. 6 A-I)

**Female** : **Head** : Brownish. Eyes narrowly contiguous. Antenna light brownish. Maxillary palpi light brownish, segment 3 short, stout and slightly dilated at base with moderately sclerotized shallow sensory pit, segments 4 and 5 fused in part, segment 4 about double the length of segment 5.

**Thorax** : Light brownish. Wing (0.91 mm x 0.47 mm) covered with brownish hair like macrotrichia in costal and radial areas; CR<sub>1</sub> slit-like, CR<sub>2</sub> narrowly open, haltere greyish. Legs light brownish, covered with short, semi-appressed, long and bristly yellowish hairs; very feeble brownish band on femora of fore and mid legs; HTC of 6 bristles.

**Abdomen** : Light brownish. Spermathecae 2, brownish, unequal, globose, spherical with short neck and measuring 0.042 mm x 0.034 mm and 0.034 mm x 0.029 mm.

**Male** : Genitalia as figured.

**Distribution** : Singapore, Taiwan, India (Arunachal Pradesh – Pasighat; West Bengal – Darjeeling, Pandua).

*Specimens examined now* : 13 females, collected from Darjeeling, in March, 1968; 1 female from Pandua in November, 1966; 2 females and 5 males from Pasighat in January, 1979; all specimens by light trap.

*Comments* : This particular species found both in Eastern India and South-East Asia (from Taiwan by Kieffer and Singapore by Chan and LeRoux) differ by the higher PR value in former region but lower PR value in latter region.

### 7. *Forcipomyia exempliforma* n.sp. (Figs. 7 A-I)

**Female** : *Head* : Brownish. Eyes narrowly separated. Antenna light brownish. Maxillary palpi light brownish; segment 3 short, stout with shallow, sensory pit, segments 4 and 5 fused in part; PP 7-8-20-11-8.

*Thorax* : Light brownish. Wing (0.81 mm x 0.37 mm) clothed with small, hair-like yellowish macrotrichia; CR<sub>1</sub> open, CR<sub>2</sub> open, elongate though narrow; haltere brownish; Legs light brownish; femora and tibiae covered with few semi-erect yellow hairs; HTC of 5.6 bristles.

*Abdomen* : Light brownish. Spermathecae two, dark brownish, oval, unequal with distinct neck, measuring 0.046 mm x 0.033 mm and 0.038 mm x 0.031 mm.

**Male** : Genitalia as figured.

*Distribution* : India (Bihar – Muzaffarpur; West Bengal – Gobardanga, Habra).

*Type data* : Holotype : female, collected from Habra in March, 1967; allotype: male from Gobardanga in April, 1967; paratypes: as 3 females from Habra, 5 females, 4 males from Gobardanga during March-June, 1967; 186 females and 53 males from Muzaffarpur Bihar) in August-October, 1985.

*Comments* : This species is somewhat similar to *F. yapensis* Tokunaga and Murachi, 1959 but its high TR value in all legs and male genitalic features makes it different.

*Etymology* : The species name is based on an example of a form having high TR value in all legs.

### 8. *Forcipomyia fermetitillans* n.sp. (Figs. 8 A-I)

**Female** : *Head* : Dark brownish. Eyes narrowly separated. Antenna dark brownish. Maxillary palpi brownish with segment 3 elongated, moderately swollen at middle having deep sensory pit, segments 4 and 5 fused in part; PP 11-12-33-20-11.

*Thorax* : Dark Brownish. Wing (1.17 mm x 0.55 mm) covered with brownish, hair-like macrotrichia; CR<sub>1</sub> narrow, CR<sub>2</sub> widely open; haltere moderately infuscated. Legs light

brownish; femora and tibiae covered with erect or semi-erect brownish hairs; HTC of 6 bristles.

**Abdomen** : Light brownish. Spermathecae two, dark brownish, strongly sclerotized, pyriform with distinct neck measuring 0.049 x 0.035 mm and 0.05 mm x 0.034 mm.

**Male** : Genitalia as figured.

**Distribution** : India (West Bengal – Darjeeling).

**Type data** : Holotype female, collected from Darjeeling in September, 1968; allotype male, paratypes as 7 females, 6 males, data same as type and all specimens collected by light trap.

**Comments** : The present species is close to *F. titillans* (Winnertz), described from Germany but remarkable for its separated eyes; smaller spermathecae and higher AR and TR values.

**Etymology** : The species name refers to the well built genitalic parts specially the basistyle and dististyle which are short but stout.

#### 9. *Forcipomyia flavencruris* n.sp. (Figs. 9 A-I)

**Female** : **Head** : Reddish brown. Eyes narrowly separated. Antenna brownish. Maxillary palpi light brownish, segment 3 slender and dilated only at base having strongly sclerotized deep sensory pit; segments 4 and 5 fused in part.

**Thorax** : Brownish. Wing (0.94 mm x 0.44 mm) covered with hair-like brownish macrotrichia dense in costal and radial areas; CR<sub>1</sub> open, CR<sub>2</sub> though short also open widely. Legs straw yellowish; femora and tibiae covered with erect or semi-erect, light brownish hairs; HTC of 7 bristles.

**Abdomen** : Brownish. Spermathecae two, unequal, strongly sclerotized dark brownish, subspherical with short neck, measuring 0.056 mm x 0.038 mm and 0.046 mm x 0.03 mm.

**Male** : Unknown.

**Distribution** : India (Arunachal Pradesh - Pasighat).

**Type data** : Holotype female, collected from Pasighat, Arunachal Pradesh. in June, 1979; paratype 2 females, data same as holotype.

**Comments** : This species resembles *F. mortuifolii* Saunders, described from West Indies but features like higher AR value, smaller TR values in all legs specially with hind

TR smaller than mid TR along with relatively smaller spermathecae separate it from *F. mortuifolii* and its allies..

*Etymology* : The species name is due to the straw yellowish leg.

#### 10. *Forcipomyia grandiclara* n.sp. (Figs. 10 A-I)

**Female** : *Head* : Light brownish. Eyes contiguous. Antenna yellowish. Maxillary palpi yellowish, segment 3 elongate with shallow sensory pit; segments 4 and 5 fused in part.

*Thorax* : Light brownish. Wing (1.00 mm x 0.48 mm) covered with semi-erect hair-like macrotrichia; CR<sub>1</sub> very narrow, CR<sub>2</sub> long, wide, with oblique tip; haltere yellowish. Legs yellowish; femora and tibiae covered with semi-appressed, erect yellowish; HTC of 6.2 bristles.

*Abdomen* : Light brownish. Spermathecae two, light brownish, unequal, moderately sclerotized, the larger one pyriform measuring 0.045 mm x 0.036 mm and the smaller one rounded with distinct neck and measuring 0.038 mm x 0.031 mm.

**Male** : Genitalia as figured.

*Distribution* : India (West Bengal – Darjeeling).

*Type data* : Holotype female, collected from Darjeeling in July 1968; allotype male and 1 female and 2 males as paratypes, all collected from type locality in July, 1968, by light trap.

*Comments* : This species though close to *F. sauteri* Kieffer, (another S.E. Asian *Forcipomyia*), bears features like feeble brownish bands on femora of fore and mid legs, greater wing length, smaller CR and higher PR and TR values with grossly rectangular aedeagus justifying its status as a new species.

*Etymology* : The species name is pertaining to the general colour and to the greater size of wings.

#### 11. *Forcipomyia indoctacruris* n.sp. (Figs. 11 A-I)

**Female** : Unknown

**Male** : *Head* : Dark brownish. Eyes contiguous along their inner margins. Antenna brownish. Maxillary palpi brownish, segment 3 having shallow sensory pit, segments 4 long, twice as long as segment 5; PP 12-16-42-24-12.

*Thorax* : Dark brownish. Wing (1.50 mm x 0.47 mm) almost hyaline, sparsely clothed with small, yellowish hair-like macrotrichia, CR<sub>1</sub> closed, CR<sub>2</sub> open. Legs brownish

covered with semi-appressed brownish hairs of moderate size and dark brownish, long and bristly hairs along with semi-erect light brownish hairs; femora and tibiae of all legs fuscous; HTC of 6 bristles.

**Abdomen** : Light brownish. Genitalia-sternum 9 short about 0.75 times as long as broad; dististyle moderately long, stout, with strongly curved and sharply pointed distal tip; aedeagus triangular, shield-like, basal arch shallow, nipple-like distomedian process prominent, basal arms short, narrow, directed lateral, parameres absent.

**Distribution** : India (West Bengal – Darjeeling).

**Type data** : Holotype male, collected from Darjeeling in July, 1968; paratype 5 males, data same as type; all specimens collected by light trap.

**Comments** : This is a species resembling *F. clara* Chan and LeRoux, 1971b but specialities like larger wings, higher AR value and uniformly fuscous legs makes it different from the former.

**Etymology** : The species name is based *indoctacruris* refers to locality and colour of specimen.

## 12. *Forcipomyia palasunitheca* n.sp. (Figs. 12 A-F)

**Female** : **Head** : Light brownish. Eyes narrowly separated. Antenna yellowish. Maxillary palpi yellowish, segment 3 having small, unsclerotized, shallow sensory pit, segments 4 and 5 almost fused to each other; PP 10-11-29-16-9.

**Thorax** : Light brownish. Wing (0.99 mm x 0.43 mm) covered with hair-like, macrotrichia; CR<sub>1</sub> open, CR<sub>2</sub> open; haltere brownish. Legs yellowish; femora and tibiae covered with semi-appressed, short, yellowish hairs; HTC of 6.1 bristles.

**Abdomen** : Light brownish. Spermatheca one, light brownish, oval with distinct and gradually tapering neck, measuring 0.048 mm x 0.032 mm.

**Male** : Unknown.

**Distribution** : India (West Bengal – Ashoknagar, Chinsurah, Naihati, Raniganj).

**Type data** : Holotype female, collected from Naihati in September, 1966; paratypes as 1 female from Ashokenagar, 1 female from holotype locality and 1 female from Raniganj.

**Comments** : This species is very close to our new species *F. subunitheca* but comparatively paler colouration and somewhat large size in case of *palasunitheca*, n.sp. separates it from *subunitheca*, n.sp.

**Etymology** : The species name refers to single spermatheca with prop.

13. *Forcipomyia palusithec* n.sp. (Figs. 13 A-F)

**Female : Head :** Brownish. Eyes narrowly separated. Antenna brownish. Maxillary palpi light brownish, segment 3 short, stout with moderately deep sensory pit, segments 4 and 5 almost fused.

**Thorax :** Brownish. Wing (1.10 mm x 0.51 mm) clothed with moderately, dense hair-like macrotrichia; CR<sub>1</sub> open, narrow; CR<sub>2</sub> slightly wider; haltere lightly infuscated. Legs yellowish; femora and tibiae covered with semi-appressed, yellowish and long, bristly hairs; HTC of 6 bristles.

**Abdomen :** Light brownish. Spermathecae two, unequal, light brownish, strongly sclerotized margin with a very short neck and measuring 0.047 mm x 0.036 mm and 0.039 mm x 0.031 mm.

**Male :** Unknown.

**Distribution :** India (Bihar – Muzaffarpur; West Bengal – Darjeeling).

**Type data :** Holotype female, collected from Darjeeling in July 1968; paratypes 9 females same data as type. Also examined 5 females, collected by light trap from Muzaffarpur during October 1983.

**Comments :** This new species similar to our new species *F. subingrami* but it is distinguished by intense spermathecal sclerotization, narrowly separated and lightly infuscated black eyes.

**Etymology :** The species name *palusithec* refers to double spermathecae with prop.

14. *Forcipomyia propenavaia* n.sp. (Figs. 14 A-F)

**Female : Head :** Light brownish. Eyes broadly contiguous. Antenna brownish. Maxillary palpi brownish, segment 3 slightly swollen in basal half with a shallow sensory pit, segments 4 and 5 incompletely fused.

**Thorax :** Light brownish. Wing (1.03 mm x 0.48 mm) covered with hair-like brownish macrotrichia; CR<sub>1</sub> almost closed, CR<sub>2</sub> open, elongate. Legs yellowish; covered with semi-appressed, semi-erect and erect yellowish hairs, hind femora with very light brownish, broad apical band; HTC of 6 bristles.

**Abdomen :** Light brownish. Spermathecae two, large, unequal, brownish, the larger one suboval measuring 0.051 mm x 0.033 mm and the smaller one measuring 0.038 mm x 0.028 mm.

**Male :** Unknown.

**Distribution :** India (West Bengal – Darjeeling).

**Type data** : Holotype female, collected from Darjeeling in April 1968; paratypes 4 females, same data as type.

**Comments** : This species closely resembles *F. navaiae* Bystrak, 1978 and Wirth but its broadly contiguous blackish brown eyes, broad apical band on hind femora, lower value of PR and TR along with smaller size of the functional spermathecae marks it as a separate species.

**Etymology** : The species name *propenavaiae* refers to the shape of larger spermatheca.

#### 15. *Forcipomyia pseudocalcarata* n.sp. (Figs. 15 A-I)

**Female** : **Head** : Dark brownish. Eyes broadly contiguous. Antenna brownish. Maxillary palpi light brownish, segment 3 elongated, slightly dilated at base and having a moderately sclerotized sensory pit, segments 4 and 5 nearly fused; PP 11-12-31-18-11.

**Thorax** : Dark brownish. Wing (1.09 mm x 0.51 mm) covered with hair-like brownish macrotrichia; CR<sub>1</sub> narrowly open, CR<sub>2</sub> widely open. Legs yellowish; femora and tibiae covered with semi-appressed, semi-erect and yellowish hairs with apical and basal brownish bands respectively that on fore legs being feeble; HTC of 6 bristles.

**Abdomen** : Light brownish. Spermathecae two, dark brownish, unequal, oval with distinct neck, gradually tapering and measuring measuring 0.05 mm x 0.033 mm and 0.038 mm x 0.031 mm.

**Male** : genitalia as figured.

**Distribution** : India (West Bengal – Darjeeling, Habra, Kalimpong).

**Type data** : Holotype: female, collected from Darjeeling in August 1968; allotype: male same data as type; paratypes: 8 females and 1 male from Darjeeling, 1 male from Kalimpong-all by light trap during July-August 1979.

**Comments** : This species is similar to our other newly described species, *F. subcalcarata* but it is distinguished as it is larger in size with fuscous legs and male genitalia having dististyle shorter in length than basistyle and aedeagal tip broadly blunt.

**Etymology** : The species, *pseudocalcarata* refers to the apparent sclerotization of sensory pit of maxillary pit.

#### 16. *Forcipomyia subcalcarata* n.sp. (Figs. 16 A-F)

**Female** : **Head** : Brownish. Eyes narrowly contiguous. Antenna light brownish. Maxillary palpi light brownish, segment 3 slightly bulged medially with feebly sclerotized, shallow sensory pit, segments 4 and 5 incompletely fused; PP 11-11-30-19-9.

*Thorax* : Brownish. Wing (1.05 mm x 0.49 mm) covered with yellowish macrotrichia; CR<sub>1</sub> slit-like, CR<sub>2</sub> open, elongate; haltere hyaline. Legs yellowish; femora and tibiae covered with short, semi-appressed yellowish hairs; HTC of 6.3 bristles.

*Abdomen* : Light brownish. Spermathecae two, brownish, unequal, the longer one pyriform and the smaller one spherical with distinct, short neck and measuring 0.05 mm x 0.034 mm and 0.035 mm x 0.031 mm.

**Male** : Unknown.

*Distribution* : India (West Bengal – Darjeeling).

*Type data* : Holotype female, collected from Darjeeling in May 1968; paratypes 8 females, data as type.

*Comments* : This species somewhat resembles *F. calcarata* (Coquillet), 1905 but features like legs without bands, lower TR values for all legs and two subequal spermathecae makes it distinct.

*Etymology* : The species name refers to the feeble sclerotization of sensory pit of maxillary pit.

#### 17. *Forcipomyia subingrami* n.sp. (Figs. 17 A-F)

**Female** : *Head* : Brownish. Eyes narrowly separated. Antenna brownish. Maxillary palpi light brownish, segment 3 moderately elongate with a shallow sensory pit; segments 4 and 5 incompletely fused, segment 4 being slightly thicker and about double the length of segment 5.

*Thorax* : Brownish. Wing (1.05 mm x 0.50 mm) covered with hair-like brownish macrotrichia; CR<sub>1</sub> almost closed, CR<sub>2</sub> open, elongate; haltere brownish. Legs yellowish; femora and tibiae covered with semi-appressed, yellowish and semi-erect and erect bristly yellow hairs; HTC of 6.5 bristles.

*Abdomen* : Brownish. Spermathecae two, dark brownish, unequal-the larger one subspherical with short neck, the smaller one spherical and almost without a neck, the two spermathecae measuring 0.048 mm x 0.037 mm and 0.038 mm x 0.031 mm respectively.

**Male** : Unknown.

*Distribution* : India (West Bengal – Darjeeling).

*Type data* : Holotype female, collected from Darjeeling in June 1968; paratypes 11 females, same data as type.

**Comments** : This species is somewhat similar to *F. quasiingrami* Macfie, 1939c from which it is distinguished by its larger spermathecae, higher AR value and lower TR values of mid and hind legs.

**Etymology** : The species name refers to the nearly linear shape of maxillary palpi.

#### 18. *Forcipomyia subunitheca* n.sp. (Figs. 18 A-F)

**Female** : **Head** : Brownish. Eyes narrowly separated. Antenna light brownish. Maxillary palpi yellowish, segments 3 elongate with shallow sensory pit; segments 4 and 5 incompletely fused.

**Thorax** : Light brownish. Wing (0.92 mm x 0.42 mm) covered with brownish macrotrichia; CR<sub>1</sub> narrowly open, CR<sub>2</sub> elongate; open and wider; haltere brownish. Legs yellowish; femora and tibiae densely clothed with short, semi-appressed, long, bristle-like hairs; HTC of 6.2 bristles.

**Abdomen** : Light brownish. Spermathecae one, large, brownish and oval with gradually tapering neck and measuring 0.047 mm x 0.032 mm.

**Male** : Unknown.

**Distribution** : India (West Bengal – Ashoknagar, Habra, Palla Road, Uttarpara).

**Type data** : Holotype female, collected from Palla Road during May-June, 1979; paratypes as : 1 female from Habra, 1 female from Ashoknagar and 2 females from Uttarpara.

**Comments** : This species is somewhat similar to *F. unica* Bystrak and Wirth, 1978 but is unique in the respect of its higher PR and TR values.

**Etymology** : The species name refers to the single large oval spermatheca.

#### (c) Species of the subgenus *Forcipomyia* s.str.

#### 19. *F. albiradialis* Tokunaga, 1940c (Figs. 19 A-F)

**Female** : **Head** : Brownish. Eyes very narrowly separated. Antenna dull brownish. Maxillary palpi light brownish, segment 3 highly inflated with deep sensory pit, segments 4 and 5 completely separated; PP 8-10-30-16-13.

**Thorax** : Light brownish. Wing (1.05 mm x 0.46 mm) clothed with hair-like, brownish macrotrichia; CR<sub>1</sub> closed, CR<sub>2</sub> open, slightly elongate; haltere hyaline. Legs golden yellowish with short, semi-erect, long, erect, bristly yellowish hairs; hind femora with dark brownish, broad apical band extended to about half of the length of femora while tibiae with narrower subbasal band; HTC of 8.9 bristles.

*Abdomen* : Dark brownish. Spermathecae two, brownish, oval devoid of distinct neck, measuring 0.053 mm x 0.034 mm and 0.051 mm x 0.035 mm.

**Male** : Genitalia as figured.

*Distribution* : Hokkaido, Honshu, Ryukyu Islands, India (Arunachal Pradesh – Pasighat).

*Specimens examined now* : 8 females from Pasighat.

*Comments* : This species is highly distinguished from others by 3<sup>rd</sup> maxillary palpi with highly inflated basal portion, hind legs with broad apical band and narrow sub-basal bands on femora and tibiae.

## 20. *Forcipomyia bikanni* Chan and LeRoux, 1971b (Figs. 20 A-I)

**Female** : *Head* : Brownish. Eyes narrowly separated. Antenna light brownish. Maxillary palpi light brownish, segment 3 moderately elongate with small, deep, sensory pit, segments 4 and 5 short, stout and of same width and length; PP 9-11-30-13-12.

*Thorax* : Brownish. Wing (1.00 mm x 0.45 mm) sparsely covered with short, hair-like, brownish macrotrichia; CR<sub>1</sub> closed, CR<sub>2</sub> narrowly open, elongate; haltere hyaline. Legs covered with semi-appressed, yellowish hairs, erect to semi-erect, bristly yellowish hairs; hind femora with apical broad, dark brown band and tibiae with narrower dark brown sub-basal bands, indistinct bands of similar nature present on mid legs but no bands on fore femora though fore tibiae slightly fuscous in its middle; HTC of 7.2 bristles.

*Abdomen* : Dark brownish. Spermathecae two, unequal with short necks, strongly sclerotized, elongate oval, measuring 0.086 mm x 0.048 mm and 0.062 mm x 0.04 mm respectively.

**Male** : Genitalia as figured.

*Distribution* : Singapore, India (Arunachal Pradesh – Pasighat; Bihar – Darbhanga, Muzaffarpur).

*Specimens now examined* : 11 females, 52 females collected by light trap from Muzaffarpur in November, 82; also collected from rearing banana stumps 15 males, 16 females from Darbhanga during September, 1982, and 10 females from Pasighat.

*Comments* : The Indian forms of *F. bikanni* Chan and LeRoux studied now were identical to their counterparts described from Singapore except that the wing length of the Indian forms were consistently shorter. It is a widely distributed species and a common *Forcipomyia* in India.

**21. *Forcipomyia brevipalpis* n.sp. (Figs. 21 A-I)**

**Female : Head :** Brownish. Eyes narrowly separated. Antenna light brownish. Maxillary palpi brownish, segment 3 moderately dilated at base with small and deep sensory pit, segments 4 and 5 short, almost equal; PP 9-10-26-10-10.

**Thorax :** Brownish. Wing (0.82 mm x 0.35 mm) clothed with small, hair-like, brownish slit-like macrotrichia; CR<sub>1</sub> open, CR<sub>2</sub> open. Legs yellowish, covered with semi-appressed, semi-erect and erect yellowish hairs of apical bands of brownish shades; hind tibiae slightly fuscous subbasally, fore tibiae with apical fuscous spots; HTC of 8 bristles.

**Abdomen :** Light brownish. Spermathecae two, subequal, oval, lightly sclerotized, without definite neck, measuring 0.047 mm x 0.032 mm and 0.042 mm x 0.028 mm.

**Male :** Genitalia as figured.

**Distribution :** India (West Bengal – Palla Road).

**Type data :** Holotype female, collected from Palla Road, Burdwan District in May, 1979; allotype male and 6 females as paratypes; data same as type.

**Comments :** This species is similar to *F. fulvotibialis*, n.sp. and *F. pulluspadicruris*, n.sp., but difference being in respect of short palpal segment, eyes being narrowly separated closely separates *F. brevipalpis*, n.sp. from *F. fulvotibialis*, n.sp. and *F. pulluspadicruris*, n.sp.

**Etymology :** The species name refers to the shortness of pali.

**22. *Forcipomyia fascilatipes* n.sp. (Figs. 22 A-F)**

**Female : Head :** Brownish. Eyes narrowly contiguous. Antenna light brownish. Maxillary palpi light brownish, segment 3 dilated at base and having a shallow sensory pit; segments 4 and 5 not fused and of almost the same length.

**Thorax :** Brownish. Wing (0.99 mm x 0.44 mm) covered with brownish, hair-like macrotrichia; CR<sub>1</sub> obliterated, CR<sub>2</sub> open, short; haltere hyaline. Legs yellowish, with erect and semi-erect, yellowish hairs; femora and tibiae of mid and hind legs with apical and sub-basal, brownish bands covering about half of their lengths; HTC of 7.2 bristles.

**Abdomen :** Brownish. Spermathecae two, unequal to each other, brownish, unsclerotized, measuring 0.073 mm x 0.051 mm and 0.52 mm x 0.039 mm.

**Male :** Unknown.

**Distribution :** India (Arunachal Pradesh – Pasighat).

*Type data* : Holotype female, collected from Pasighat in September, 1977; paratypes 4 females, same data as type.

*Comments* : This present species is closely allied to *F. fascicauda* Tokunaga, 1940c and *F. bikanni* Chan and LeRoux, 1971b but distinctive for its broader band on tibiae and higher values of mid TR.

*Etymology* : The species name refers to the broad band on legs.

### 23. *Forcipomyia fulvipes* n.sp. (Figs. 23 A-I)

**Female** : *Head* : Brownish. Eyes broadly contiguous. Antenna light brownish. Maxillary palpi brownish, segment 3 slender, middle swollen having rounded, sensory pit, segments 4 and 5 completely segmented, equal and of same width.

*Thorax* : Brownish. Wing (1.38 mm x 0.56 mm) covered with moderately long brownish macrotrichia; CR<sub>1</sub> slit-like, CR<sub>2</sub> open and elongate; haltere hyaline. Legs light brownish with moderately, long, semi-appressed, semi-erect and erect, long bristly yellowish hairs; hind femora with narrow, apical brownish bands; HTC of 8.4 bristles.

*Abdomen* : Brownish. Spermathecae two, brownish, unequal and oval with very short, indistinct neck, and measuring 0.056 mm x 0.037 mm.

**Male** : Genitalia as figured.

*Distribution* : India (West Bengal – Darjeeling).

*Type data* : Holotype female, collected from Darjeeling in September, 1968; allotype male, and 3 females and 5 males as paratypes data same as type.

*Comments* : The present species is somewhat allied to *F. securis* Chan and LeRoux, 1971b in antennal pattern, palpal structure and in male genitalia. But a lower value in TR, a higher value in AR and TR, and presence of a connection between the two caudal lobes of parameres make it distinct from *F. securis* Chan and LeRoux, 1971b.

*Etymology* : The species name refers to the colour of the legs.

### 24. *Forcipomyia fulvotibialis* n.sp. (Figs. 25 A-I)

**Female** : *Head* : Brownish. Eyes narrowly contiguous in their margin. Antenna brownish. Maxillary palpi light brownish, segment 3 swollen in its basal two thirds having large, deep round and strongly sclerotized sensory pit; segments 4 and 5 moderately broad, elongate and almost of same width and length.

*Thorax* : Light brownish. Wing (1.3 mm x 0.55 mm) covered with brownish, hair-like macrotrichia; CR<sub>1</sub> slit-like, CR<sub>2</sub> open, short and oblique. Legs light brownish, covered

with semi-erect yellow or brownish yellow hairs and erect, fine bristly hairs; hind femora with broad, fair brownish apical band; sub-basal tibial band indistinct; HTC of 8 bristles.

**Abdomen** : Light brownish. Spermathecae two, subequal, ovoid, slightly sclerotized without distinct necks and measuring 0.054 mm x 0.053 mm and 0.05 mm x 0.036 mm.

**Male** : Genitalia as figured.

**Distribution** : India (West Bengal – Darjeeling).

**Type data** : Holotype: female, collected from Darjeeling in September, 1968; allotype: male from same locality in September, 1968; paratypes: 3 females and 2 males, same data as type.

**Comments** : This species is similar to *F. albiradialis* Tokunaga, 1940c and *F. bystraki* Grogan and Wirth, 1975c but is distinguished for absence of brownish bands on hind tibiae, 2 lightly sclerotized ovoid spermathecae without distinct necks and prongs of paramere crossed each other caudally.

**Etymology** : The species name refers to the colour of the tibiae.

#### 25. *Forcipomyia globofuscitheca* n.sp. (Figs. 25 A-F)

**Female** : **Head** : Brownish. Eyes narrowly contiguous in their inner margins. Antenna brownish. Maxillary palpi brownish, segment 3 short and moderately broad with deep sensory pit, segment 4 short and tubular, segment 5 nearly of same length as segment 4.

**Thorax** : Dark brownish. Wing (1.08 mm x 0.47 mm) clothed with short, hair-like brownish macrotrichia; CR<sub>1</sub> closed, CR<sub>2</sub> open, elongate; haltere moderately fuscous. Legs covered with short, semi-appressed, brownish setae and a few moderately long, bristly hairs; hind femora with brownish band on apical half and tibiae with brownish band on its basal two-third; bands of similar nature present in mid legs also; HTC of 7.4 bristles.

**Abdomen** : Brownish. Spermathecae two, large, oval, unequal to each other with very short necks and dark brownish, strongly sclerotized measuring 0.073 mm x 0.049 mm and 0.062 mm x 0.044 mm.

**Male** : Unknown.

**Distribution** : India (Arunachal Pradesh – Pasighat).

**Type data** : Holotype female, collected from Pasighat in June, 1979; paratypes 5 females, same data as type.

*Comments* : This species although resembles *F. albiradialis* Tokunaga, 1940c but its distinctive features are higher values of TR of the last four legs including strong sclerotized oval spermatheca.

*Etymology* : The species name refers to the nearly globular, dark brown spermathecae.

#### 26. *Forcipomyia holofuscicruris* n.sp. (Figs. 26A-I)

**Female** : *Head* : Light brownish. Eyes narrowly separated. Antenna light brownish. Maxillary palpi brownish, segment 3 elongated with roundish, deep and sclerotized sensory pit, segment 4 tubular and longer than segment 5; PP 11-12-12-39-18-16.

*Thorax* : Light brownish. Wing (1.35 mm x 0.52 mm) covered with short, hair-like, brownish, macrotrichia; CR<sub>1</sub> closed, CR<sub>2</sub> open, short; haltere hyaline. Legs light brownish, covered with semi-appressed and semi-erect or erect, brownish or yellowish brown hairs; femora and tibiae of all legs fuscous throughout excepting their extreme apices; HTC of 9.2 bristles.

*Abdomen* : Light brownish. Spermathecae two, subequal oval, lightly sclerotized and without distinct necks measuring 0.058 mm x 0.038 mm and 0.052 mm x 0.031 mm.

**Male** : Genitalia as figured.

*Distribution* : India (Arunachal Pradesh – Pasighat; West Bengal – Darjeeling).

*Type data* : Holotype female, collected from Darjeeling in May, 1968; allotype male, same data as type; paratypes as 6 females and 5 males from Darjeeling in May, 1968 and 1 female and 1 male from Pasighat in June, 1979.

*Comments* : This species bears a close similarity with *F. claggi* Tokunaga, 1959 but is distinctively different in tarsal ratios and structural pattern of aedeagus and parameres.

*Etymology* : The species name refers to the entire cover of dark brown hairs on legs.

#### 27. *Forcipomyia imparithecica* n.sp. (Figs 27 A-I)

**Female** : *Head* : Light brownish. Eyes broadly contiguous. Antenna light brownish. Maxillary palpi light brownish, segment 3 tubular, slightly bulged apically and having small, rounded, shallow sensory pit, segments 4 and 5 equal to each other, narrow and tubular.

*Thorax* : Brownish. Wing (1.07 mm x 0.45 mm) densely covered with short, hair-like, yellowish macrotrichia; CR<sub>1</sub> slit-like, CR<sub>2</sub> widely open and roughly triangular. Legs yellowish and clothed with semi-erect or erect yellowish hairs of moderate length; no band present on legs; HTC of 7.8 bristles.

**Abdomen** : Light brownish. Spermathecae two, light brownish, hyaline, unequal to each other, with very short neck and measuring 0.09 mm x 0.066 mm and 0.068 mm x 0.044 mm.

**Male** : Genitalia as figured.

**Distribution** : India (West Bengal – Darjeeling, Kalimpong).

**Type data** : Holotype female, collected from Darjeeling in September, 1968; allotype male, same data as type; paratypes as 5 females and 8 males from Darjeeling, 1 male from Kalimpong in July, 1968.

**Comments** : This species resembles *F. fascicornis* Tokunaga, 1962a but it is relatively smaller and may be distinguished from the former species by its higher AR values, hyaline colouration of the spermatheca and by male genitalic details.

**Etymology** : The species name refers to the unequal of spermathecae.

#### 28. *Forcipomyia lurida* n.sp. (Figs. 28 A-F)

**Female** : **Head** : Light brownish. Eyes very narrowly separated. Antenna brownish. Maxillary palpi light brownish, segment 3 short having deep tubular, sensory pit; segments 4 and 5 tubular.

**Thorax** : Brownish. Wing (1.14 mm x 0.50 mm) densely covered with moderately long hair-like macrotrichia; CR<sub>1</sub> open narrowly, CR<sub>2</sub> widely open and roughly rhomboidal; haltere hyaline. Legs yellowish, covered with short, semi-appressed and semi-erect or erect fine, hair-like yellowish setae, no band present on legs; HTC of 7 bristles.

**Abdomen** : Light brownish. Spermathecae two, unequal, lightly sclerotized, the larger one spherical with distinct neck, measuring 0.081 mm x 0.061 mm, smaller one oval without a neck, measuring 0.056 mm x 0.036 mm.

**Male** : Genitalia as figured.

**Distribution** : India (Arunachal Pradesh – Pasighat; West Bengal – Darjeeling).

**Type data** : Holotype female, collected from Darjeeling in September, 1968; paratypes as 4 females from type locality and 1 female from Pasighat in August, 1977.

**Comments** : This species is similar to *F. edgari* Tokunaga and Murachi, 1959 but it is distinct for higher TR value of mid legs and larger spermathecae which are poorly sclerotized.

**Etymology** : The species name refers to the pale yellow colour of the body.

29. *Forcipomyia paenealbiradialis* n.sp. (Figs. 29 A-I)

**Female : Head :** Light brownish. Eyes broadly contiguous. Antenna pale. Maxillary palpi brownish, segment 3 greatly swollen at base but narrowed distally with deep sensory pit, segments 4 and 5 equal to each other.

**Thorax :** Light brownish. Wing (0.9 mm x 0.4 mm) clothed with small, hair-like macrotrichia; CR<sub>1</sub> closed, CR<sub>2</sub> open, short; haltere hyaline. Legs pale yellowish with erect and semi-erect bristly hairs, femora and tibiae of hind legs with broad, apical and comparatively narrow, subbasal brownish bands; HTC of 7.6 bristles.

**Abdomen :** Light brownish. Spermathecae two, subequal, oval, brownish, lightly sclerotized and measuring 0.053 mm x 0.04 mm and 0.048 mm x 0.037 mm.

**Male :** Genitalia as figured.

**Distribution :** India (Arunachal Pradesh – Pasighat).

**Type data :** Holotype female, collected from Pasighat in June, 1979; allotype male and 2 females and 2 males as paratypes, same data as type.

**Comments :** This species closely resembles *F. albiradialis* Tokunaga, 1940c but separated for its lower value of TR of mid and hind legs, 2 lightly sclerotized differently shaped spermathecae.

**Etymology :** The species name refers to the colour of the radial area along with lower value of TR of legs.

30. *Forcipomyia palpipotens* n.sp. (Figs. 30 A-I)

**Female : Head :** Brownish. Eyes very narrowly separated. Antenna light brownish. Maxillary palpi short, brownish segment 3 swollen throughout with large, round, deep, sensory pit, segments 4 and 5 equal to each other, short and stout; PP 8-10-24-10-10.

**Thorax :** Brownish. Wing (1.09 mm x 0.46 mm) covered with hair-like brownish macrotrichia; CR<sub>1</sub> slit-like, CR<sub>2</sub> narrowly open; haltere moderately infuscated. Legs light brownish, covered with semi-erect and erect bristly hairs; femora and tibiae of all legs broadly fuscous for most of their parts excepting basal area of femora and apical area of tibiae; HTC of 8 bristles.

**Abdomen :** Brownish. Spermathecae two, subequal, strongly sclerotized but without a distinct neck, elongated oval and measuring 0.05 mm x 0.024 mm and 0.044 mm x 0.023 mm.

**Male :** Genitalia as figured.

**Distribution :** India (West Bengal – Darjeeling, Kalimpong).

**Type data** : Holotype female, collected from Darjeeling in August, 1968; allotype male, same data as type; paratypes as 4 females, 6 males from Darjeeling and 1 male from Kalimpong in October, 1968.

**Comments** : This species is very similar to *F. swezeyana* Tokunaga and Murachi, 1959 and *F. swezeyanaadfinis* Chan and LeRoux, 1971b, but is distinguished for its smaller values of PR, unequal spermathecae and strikingly wider basistyle.

**Etymology** : The species name refers to the powerful palpi.

### 31. *Forcipomyia pseudobipunctata* n.sp. (Figs. 31 A-I)

**Female** : **Head** : Light brownish. Eyes narrowly contiguous. Antenna yellowish. Maxillary palpi yellowish, segment 3 short, pitcher-like with large, round and deep sensory pit, segments 4 and 5 narrow, tubular, equal to each other.

**Thorax** : Light brownish. Wing (1.61 mm x 0.66 mm) covered with yellowish, hair-like macrotrichia; CR<sub>1</sub> closed, CR<sub>2</sub> widely open, elongate; haltere hyaline. Legs yellowish covered with short, semi-erect and moderately long, erect, bristly yellowish hairs; hind femora with broad, apical brownish band covering their distal half, hind tibiae with brownish band extended from sub-basal region to sub-apical region; similar bands though paler present on mid femora and mid tibiae; HTC of 9 bristles.

**Abdomen** : Light brownish. Spermathecae two, almost equal to each other with short neck, light brownish and measuring 0.077 mm x 0.049 mm and 0.077 mm x 0.042 mm.

**Male** : Genitalia as figured.

**Distribution** : India (West Bengal – Darjeeling).

**Type data** : Holotype female, collected from Darjeeling in September, 1968; allotype male from type locality in September, 1968; paratypes 3 females and 2 males, same data as type.

**Comments** : This new species though similar to *F. bipunctataproxima* Chan and LeRoux, 1971b and *F. bystraki* Grogan and Wirth, 1975c in respect of antennal structure, maxillary palpi, spermatheca and male genitalic structure but this species is distinct in respect of lower and higher TR and AR value respectively and different leg bandings and genitalic details.

**Etymology** : The species name refers to the double spots on hind legs.

### 32. *Forcipomyia pulluspadicruris* n.sp. (Figs. 32 A-I)

**Female** : **Head** : Dark brownish. Eyes almost contiguous. Antenna brownish. Maxillary palpi brownish, segment 3 short, stout, swollen in basal two-third, with

moderately deep and strongly sclerotized sensory pit, segments 4 and 5 almost equal to each other, segment 5 slightly thicker and rounded distally.

*Thorax* : Dark brownish. Wing (1.52 mm x 0.65 mm) densely clothed with hair-like, brownish macrotrichia; CR<sub>1</sub> closed; CR<sub>2</sub> open, elongate; haltere moderately infuscated. Legs dark brownish with moderately long, erect and semi-appressed brownish hairs; HTC of 9 bristles.

*Abdomen* : Brownish. Spermathecae two, unequal, sclerotized, both without neck, the larger one elongate oval, measuring 0.101 mm x 0.058 mm and the smaller one subspherical measuring 0.076 mm x 0.052 mm.

**Male** : Genitalia as figured.

*Distribution* : India (West Bengal – Darjeeling, Kalimpong).

*Type data* : Holotype female, collected from Darjeeling in July, 1968; allotype male from type locality, in August, 1968; paratypes as 4 females, 6 males with data same as type, 1 male from Kalimpong in August, 1968.

*Comments* : The present species is very much allied to *F. bipunctataprovingua* Chan and LeRoux, 1971b, in similar AR, PR and TR values, apparently alike spermathecae, male genitalia, but it is distinct by its characteristic leg colouration and details of aedeagus and parameres.

*Etymology* : The species name refers to the dark brownish legs.

### 33. *Forcipomyia quasialbiradialis* n.sp. (Figs. 33 A-I)

**Female** : *Head* : Light brownish. Eyes broadly contiguous throughout their inner margin. Antenna yellowish. Maxillary palpi light brownish, segment 3 moderately long, slightly curved and swollen in basal half having deep, large round sensory pit, segments 4 and 5 stout, almost equal to each other in length.

*Thorax* : Brownish. Wing (1.35 mm x 0.57 mm) covered with brownish, hair-like macrotrichia; CR<sub>1</sub> narrowly open, CR<sub>2</sub> widely open, elongate; haltere hyaline. Legs covered with semi-erect, brownish yellow hairs and erect, fine, bristly hairs of variable sizes; hind femora with narrow pre-apical brownish bands; HTC of 8 bristles.

*Abdomen* : Brownish. Spermathecae two, large, unequal and elliptical, lightly sclerotized with short neck and measuring 0.078 mm x 0.046 mm and 0.062 mm x 0.035 mm.

**Male** : Genitalia as figured.

*Distribution* : India (Arunachal Pradesh – Pasihat; West Bengal – Darjeeling).

**Type data** : Holotype female, collected from Darjeeling in August, 1968; allotype male, from Darjeeling in September, 1968; paratypes 8 females from Darjeeling (data same as type) and 1 male from Pasighat in August, 1977.

**Comments** : This new species, *quasialbiralialis* is similar to *F. albiradialis* Tokunaga, 1940c and new species *F. fulvotibialis* but is distinct from these two species by lower values of TR.

**Etymology** : The species name refers to the colour of the radial area with lower values of TR.

#### 34. *Forcipomyia variicrus* Kieffer, 1913d (Figs. 34 A-F)

**Female** : **Head** : Brownish. Eyes broadly contiguous. Antenna light brownish. Maxillary palpi brownish, segment 3 dilated in basal half having large, round, moderately sclerotized and shallow sensory pit, segment 4 roughly triangular, segment 5 narrower.

**Thorax** : Dark brownish. Wing (1.3 mm x 0.57 mm) moderately clothed with hair-like, brownish macrotrichia; CR<sub>1</sub> obliterated, CR<sub>2</sub> open, narrow and oblique at tip; haltere hyaline. Legs yellowish, clothed with moderately long, semi-erect, yellowish hairs and long brownish, erect, bristly hairs; femora of mid and hind legs with broad, dark brownish apical bands extended upto two thirds of its length, no bands on fore femora; tibiae of all legs with apical brownish bands on fore and mid legs paler; HTC with 9 spines.

**Abdomen** : Brownish. Spermathecae two, unequal, moderately sclerotized, brownish, sub-spherical with short neck and measuring 0.056 mm x 0.042 mm and 0.046 mm x 0.036 mm.

**Male** : Genitalia as figured.

**Distribution** : India (West Bengal – Darjeeling, Port Canning).

**Specimens examined** : 3 females from Darjeeling and 1 male from Port Canning.

**Comments** : This species has certain specialities. Eyes broadly contiguous, maxillary palpi with segment 3 dilated on basal half, femora of mid and hind legs with very broad dark brownish apical bands.

#### (d) Species of the subgenus *Lepidohelea* Kieffer

#### 35. *Forcipomyia chrysolopha* (Kieffer), 1911c (Figs. 35 A-E)

**Female** : **Head** : Brownish. Eyes broadly contiguous. Antenna light brownish. Maxillary palpi yellowish, segment 3 slightly bulged radially having small, round, deep, strongly sclerotized sensory pit, segments 4 and 5 stout, segment 4 shorter.

**Thorax** : Brownish. Wing (0.94 mm x 0.39 mm) with short, hair-like, yellowish macrotrichia; CR<sub>1</sub> closed, CR<sub>2</sub> widely open, elongated with oblique tip; haltere fuscous. Legs brownish, clothed with short, semi-erect, light brownish hairs and erect, long, brownish bristly hairs along with short, wide, lanceolate, 4-5 striped scales; femora and tibiae of all legs with broad, sub-basal and sub-apical brownish bands with clear areas in between; bands of hind legs comparatively darker; HTC of 7.6 bristles.

**Abdomen** : Light brownish. Spermathecae two, small, subequal, dark brownish, strongly sclerotized, oval with distinct, tubular, neck and measuring 0.04 mm x 0.029 mm and 0.035 mm x 0.026 mm.

**Male** : Genitalia as figured.

**Distribution** : Widespread in Ethiopian and Oriental Region, Malaysia, Taiwan, West Africa, India (Arunachal Pradesh – Pasighat; Bihar – Muzaffarpur; West Bengal – Asansol, Burdwan Town, Chinsura, Durgapur, Kalimpong, Maithon).

**Specimens examined** : Pasighat 4 females in June, 1979; 60 males, 340 females collected by light trap from Muzaffarpur in February, 1986 to August 1999 where as 65 females and 30 males collected from 6 different locations in West Bengal, named above during February 1986 – August 1999.

**Comments** : The present species is an abundant one with spotted legs and can easily be distinguished from other *Forcipomyia* species. This species is also distinctive for its sub-basal and sub-apical brownish band on all legs, short tubular maxillary palpi and short vasiform antennal segments.

(e) Species of the subgenus *Microhelea* Kieffer

36. *Forcipomyia angustipalpis* n.sp. (Figs. 36 A-J)

**Female** : **Head** : Brownish. Eyes almost contiguous along their inner margin. Antenna light brownish. Maxillary palpi light brownish, segment 3 elongated, narrow at base and slightly bulged medially with deep sensory pit, segment 4 narrow, tubular, 3-5 times as long as broad and 2.33 times as long as segment 5.

**Thorax** : Dark brownish. Wing (1.55 mm x 0.68 mm) covered with moderately long, hair-like, brownish macrotrichia; CR<sub>1</sub> open, elongated, narrow; CR<sub>2</sub> open widely, elongate and subrectangular. Legs light brownish, clothed with semi-erect, yellowish hairs and erect light brownish, bristly hairs; hind femora and tibiae with broad sub-apical and sub-basal brownish bands, bands of similar nature but lighter present in mid legs; fore tibiae slightly fuscous basally; HTC of 7.5 bristles.

**Abdomen** : Light brownish. Spermathecae two, large, oval, subequal with very, short neck, strongly sclerotized, measuring 0.084 mm x 0.044 mm and 0.08 mm x 0.04 mm.

**Male : Genitalia** as figured.

**Distribution** : India (West Bengal – Darjeeling).

**Type data** : Holotype female, collected from Darjeeling in August, 1968; allotype male in September, 1968; paratypes 4 females and 1 male from type locality.

**Comments** : This species is very much similar to *F. intonsa* Chan and LeRoux, 1971b in banding pattern and palpal structure but is discreet in the aspect of higher AR, PR values, smaller TR values with elongate, oval spermathecae. In males it is also distinctive in the convex basal arch of aedeagus and very narrow fused basal portion of parameres.

**Etymology** : The species name refers to the narrow maxillary palpi.

### 37. *Forcipomyia fuliginosa* (Meigen), 1818 (Figs. 37 A-J)

**Female : Head** : Dark brownish. Eyes almost contiguous throughout their inner margin. Antenna light brownish. Maxillary palpi dark brownish, segment 3 swollen with moderately broad and deep sensory pit, segment 4 tubular, 3 times as long as broad, 1.5 times as long as segment 5.

**Thorax** : Dark brownish. Wing (1.77 mm x 0.74 mm) densely clothed with brownish, hair-like macrotrichia; CR<sub>1</sub> open, slit-like, CR<sub>2</sub> widely open and greatly elongated; haltere moderately infuscated. Legs light brownish, covered with semi-appressed and erect or semi-erect brownish, fine, bristly hairs; hind femora and tibiae with broad, apical and basal dark brownish bands and bands of similar nature though slightly lighter present in mid legs; HTC of 8.7 bristles.

**Abdomen** : Dark brownish. Spermathecae two, almost equal, without neck, strongly sclerotized, dark brownish, ovoid and measuring 0.062 mm x 0.045 mm and 0.066 mm x 0.047 mm.

**Male : Genitalia** as figured.

**Distribution** : Germany, India (West Bengal – Darjeeling).

**Specimens examined** : 7 females and 5 males collected from Darjeeling.

**Comments** : The Indian forms of the present species show slight lower values in metathoracic TR, otherwise they are similar to their exotic counterparts.

**Etymology** : The species name refers to the specific colour of the body.

### 38. *Forcipomyia gracilalitheca* n.sp. (Figs. 38 A-J)

**Female : Head** : Brownish. Eyes broadly contiguous along their inner margin. Antenna light brownish. Maxillary palpi light brownish, segment 3 swollen nearly to its

tip having deep sensory pit; segment 4 moderately long, 3 times as long as broad and 1.5 times as long as segment 5.

*Thorax* : Brownish. Wing (1.33 mm x 0.6 mm) covered with brownish, hair-like macrotrichia; CR<sub>1</sub> open and slit-like, CR<sub>2</sub> widely open and elongate; haltere moderately infuscated. Legs slightly fuscous basad; HTC bears 8.7 bristles.

*Abdomen* : Light brownish. Spermathecae two, small, light sclerotized, with very short neck measuring 0.38 mm x 0.027 mm and 0.036 mm x 0.027 mm.

**Male** : Genitalia as figured.

*Distribution* : India (West Bengal – Darjeeling).

*Type data* : Holotype female, collected from Darjeeling in June, 1968; allotype male from same locality in June, 1968; paratypes 5 females and 2 males from type locality.

*Comments* : This species resembles *F. fuliginosa* (Meigen), 1818 but may be readily distinguished by unbanded legs and smaller spermathecae.

*Etymology* : The species name refers to the two smaller spermathecae.

### 39. *Forcipomyia nudifascipes* n.sp. (Figs. 39 A-J)

**Female** : *Head* : Light brownish. Eyes broadly contiguous almost throughout their inner margin. Antenna light brownish. Maxillary palpi light brownish with short, stout, enlarged segment 3 having deep and broad sensory pit, segment 4 long, tubular 3.6 times as long as broad and 2.7 times as long as knob-like segment 5.

*Thorax* : Light brownish. Wing (1.34 mm x 0.56 mm) covered with hair-like macrotrichia; CR<sub>1</sub> open, CR<sub>2</sub> open and moderately elongated; haltere hyaline. Legs yellowish clothed with semi-appressed, fine yellowish hairs and semi-erect, erect fine bristly hairs of variable length; HTC bears 8 bristles.

*Abdomen* : Light brownish. Spermathecae two, almost equal without neck, lightly sclerotized, brownish measuring 0.052 mm x 0.039 mm and 0.054 mm x 0.036 mm.

**Male** : Genitalia as figured.

*Distribution* : India (West Bengal – Darjeeling, Kalimpong).

*Type data* : Holotype female, collected from Darjeeling in September, 1968; allotype male from type locality in April, 1968; paratypes Darjeeling 3 females, 2 males, Kalimpong 1 female and 2 males.

**Comments** : This species resembles *F. tuthilli* Tokunaga and Murachi, 1959 by palpal structure and spermatheca. It is however distinctive for its higher TR value and absence of band on hind femora.

**Etymology** : The species name refers to the nakedness of legs.

#### 40. *Forcipomyia ovatithec*a n.sp. (Figs. 40 A-J)

**Female** : **Head** : Brownish. Eyes almost contiguous throughout their inner margin. Antenna light brownish. Maxillary palpi dark brownish, segment 3 greatly enlarged almost to its tip. Roughly sub-rectangular with deep sensory pit, segment 4 tubular 3.4 times as long as broad and 2 times as long as segment 5.

**Thorax** : Black brown. Wing (1.52 mm x 0.64 mm) clothed with hair-like macrotrichia, CR<sub>1</sub> slit-like, CR<sub>2</sub> widely open and elongate; haltere slightly fuscous. Legs light brownish covered with brownish, small semi-appressed hair and semi-erect, erect bristly brownish hairs of variable length; hind femora with broad, deep brownish apical and tibiae with comparatively narrow sub-basal band; mid femora and tibiae, with narrow and light brownish bands of similar nature; HTC bears 8.5 bristles.

**Abdomen** : Light brownish. Spermathecae two, elongated, oval, almost equal without neck, strongly sclerotized and dark brownish measuring 0.060 mm x 0.039 mm and 0.062 mm and 0.039 mm.

**Male** : Genitalia as figured.

**Distribution** : India (West Bengal – Darjeeling).

**Type data** : Holotype female, collected from Darjeeling in September, 1968; allotype male from same area in April, 1968; paratypes 5 females and 5 males from type locality.

**Comments** : This species is somewhat similar to *F. tuthilli* Tokunaga and Murachi, 1959 and *F. ornata* Tokunaga, 1940c. However smaller TR and presence of band on hind tibiae separate *F. ovatithec*a, n.sp. from *F. tuthilli* Tokunaga and Murachi, 1959, whereas smaller AR value and mode of banding in mid and hind legs separate *F. ovatithec*a, n.sp. from *F. ornata* Tokunaga, 1940c.

**Etymology** : The species name refers to the oval spermathecae.

#### 41. *Forcipomyia paenefuliginosa* n.sp. (Figs. 41 A-F)

**Female** : **Head** : Light brownish. Eyes broadly contiguous throughout their inner margin. Antenna yellowish. Maxillary palpi light brownish with segment 3 greatly enlarged having deep sensory pit, segment 4 long, 3.7 times as long as broad and 2.16 times as long as segment 5.

**Thorax** : Light brownish. Wing (1.73 mm x 0.74 mm) clothed with hair-like yellowish brown macrotrichia, CR<sub>1</sub> open, CR<sub>2</sub> open and greatly elongated; haltere hyaline. Legs yellowish covered with semi-erect and erect fine bristly yellowish hairs; hind femora and tibiae with subapical and basal light brownish bands; HTC bears 8.8 bristles.

**Abdomen** : Light brownish. Spermathecae unequal, devoid of neck, almost unsclerotized, light brownish, the larger oval measuring 0.064 mm x 0.041 mm and the smaller one subspherical measuring 0.056 mm x 0.044 mm.

**Male** : Unknown.

**Distribution** : India (West Bengal – Darjeeling).

**Type data** : Holotype female, collected from Darjeeling in September, 1968; paratypes 4 females from type locality.

**Comments** : This species is closely resembles *F. fuliginosa* (Meigen), 1818 but distinguished for its unbanded fore and mid legs and also very faint band on hind legs.

**Etymology** : The species name refers to the light brownish spermathecae.

#### 42. *Forcipomyia similitheca* n.sp. (Figs. 42 A-I)

**Female** : **Head** : Dark brownish. Eyes almost contiguous throughout their broad inner margin. Antenna brownish. Maxillary palpi dark brownish, segment 3 greatly enlarged having deep sensory pit; segment 4 tubular, long, 3.1 times as long as broad and 1.3 times as long as segment 5.

**Thorax** : Dark brownish. Wing (1.75 mm x 0.74 mm) covered with hair-like brownish macrotrichia; CR<sub>1</sub> open and slit-like, CR<sub>2</sub> widely open and greatly elongated; haltere moderately fuscous. Legs brownish, covered with brownish semi-appressed and slender semi-erect and erect hairs; hind femora and tibiae with broad sub-apical and sub-basal brownish band extending half of its length respectively; bands of similar nature present on mid legs but so prominent; HTC bears 8.4 spines.

**Abdomen** : Brownish. Spermathecae two, almost equal with very short neck, subspherical, strongly sclerotized, dark brownish, measuring 0.054 mm x 0.046 mm and 0.05 mm x 0.04 mm.

**Male** : Genitalia as figured.

**Distribution** : India (West Bengal – Darjeeling).

**Type data** : Holotype female, collected from Darjeeling in September, 1979; allotype male from same locality in September, 1968; paratypes 6 females and 6 males from type locality.

**Comments** : This species being allied to *F. fuliginosa* (Meigen), 1818 *F. subspadicifascia* Tokunaga and Murachi, 1959, *F. esakiana* Tokunaga, 1940a and *F. intonsa* Chan and LeRoux, 1971b, has the following diagnostic features: greatly enlarged segment 3 of the maxillary palpi without prominent ventrodial corner; bands on femora and tibiae of hind legs extended to half of its length along with 2 large and ovoid spermathecae with very short neck.

**Etymology** : The species name refers to the same sized spermathecae.

#### 43. *Forcipomyia tenuifascicruris* n.sp. (Figs. 43 A-J)

**Female** : **Head** : Light brownish. Eyes almost contiguous throughout their inner margin. Antenna yellowish. Maxillary palpi light brownish with segment 3 sub-rectangular dilated all throughout its length, having deep sensory pit; segment 4 narrow, tubular elongated and 3 times as long as broad and 2 times as long as segment 5.

**Thorax** : Light brownish. Wing (1.48 mm x 0.63 mm) covered with moderately, long brownish hair-like macrotrichia; CR<sub>1</sub> open and slit-like, CR<sub>2</sub> widely open with oblique tip; haltere hyaline. Legs yellowish covered with short semi-appressed and semi-erect, erect, fine, bristly hairs; faint, sub-apical and sub-basal brownish bands present on femora and tibiae of mid and hind legs, those on hind leg broader and deeper; HTC of 8.3 bristles.

**Abdomen** : Pale. Spermathecae two, subequal, oval, without neck, light brownish, measuring 0.058 mm x 0.040 mm and 0.052 mm and 0.040 mm.

**Male** : Genitalia as figured.

**Distribution** : India (West Bengal – Darjeeling).

**Type data** : Holotype male, collected from Darjeeling in September, 1968; allotype male from same locality in July, 1968; paratypes 7 females and 4 males from same locality.

**Comments** : This species closely resembles *F. nudifascipes*, n.sp. but differing in possession of the following structures as larger spermatheca, larger maxillary palpi, very faint banding on hind leg and fused portion of parameres comparatively shorter.

**Etymology** : The species name refers to the very faint bands on legs.

#### (f) Species of the subgenus *Rhynchoforcipomyia* Wirth and Dow

#### 44. *Forcipomyia flavisimplexa* n.sp. (Figs. 44 A-F)

**Female** : **Head** : Brownish. Antenna brownish. Maxillary palpi brownish, completely segmented, segment 3 moderately elongated, dilated basally with no sensory pit.

*Thorax* : Brownish. Wing (1.27 mm x 0.67 mm) with slender, hair-like brownish macrotrichia; CR<sub>1</sub> slit-like, CR<sub>2</sub> narrow, open; haltere brownish. Legs brownish with femora and tibiae covered with semi-appressed and erect brownish hairs; HTC bears 7 bristles.

*Abdomen* : Brownish. Spermathecae two, oval with distinct narrow neck, sclerotization indistinct, measuring 0.060 mm x 0.044 mm and 0.057 mm and 0.038 mm.

**Male** : Unknown.

*Distribution* : India (Jharkhand – Hazaribag).

*Specimens examined* : 7 females were collected by light trap from Hazaribag D.V.C. area in July, 1992.

*Comments* : This species is somewhat similar to *F. puracensis* Wirth and Dow, 1972 but is readily distinguished by its smaller AR, PR and CR values.

*Etymology* : The species name refers to the brownish colour of the body and maxillary palpi without sensory pit.

(g) Species of the subgenus **Schizoforcipomyia** Chan and Roux

45. *Forcipomyia borbonica* Clastrier, 1959 (Figs. 45 A-I)

1959. Arch. Ins. Past., Algeric, 37: 412. Synonyms - *penniornata* Tokunaga and Murachi, 1959 : 163; *fuscimaculata* Hardy, 1960 : 170; *stabilis* Sen and Dasgupta, 1960:95; *peteroni* Chan and de Roux, 1971:272.

**Female** : *Head* : dark brown. Eyes bare, broadly contiguous along inner margins. Antennae dark brown with antennomere 3-15 shaped and 10-11 setose as figured. Maxillary palpi brown with palpomere 3 fusiform with a prominent sensory pit in middle.

*Thorax* : Darkish brown. Scutum with 4 longitudinal rows of stout setae and some weak setae in between; scutellum bears 10-11 strong bristles at middle. Wing length 0.82 mm, with venation and darkish streaks as figured. Haltere stem pale, knob infuscated. Legs with tibio-femoral colouration as figured; legs segments from femora to tarsomere 5 52:68:17:19:12:9:8 in a hind leg; HTC of bears 7-9 bristles; spur thorn like and bristles away from spur longer.

*Abdomen* : Dark brown; two sub-equal oval, intensely sclerotized spermathecae as figured, measuring 0.06 mm x 0.04 mm. and 0.05 x 0.03 mm.

**Male** : Genitalia as figured.

**Distribution** : Guam, Hawaii, Reunion Island (France), Singapore, India (bihar-Muzaffarpur; West Bengal-Asoknagar, Chinsurah, Dum Dum, Habra, Haringhata Farm, Jhargram, Kolkata City, Siliguri).

**Specimens examined** : 40 females, 21 male insects of the present species were collected from different localities of West Bengal, named above by us during November 1963- December 1966 and March 1980- August 1998; from Bihar (Muzaffarpur), by one of us (Dasgupta) during 1984; mostly by light trap; by sticky trap in two cases. Samples prepared as permanent slide-mount and distributed to institutions and individuals for study/and preservation.

**Comments** : The present species keys out of other known Indian species of *Forcipomyia* easily in having characteristic colour pattern in all femora. The genitalic features of its males are strikingly peculiar. The species is noteworthy being the only Indian sample of the *Forcipomyia* subgenus *Scizoforcipomyia* known so far.

(h) Species of the subgenus *Synthyridomyia* Saunders

46. *Forcipomyia flexoductithec*a n.sp.(Figs. 46 A-I)

**Female** : **Head** : Brownish. Eyes narrowly separated. Antenna light brownish. Maxillary palpi light brownish with segment 3 swollen slightly with distinct sensory pit, segments 4 and 5 distinctly separate.

**Thorax** : Light brownish. Wing (0.68 mm x 0.28 mm) densely covered with brownish hair-like macrotrichia; CR<sub>1</sub> and CR<sub>2</sub> of equal length; haltere hyaline stalk with dark blackish knob. Legs yellowish covered with short, yellowish, erect and semi-erect setae; HTC near 6.6 bristles.

**Abdomen** : Light brownish. Spermatheca one, retort-shaped, brownish with long curved, moderately slender, tapering, neck, measuring 0.038 mm x 0.026 mm.

**Male** : Genitalia as figured.

**Distribution** : India (Jharkhand – Hazaribag).

**Specimens examined** : 12 females, 4 males were collected by light trap from Hazaribag D.V.C. area in August, 1992.

**Comments** : Females of this species is somewhat similar to that of *F. floridensis* Dow and Wirth, 1972 but may be distinguished by the smaller wing size, smaller TR values in all legs and small values of CR.

**Etymology** : The species name refers to the retort shaped spermatheca.

(i) Species of the subgenus *Thyriodomyia* Saunders47. *Forcipomyia cineornata* n.sp. (Figs. 47 A-F)

**Female : Head :** Light brownish. Eyes broadly contiguous. Antenna pale. Maxillary palpi pale with segment 3 short, cylindrical with ill-defined sensory pit, segments 4 and 5 fused.

**Thorax :** Pale. Wing (1.14 mm x 0.497 mm) covered with yellowish, hair-like macrotrichia, CR<sub>1</sub> almost obliterated, CR<sub>2</sub> open and elongate; haltere hyaline. Legs yellowish with semi-appressed, small and moderately long erect yellowish hairs; tarsal claws curved and sharply bent at mid length; HTC bears 6 bristles.

**Abdomen :** Pale. Spermatheca one brownish, oval with short tapering neck measuring 0.039 mm x 0.025 mm.

**Male :** Unknown.

**Distribution :** India (Jharkhand – Hazaribag).

**Specimens examined :** 10 females were collected by light trap from Hazaribag D.V.C. area in September, 1992.

**Comments :** This species is similar to *F. nodosa* Saunders, 1959 but by the larger wing length, palish legs, smaller TR values in mid and hind legs, larger PR which distinguished it as a new species.

**Etymology :** The species name refers to the pale colour of the legs.

48. *Forcipomyia fererugosa* n.sp. (Figs. 48 A-I)

**Female : Head :** Dark brownish. Antennae dark brownish. Maxillary palpi light brownish with segment 3 short, spindle-shaped with deep sensory pit, segments 4 and 5 separate.

**Thorax :** Brownish. Wing (0.90 mm x 0.42 mm) broad, hyaline with profuse, brownish hair-like macrotrichia; CR<sub>1</sub> closed, CR<sub>2</sub> open with oblique tip; haltere with hyaline knob and brownish stalk. Legs light brownish with erect and semi-erect, light brownish hairs; HTC bears 6 bristles.

**Abdomen :** Light brownish. Spermathecae one, dark brownish, spherical with short neck, measuring 0.022 mm x 0.020 mm.

**Male :** Genitalia as figured.

**Distribution :** India (Jharkhand – Hazaribag).

**Specimens examined** : 3 females, 1 male were collected by light trap from Hazaribag D.V.C. area in August, 1992.

**Comments** : This new species closely resembles females of *F. rugosa* Chan and LeRoux, 1970 and male of *F. aspinosa* Saunders, 1957 and *F. hamata* Tokunaga, 1959 with distinctive features as follows : antenna with slightly compressed globular basal segments, short spindle-shaped third maxillary palpi segment, single dark brownish spermatheca with short neck.

**Etymology** : The species name refers to the similarity with the species *rugosa* of Chan and LeRoux.

## SUMMARY

This extended paper furnishes illustrated description of 48 species of the genus *Forcipomyia* Meigen (Family Ceratopogonidae, Order Diptera) extant in the Union territory of India of which 41 species are new species with the specific parts of their names as : *longipalpis*, *paraglauca*, *quasiglauca*, *semiglauca* and *subglauca* (of subgenus *Caloforcipomyia* Saunders); *exempliforma*, *fermetitillans*, *flavencruris*, *grandiclara*, *indoctacruris*, *palasunitheca*, *palusitheca*, *propenavaiaae*, *pseudocalcarata*, *subcalcarata*, *subingrami* and *subunitheca* (of subgenus *Euprojoannisia* Brethes); *brevipalpis*, *fascilatipes*, *fulvipes*, *fulvotibialis*, *globofuscitheca*, *holofuscicruris*, *imparitheca*, *lurida*, *paenealbiradialis*, *palpipotens*, *pseudobipunctata*, *pulluspadicruris* and *quasialbiradialis* (of subgenus *Forcipomyia* Meigen); *angustipalpis*, *gracilalitheca*, *nudifascipes*, *ovatitheca*, *paenefuliginova*, *similitheca* and *tenuifascicruris* (of subgenus *Microhelea* Kieffer); *flavisimplexa* (of subgenus *Rhynchoforcipomyia* Wirth and Downes); *flexoductitheca* (of subgenus *Synthyridomyia* Saunders); *cineornata* and *fererugosa* (of subgenus *Thyridomyia* Saunders).

With the addition of 41 new species now, the biting midges of the genus *Forcipomyia* are known from India to the date by a total of 67 described species of 9 subgenera which include 7 subgenera are already named above and other 2 subgenera such as *Lepidohelea* Kieffer and *Schizoforcipomyia* Chan and Roux are dealt with in the description portion of this paper.

A table furnishing comparative data on additional features of taxonomic importance and an extended key to all the subgenera and the species dealt now are also provided in this paper.

**Table 1: Quantitative data (average) of select features of the Indian species of genus *Forcipomyia* Meigen**

Subgenus	Sl. No. / Species M – male, F – female	Head				Wing				TR in		
		AR	ASP	PR	PSP	CR	RR	$r_s/r_1$	$\frac{M_{3+4}}{Cu_1}$	Fore leg	Mid leg	Hind leg
1. <i>Caloforcipomyia</i> Saunders	1. <i>longipalpis</i> n.sp. (F)	0.98	32:28:28:32:32:32:32: 32:48:48:48:48:64	4.16	16:20:52:20:18	0.53	1.81	1.94	2.00	2.08	1.86	1.43
	2. <i>paraglauca</i> n.sp. (F)	1.02	29:30:31:31:31:31:31: 32:48:46:46:52:64:	5.79	17:21:52:44	0.54	1.73	1.90	1.95	2.05	1.75	1.40
	3. <i>quasiglauca</i> n.sp. (M)	1.35	40:24:24:24:22:22:22: 22:24:120:64:60:64	7.42	20:24:60:42	0.54	1.77	1.77	2.32	1.99	1.97	1.52
	4. <i>semiglauca</i> n.sp. (M)	1.26	36:24:24:24:22:22:22: 22:24:96:60:56:68	6.18	16:20:52:42	0.51	1.45	1.67	2.16	1.91	1.71	1.33
	5. <i>subglauca</i> n.sp. (F)	1.01	19:19:21:22:22:22:22: 24:33:33:31:34:46	4.42	11:12:31:28	0.61	2.21	2.65	2.14	2.02	1.84	1.42
2. <i>Euprojonnisia</i> Breaths	6. <i>sauteri</i> Kieffer (F)	1.14	12:9:10:10:10:10:10: 11:16:17:17:16:25	3.34	10:12:28:18:10	0.52	1.05	1.92	1.91	1.65	1.16	1.20
	7. <i>exempliforma</i> n.sp. (F)	1.04	n.a.	2.99	n.a.	0.48	1.00	1.71	1.93	1.61	1.33	1.37
	8. <i>fermetitillans</i> n.sp.(F)	1.08	12:10:11;12:12:12:12: 12:19:19:19:19:33	3.47	11:12:33:20:11	0.51	1.01	1.97	1.74	1.52	1.14	1.09
	9. <i>flavencruris</i> , n.sp. (F)	1.19	12:9:10:10:10:10:11: 12:17:18:19:19:28	3.63	8:13:32:20:16	0.51	1.14	1.77	1.58	1.69	1.41	1.28
	10. <i>grandiclara</i> , n.sp. (F)	1.15	12:8:9:10:10:10:10: 11:16:16:16:17:28	3.34	10:12;27:16:9	0.53	1.02	1.82	1.85	1.69	1.41	1.28
	11. <i>indoctacruris</i> , n.sp.(M)	1.15	24:16::14:14:14:14:16: 16:18:68:42:22:38	5.32	12:16:42:24:12	0.4	0.38	1.41	2.21	1.09	0.58	0.64
	12. <i>palasunitheca</i> , n.sp.(F)	1.10	12:10:10:11:10:11:11: 12:17:18:18:18:28	3.53	10:11:29:16:9	0.51	1.11	1.82	2.00	1.34	0.85	0.98
	13. <i>palusitheca</i> , n.sp. (F)	1.13	n.a.	3.33	n.a.	0.51	1.04	2.05	2.07	1.56	1.11	1.12

Subgenus	Sl. No. / Species M – male, F – female	Head				Wing				TR in		
		AR	ASP	PR	PSP	CR	RR	$r_2/r_1$	$\frac{M_{3+4}}{Cu_1}$	Fore leg	Mid leg	Hind leg
	14. <i>propenavaiae</i> , n.sp.(F)	1.16	12:8:9:10:10:10:10: 11:16:17:17:17:27	3.34	12:12:30:16:10	0.52	1.15	1.95	1.85	1.6	1.11	1.06
	15. <i>pseudocalcarata</i> , n.sp.(F)	1.17	12:10:10:11;11:11:11: 12:17:18:18:18:29	3.46	11:12:31:18:11	0.51	1.06	1.9	1.94	1.54	1.17	1.14
	16. <i>subcalcarata</i> , n.sp. (F)	1.17	12:9:9:10:10:10:10: 11:17:18:17:17:27	3.28	11:11:30:19:9	0.51	1.07	2.05	1.8	1.59	1.12	1.14
	17. <i>subingrami</i> , n.sp. (F)	1.15	12:9:10:10:10:11:11: 12:17:17:17:18:28	3.37	11;12:30:19:11	0.52	1.09	1.95	1.84	1.57	1.16	1.17
	18. <i>subunitheca</i> , n.sp. (F)	1.04	12:10:10:11:11:12:12: 12:16:16:16:16:26	3.27	8:10:24:13:8	0.53	1.14	1.81	1.79	1.34	0.88	0.96
3. <i>Forcipomyia</i> Meign	19. <i>albiradialis</i> , Tokunaga (F)	0.69	20:16:18:18:18:18:18: 18:18:18:18:18:25	2.27	8:10:30:16:13	0.44	1.04	1.6	1.8	1.19	0.88	0.81
	20. <i>bikanni</i> , Chan and LeRoux (F)	0.76	n.a.	2.78	n.a.	0.44	0.86	1.64	1.77	1.16	0.89	0.89
	21. <i>brevipalpis</i> n.sp.(F)	0.68	n.a.	2.57	n.a.	0.43	1.07	1.92	1.36	1.02	0.75	0.76
	22. <i>fascilatipes</i> , n.sp.(F)	0.75	15:12:12:12:12:12:12: 12:13:13:14:14:24	2.76	8:10:25:13:12	0.41	0.8	1.52	1.73	1.3	0.8	0.93
	23. <i>fulvipes</i> n.sp.(F)	0.75	21:19:19:19:19:18:18: 18:20:20:21:22:32	2.90	12:14:34:14:14	0.44	1.22	1.79	1.89	0.88	0.66	0.69
	24. <i>fulvotibialis</i> n.sp. (F)	0.84	18:16:16:15:15:15:14: 14:20:20:20:20:30	2.17	10:12:28:14:14	0.46	1.08	1.53	1.86	1.09	0.9	0.84
	25. <i>globofuscitheca</i> n.sp. (F)	0.81	16:12:12:12:12:12:12: 12:13:14:14:14:26	2.61	8:10:27:14:13	0.41	0.93	1.54	1.79	1.36	1.15	0.94

Subgenus	Sl. No. / Species M – male, F – female	Head				Wing				TR in		
		AR	ASP	PR	PSP	CR	RR	$r_s/r_1$	$\frac{M_{3+4}}{Cu_1}$	Fore leg	Mid leg	Hind leg
	26. <i>holofuscicuris</i> n.sp. (F)	0.77	22:19:19:19:19;19:18: 18:20:21:22:23:33	2.96	11:12:39:18:16	0.38	0.69	1.14	0.98	1.43	0.66	0.63
	27. <i>imparithea</i> , n.sp. (F)	0.72	15:12:14:14:14:14:14: 14:14:14:14:14:26	3.43	10:12:26:12:12	0.46	1.00	1.78	2.01	1.55	1.42	1.25
	28. <i>lurida</i> , n.sp. (F)	1.17	15:12:12:13:13:13:13: 13:20:20:22:22:36	1.75	10:12:26:15:11	0.49	1.41	1.88	1.79	1.07	0.82	0.84
	29. <i>paenealbiradi-alis</i> , n.sp. (F)	0.71	16:15:15:16:16:16:16: 16:16:16:16:16:24	2.41	9:12:29:12:12	0.44	1.08	1.69	1.92	1.13	0.75	0.81
	30. <i>palpipotens</i> n.sp. (F)	0.78	14:12:13:13:13:13:13: 13:13:13:14:26:28	1.7	8:10:24:10:10	0.41	0.67	1.63	1.91	1.24	0.89	0.92
	31. <i>pseudobipunctata</i> n.sp. (F)	1.05	22:16;18:18:18:18:18: 18:25:26:26:28:42	1.98	12:12:30:16:16	0.46	1.00	1.62	1.82	1.15	0.94	1.00
	32. <i>pulluspadicuris</i> n.sp. (F)	0.81	24:18:18:18:19:19:19: 19:24:24:24:24:26	2.33	12:16:38:18:16	0.45	1.00	1.66	1.79	1.36	1.19	1.14
	33. <i>quasialbiradi-alis</i> n.sp. (F)	0.73	22:19:19:19:20:18:18: 18:20:20:21:22:32	2.9	12:14:31:15:16	0.46	1.07	1.68	1.89	0.88	0.64	0.67
	34. <i>variicrus</i> n.sp. (F)	0.62	20:18:20:20:20:18:18: 18:16:16:17:17:27	2.5	10:12:36:18:15	0.44	1.93	1.96	1.85	0.92	0.69	0.7
4. <i>Lepidohelea</i> Kieffer	35. <i>chrysolopha</i> Kieffer	0.76	n.a.	3.01	n.a.	0.45	0.9	1.75	1.84	1.44	1.05	0.88
	36. <i>angustipalpis</i> , n.sp.	1.78	16:13:13:14:14:14:14: 15:34:38:38:50	3.61	15:23:56:28:12	0.52	1.53	1.38	1.87	0.54	0.38	0.43
	37. <i>fuliginosa</i> Meigen	1.27	18:17:18:18:19:19:19: 22:34:33:34:35:50	0.73	15:28:56:24:16	0.52	1.68	1.58	1.86	0.65	0.42	0.44

Subgenus	Sl. No. / Species M – male, F – female	Head				Wing				TR in		
		AR	ASP	PR	PSP	CR	RR	r <sub>1</sub> /r <sub>1</sub>	$\frac{M_{3+4}}{Cu_1}$	Fore leg	Mid leg	Hind leg
5. <i>Microhela</i> Kieffer	38. <i>gracilatithec</i> a, n.sp.	1.26	17:13:14:14:14:15: 15:25:27:26:27:41	2.7	14:15:44:21:12	0.5	1.55	1.77	1.75	0.65	0.45	0.48
	39. <i>nudifascipes</i> , n.sp.	1.62	15:10:10:11:11:11:12: 12:27:28:28:29:40	0.83	10:12:24:22:8	0.53	1.40	1.67	1.83	0.47	0.39	0.4
	40. <i>ovatithec</i> a, n.sp.	1.48	16:13:14:14:14:14:14: 15:32:32:32:32:46	2.24	14:18:48:24:12	0.52	1.32	2.04	1.88	0.51	0.36	0.42
	41. <i>paenefuliginosa</i> , n.sp.	1.28	18:14:15:6:18:18:18: 19:31:31:32:33:45	2.49	14:16:50:26:12	0.52	1.78	1.82	1.86	0.64	0.42	0.43
	42. <i>similithec</i> a, n.sp.	1.31	18:16:16:16:17:18:19: 33:34:34:36:48	2.57	16:20:52:22:16	0.52	1.66	2.06	1.85	0.66	0.41	0.45
	43. <i>tenuifascicruris</i> , n.sp.	1.49	n.a.	2.37	n.a.	0.52	1.58	1.77	1.85	0.51	0.35	0.43
6. <i>Rhynchofor-</i> <i>cipomyia</i> Wirth and Dow	44. <i>flavisimplex</i> a n.sp. (F)	0.92	16:12:12:14:16:15:15: 16:19:19:19:19:28	3.24	8:8:28:12:13	0.52	0.75	1.84	2.07	1.9	1.94	2.13
7. <i>Schizofor-</i> <i>pomyia</i> Chan and Le Roux	45. <i>borbonica</i> Clastrier (F)	0.87	13:10:10:10:10:11:11: 11:11:14:14:14:21	2.12	7:9:24:7:10	0.47						
8. <i>Synthyredo-</i> <i>myia</i> Saunders	46. <i>flexoductithec</i> a	0.82	11:9:9:9:9:8:8:8:11: 11:11:10:16	2.87	6:10:20:20:10:7	0.36	1.00	1.86	2.00	2.6	2.5	2.37
9. <i>Thyridomyia</i> Saunders	47. <i>cineornata</i> n.sp. (F)	1.21	15:12:12:12:11:11:11: 12:21:21:21:21:34	3.41	8:10:28:23:8	0.56	1.50	2.21	1.76	2.34	2.12	2.22
	48. <i>fererugosa</i> n.sp. (F)	1.20	10:7:7:7:7:7:7:13: 12:12:13:21	3.0	6:9:21:11:9	0.53	1.11	2.09	1.92	2.60	2.16	2.18

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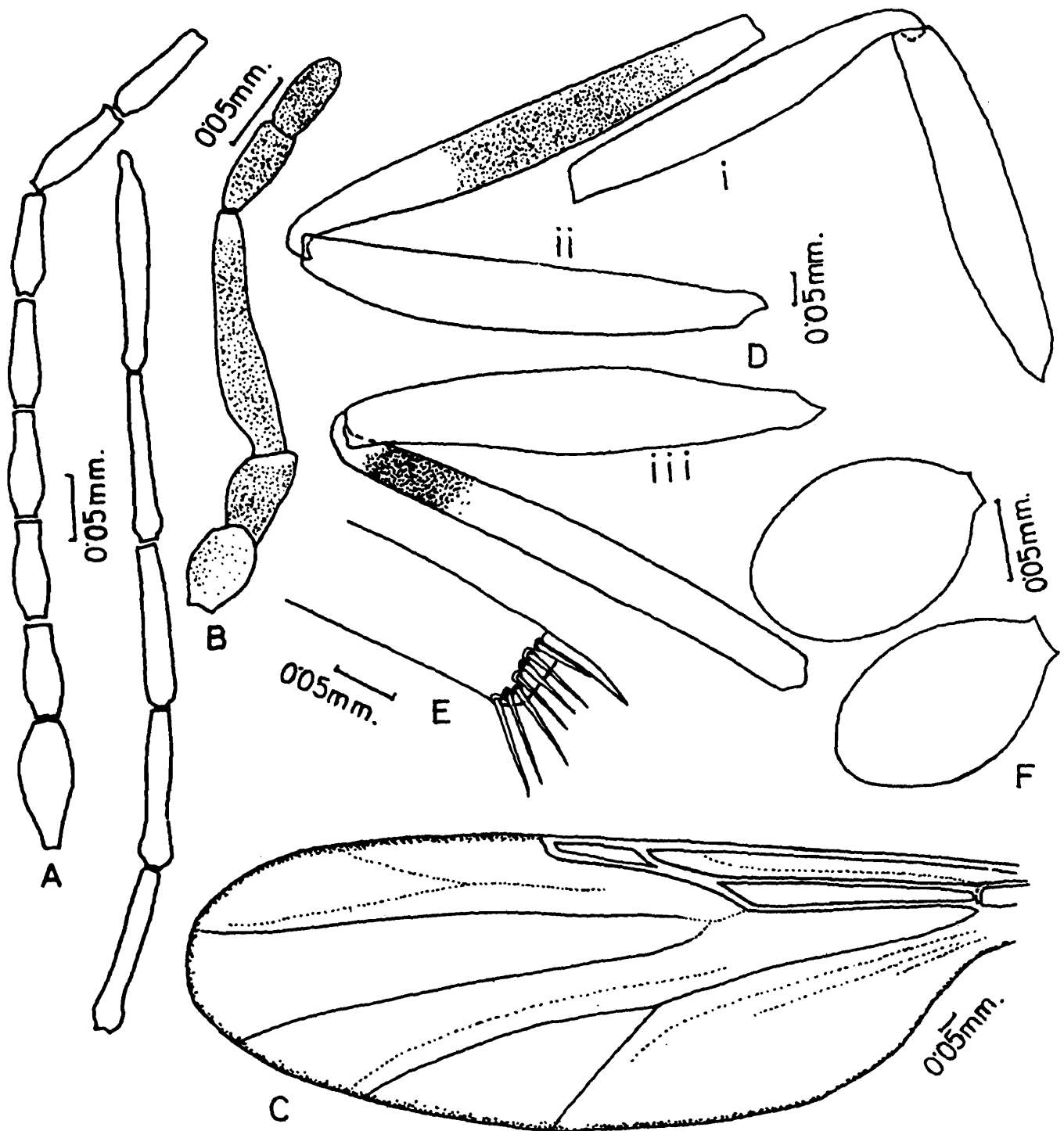
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**Figure 1 (A-F) *Forcipomyia (Caloformipomyia) longipalpis*, n. sp.**  
 Female : A - antenna, B - maxillary palp, C - wing, D - femora-tibial part of fore leg (i) mid (ii) and hind leg (iii), E - hind tibial comb, F - spermathecae.

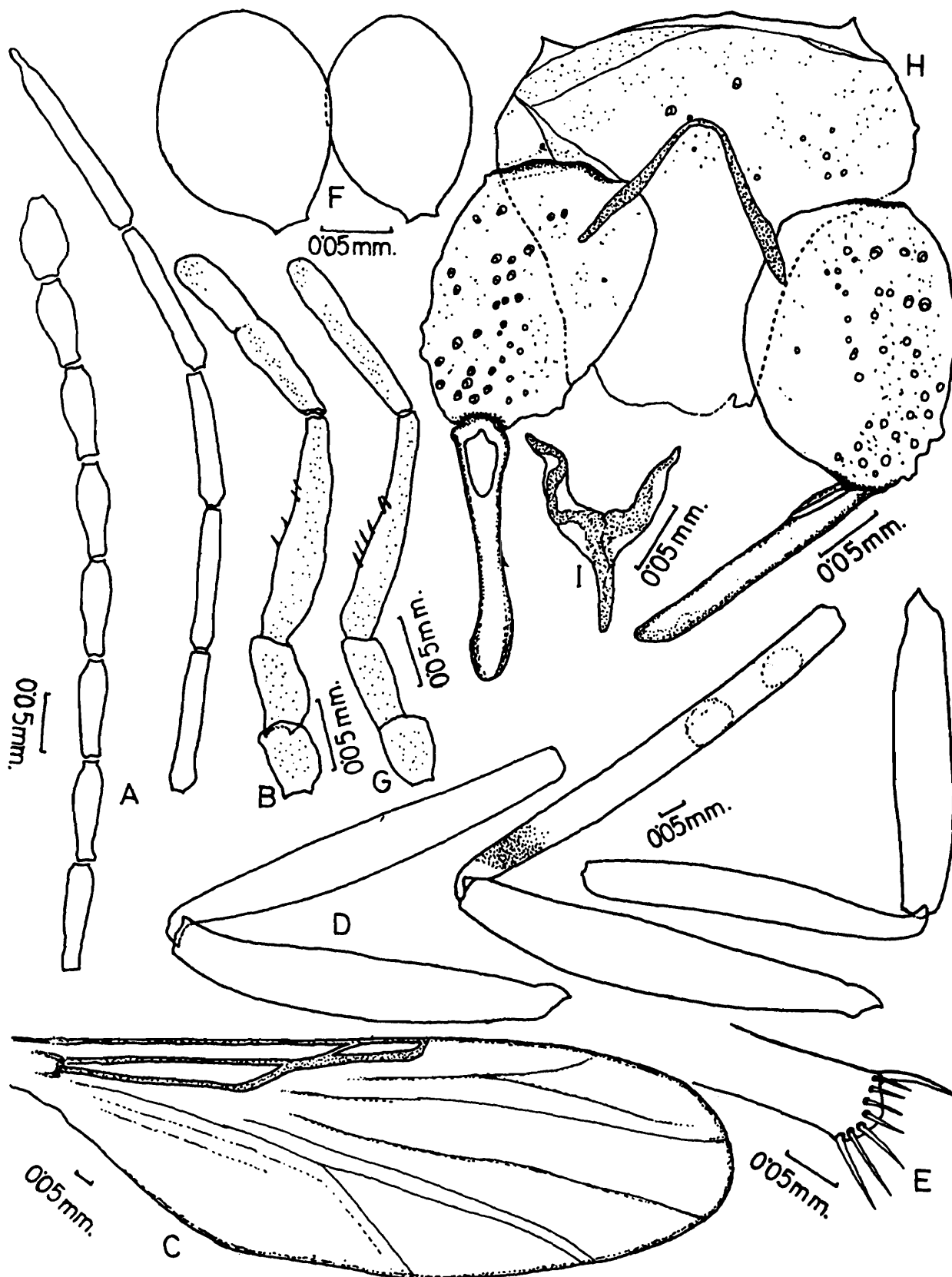
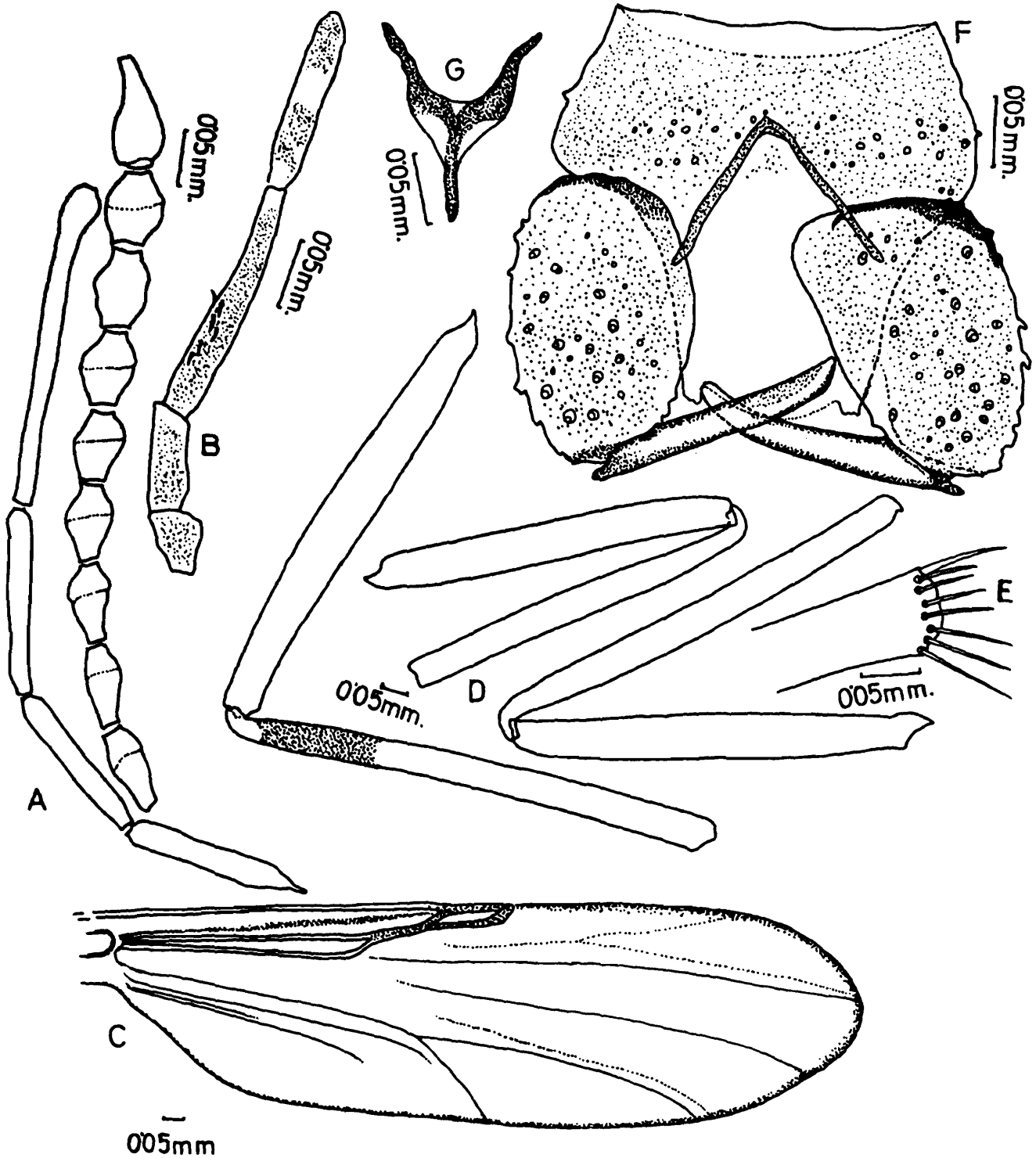


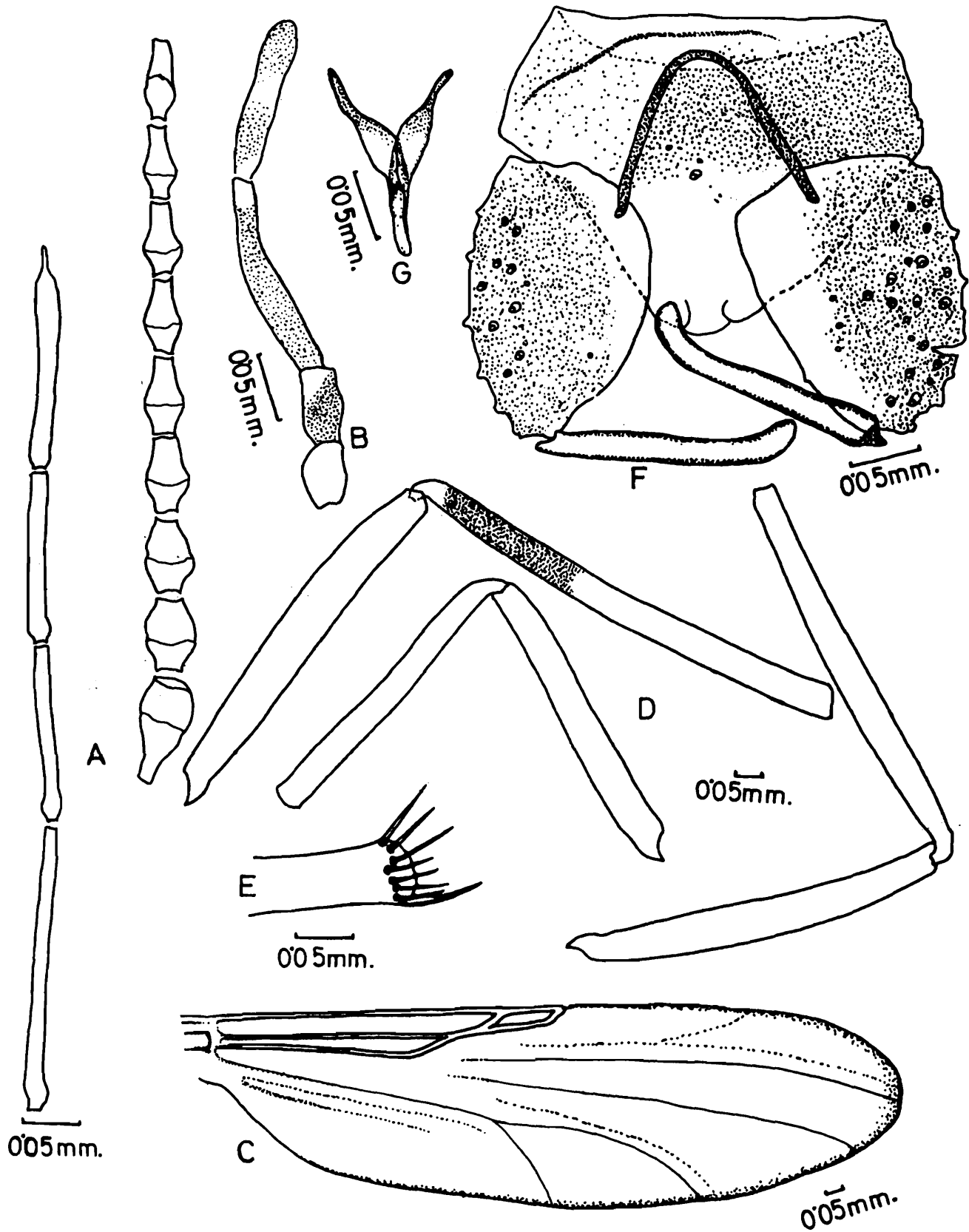
Figure 2 (A-I) *Forcipomyia (Caloformipomyia) paraglauca*, n. sp.

Female : A antenna, B - maxillary palp, C wing, D - femora-tibial part of fore leg (i) mid (ii) and hind leg (iii), E hind tibial comb, F spermathecae.

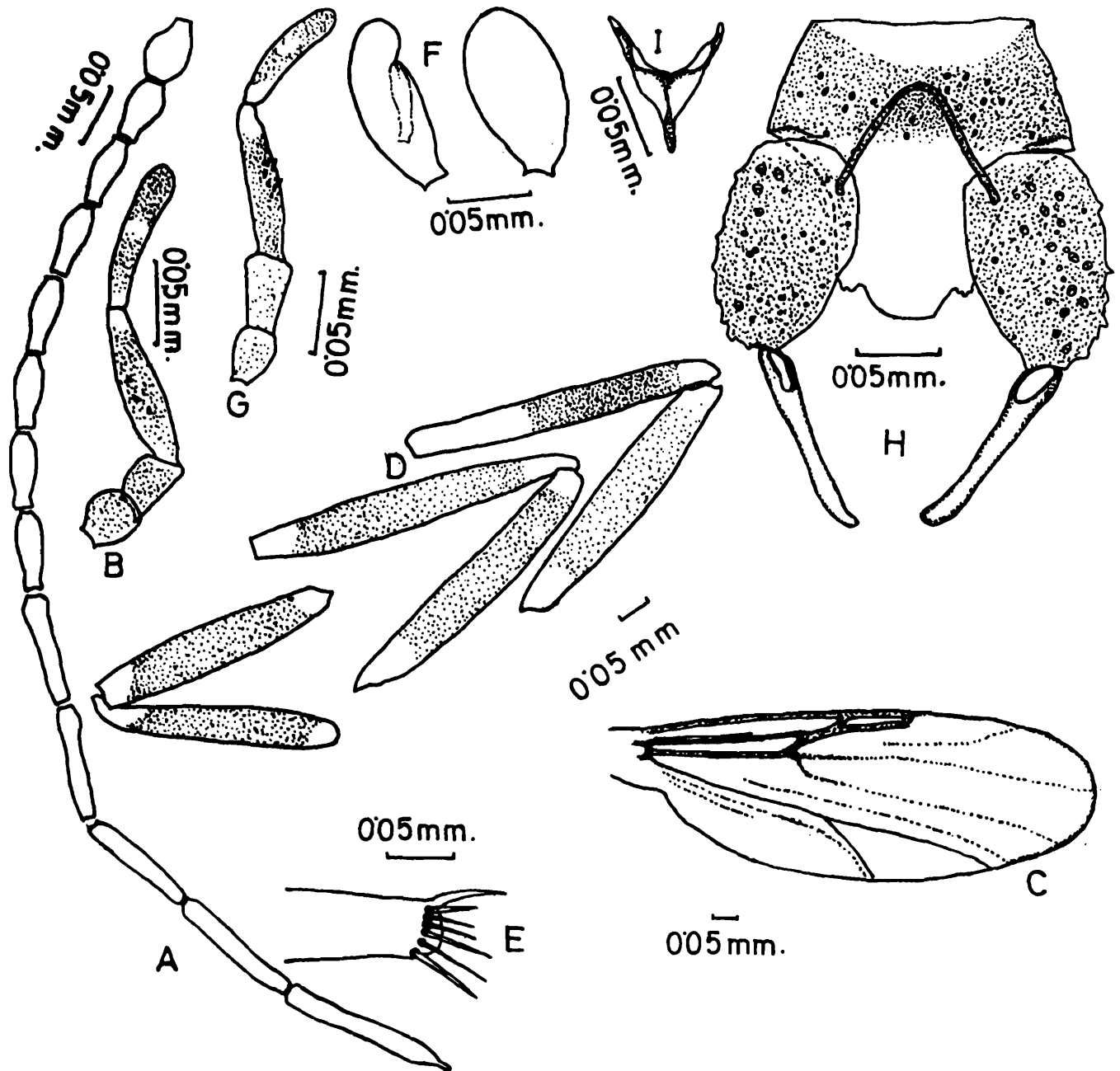
Male : G maxillary palp, H Genitalia (without aedeagus), I aedeagus.



**Figure 3 (A-G) *Forcipomyia (Caloforciomyia) quasiglauca*, n. sp.**  
 Male : A - antenna, B - maxillary palp, C - wing, D - femora-tibial part of fore leg (i) mid (ii) and hind leg (iii), E - hind tibial comb, F - genitalia (without aedeagus), G - aedeagus.



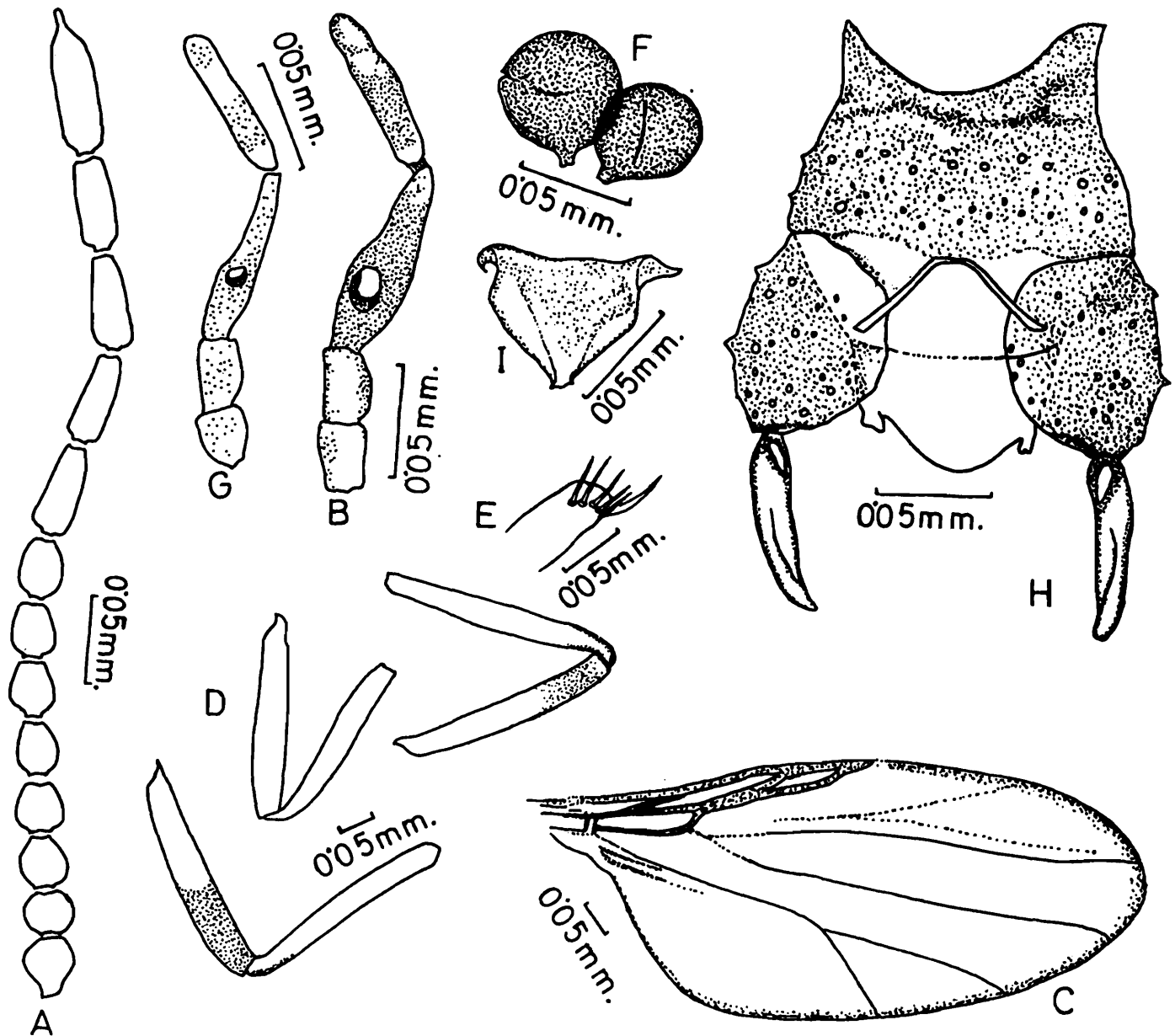
**Figure 4 (A-G) *Forcipomyia (Caloforcipomyia) semiglauca*, n. sp.**  
 Male : A - antenna, B - maxillary palp, C - wing, D - femora-tibial part of fore leg (i) mid (ii) and hind leg (iii), E - hind tibial comb, F - genitalia (without aedeagus), G - aedeagus.



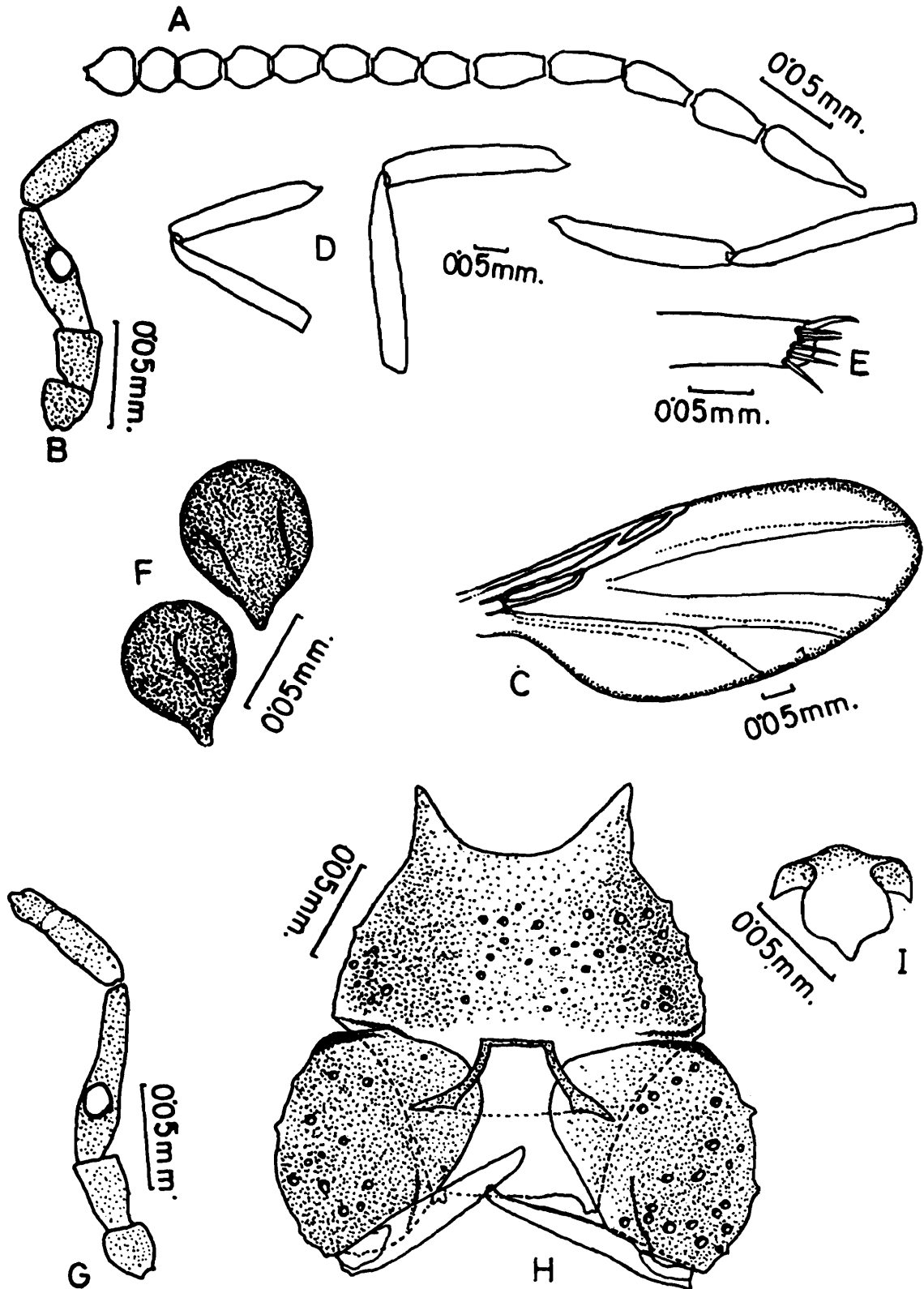
**Figure 5 (A-I)** *Forcipomyia (Caloformipomyia) subglauca*, n. sp.

Female : A - antenna, B - maxillary palp, C - wing, D - femora-tibial part of fore leg (i) mid (ii) and hind leg (iii), E - hind tibial comb, F - spermathecae.

Male : G - maxillary palp, H - Genitalia (without aedeagus), I - aedeagus.



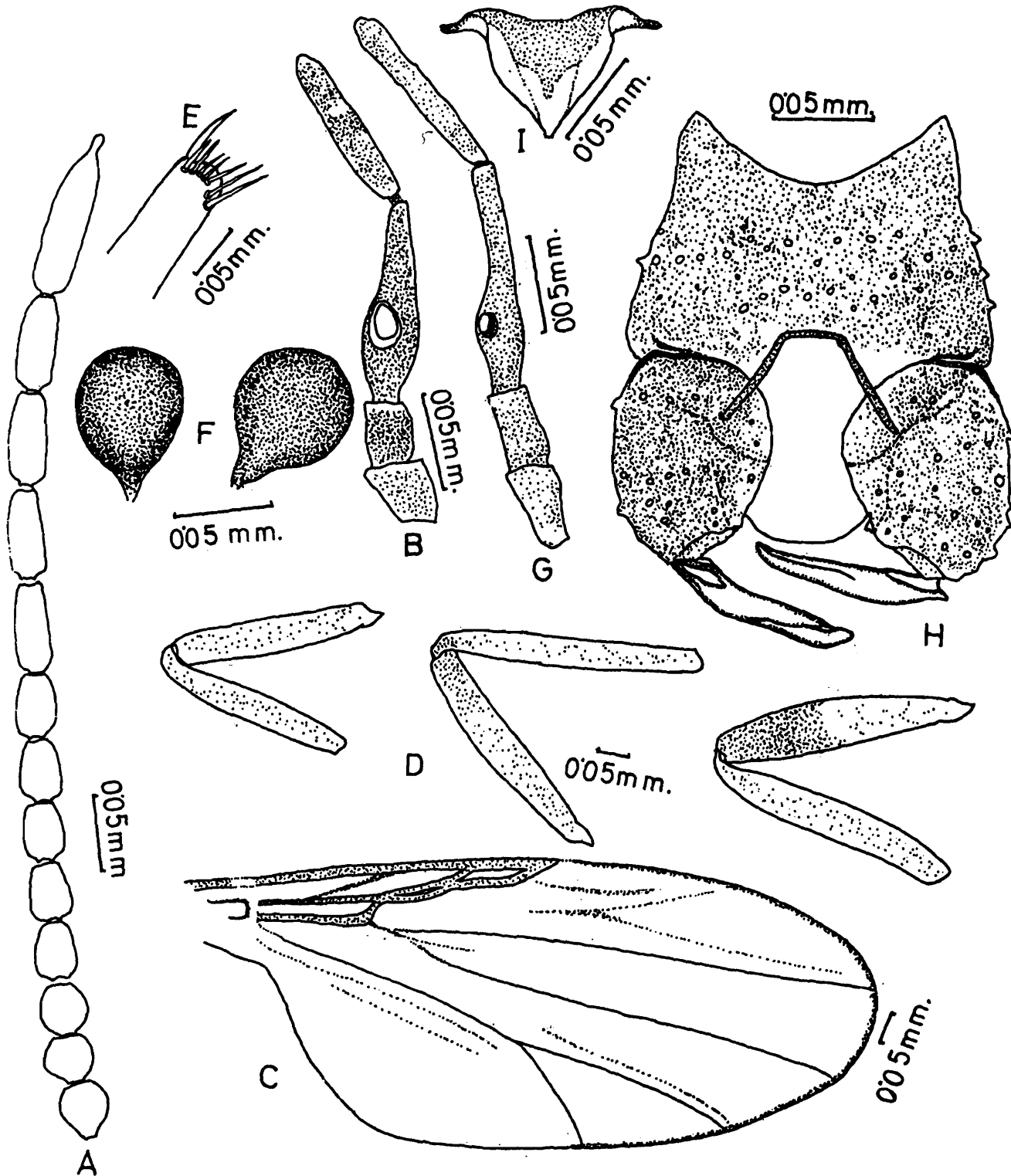
**Figure 6 (A-I) *Forcipomyia (Euprojoannisia) sauteri* Kieffer**  
 Female : A - antenna, B maxillary palp, C wing, D femora-tibial part of fore leg (i) mid (ii) and hind leg (iii); E hind tibial comb, F spermathecae.  
 Male : G - maxillary palp, H - Genitalia (without aedeagus), I - aedeagus.



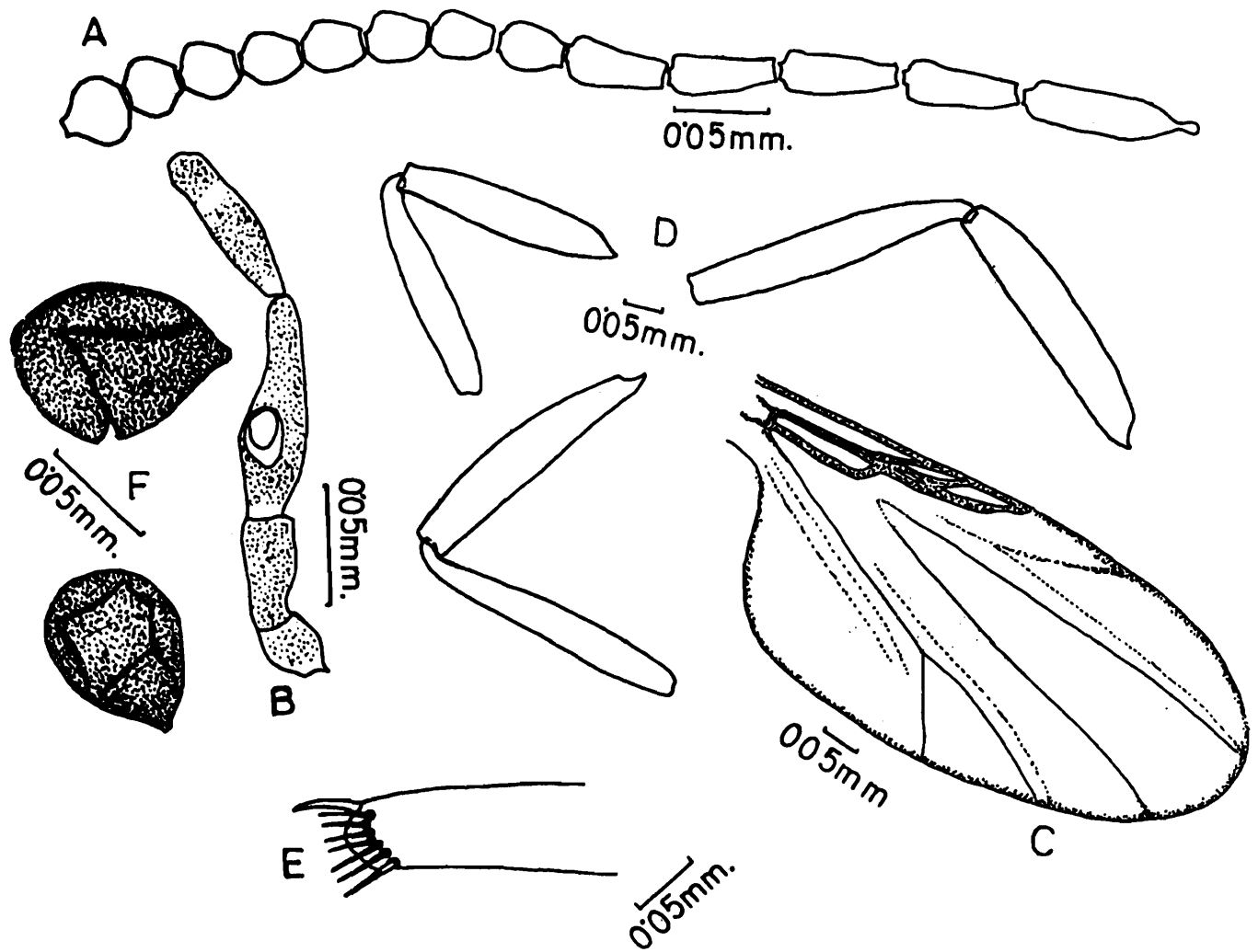
**Figure 7 (A-I) *Forcipomyia (Euprojoannisia) exempliforma*, n. sp.**

Female : A - antenna, B - maxillary palp, C wing, D femora-tibial part of fore leg (i) mid (ii) and hind leg (iii); E - hind tibial comb, F - spermathecae.

Male : G - maxillary palp, H - Genitalia (without aedeagus), I aedeagus.

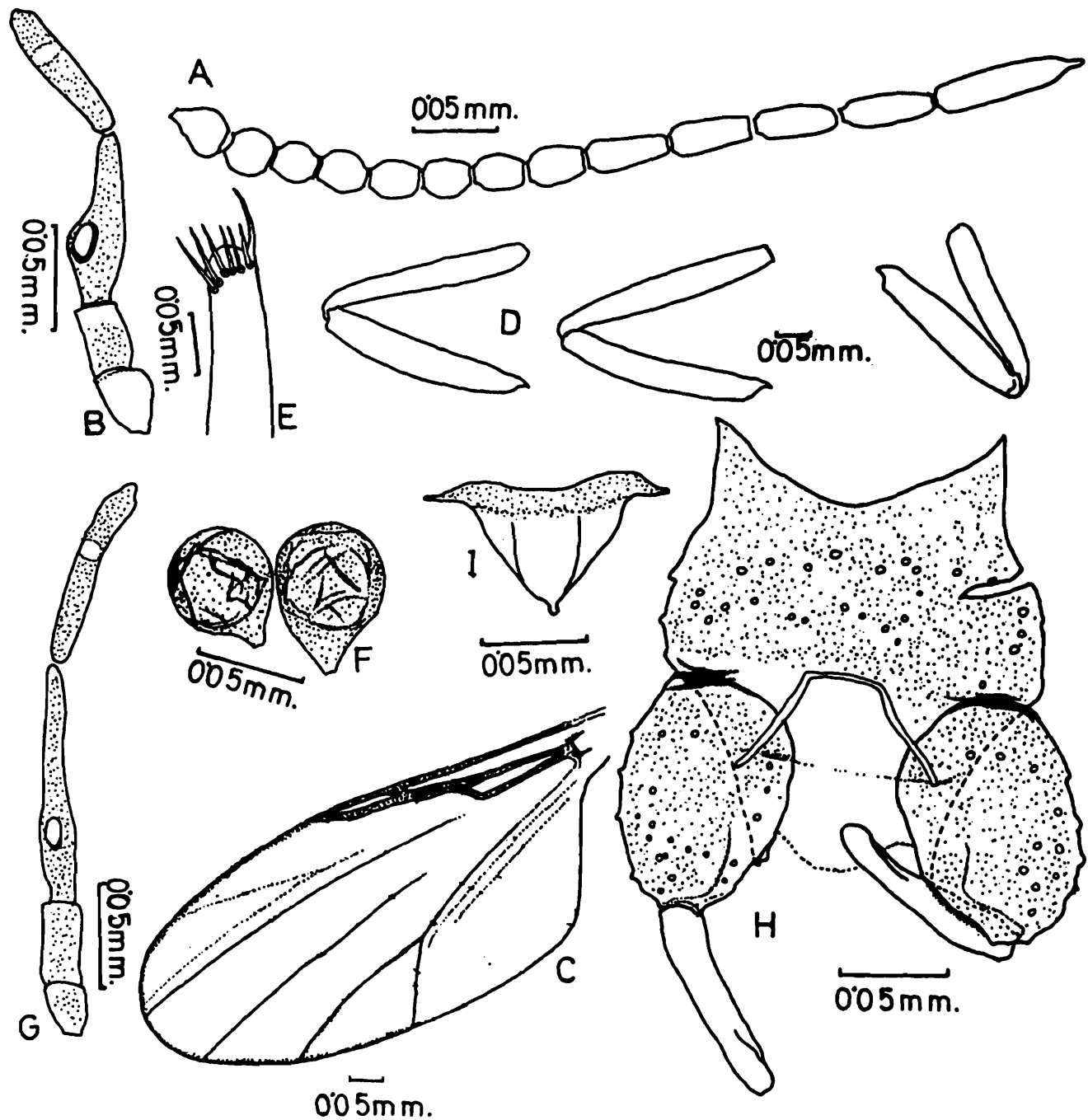


**Figure 8 (A-I) *Forcipomyia (Euprojoannisia) fermetitillans*, n. sp.**  
 Female : A - antenna, B - maxillary palp, C - wing, D - femora-tibial part of fore leg (i) mid (ii) and hind leg (iii); E - hind tibial comb, F - spermathecae.  
 Male : G - maxillary palp, H - Genitalia (without aedeagus), I - aedeagus.



**Figure 9 (A-F)** *Forcipomyia (Euprojoannisia) flavencruris*, n. sp.

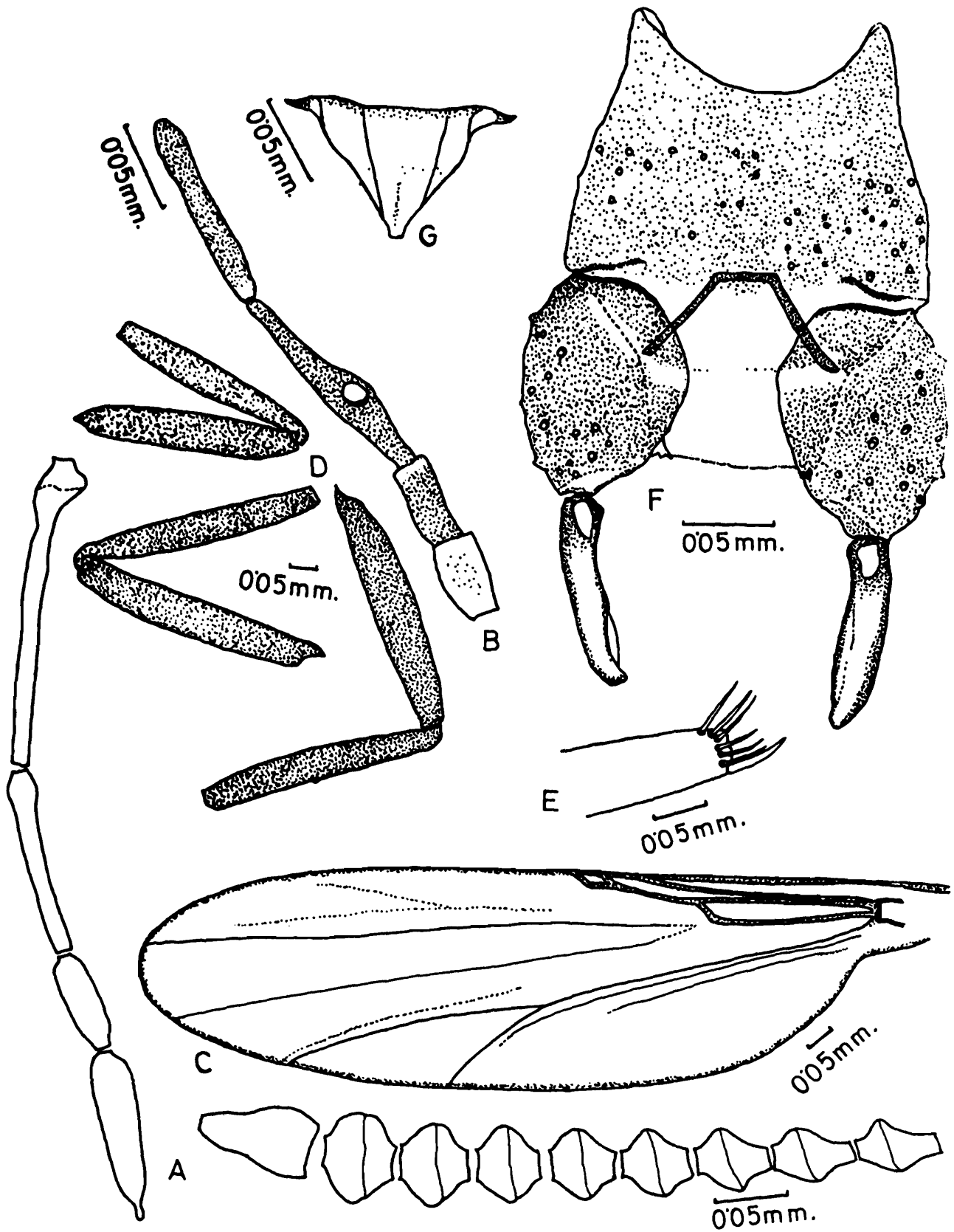
Female : A - antenna, B - maxillary palp, C - wing, D - femora-tibial part of fore leg (i) mid (ii) and hind leg (iii); E - hind tibial comb, F - spermathecae.



**Figure 10 (A-I) *Forcipomyia (Euprojoannisia) grandiclara*, n. sp.**

Female : A - antenna, B - maxillary palp, C - wing, D - femora-tibial part of fore leg (i) mid (ii) and hind leg (iii); E - hind tibial comb, F - spermathecae.

Male : G maxillary palp, H Genitalia (without aedeagus), I - aedeagus.



**Figure 11 (A-G)** *Forcipomyia (Euprojoannisia) indoctrurris*, n. sp.  
 Male : A - antenna, B - maxillary palp, C - wing, D femora-tibial part of fore leg (i) mid (ii) and hind leg (iii); E - hind tibial comb, F - Genitalia (without aedeagus), G - aedeagus.

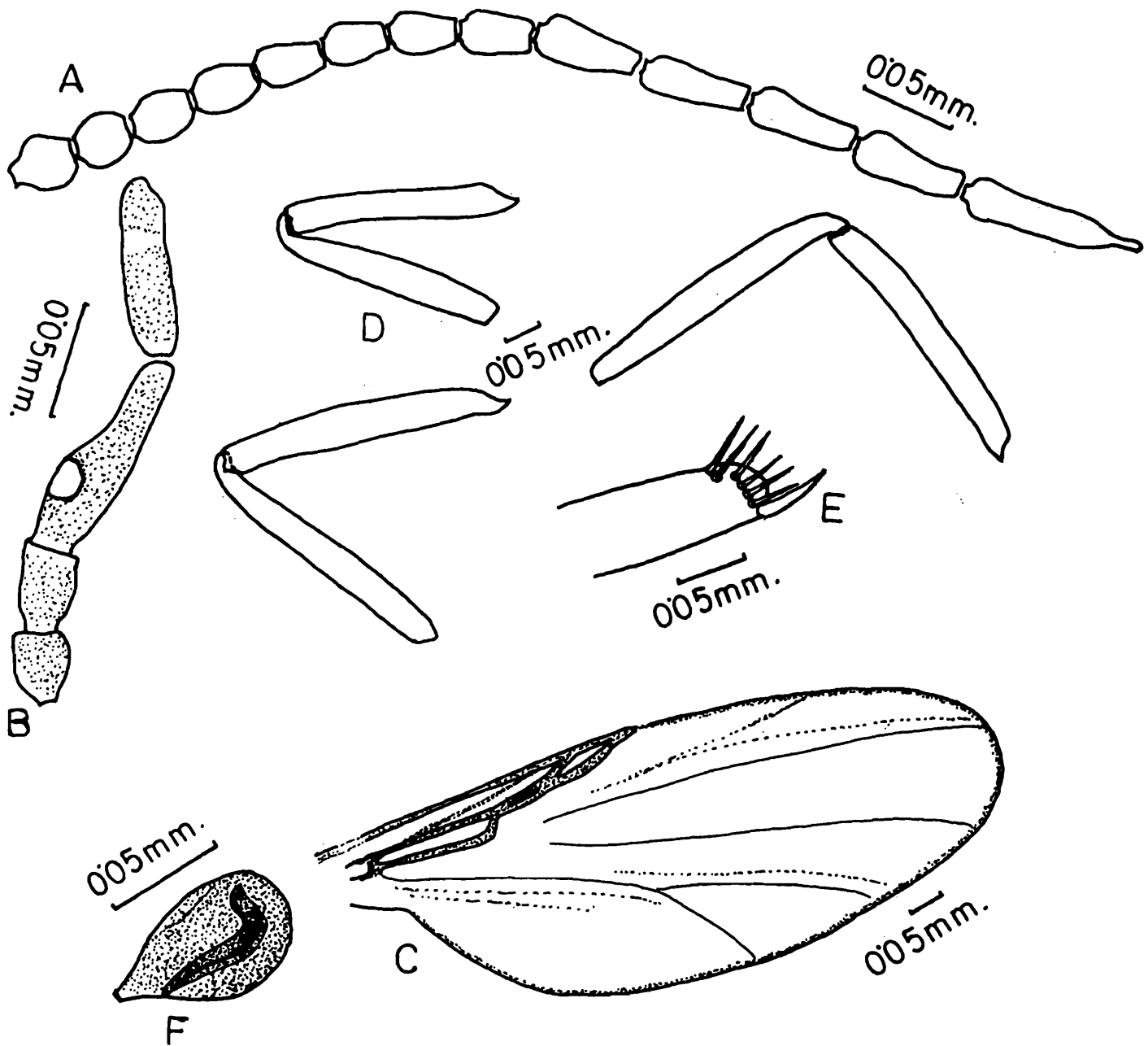
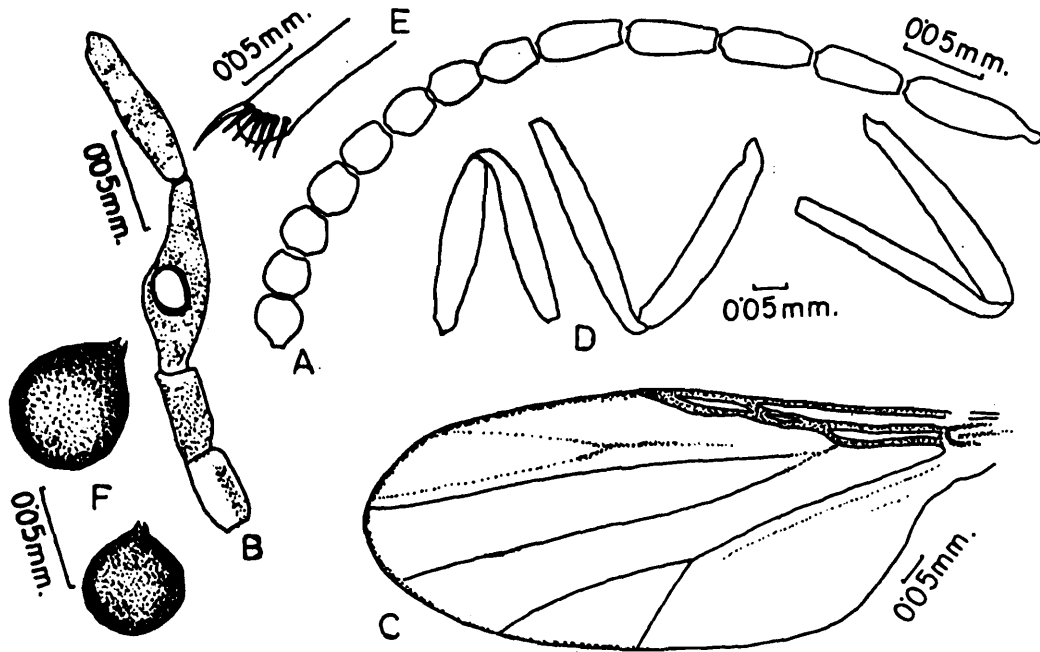
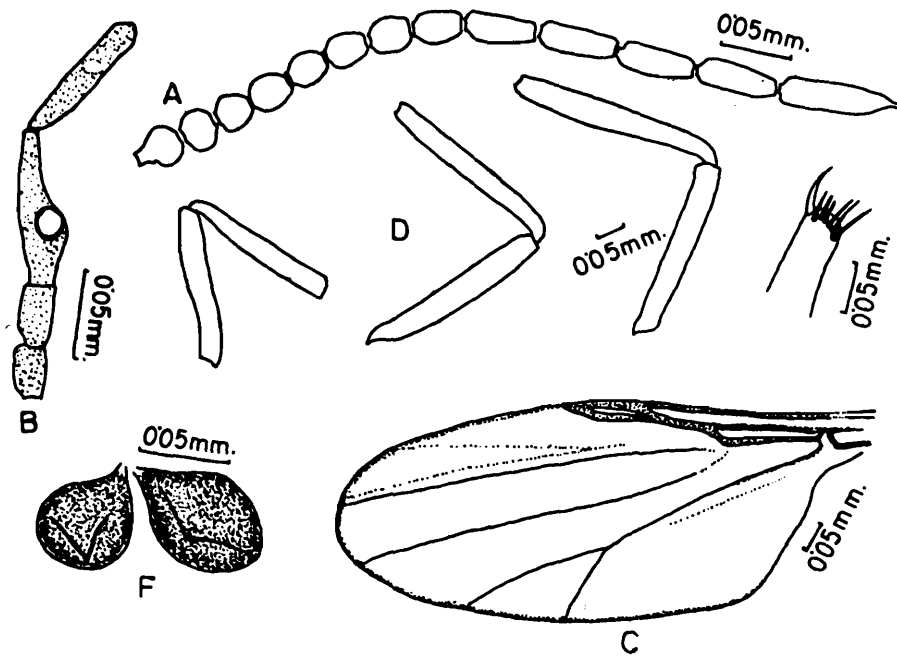


Figure 12 (A-F) *Forcipomyia (Euprojoannisia) palasunitheca*, n. sp.

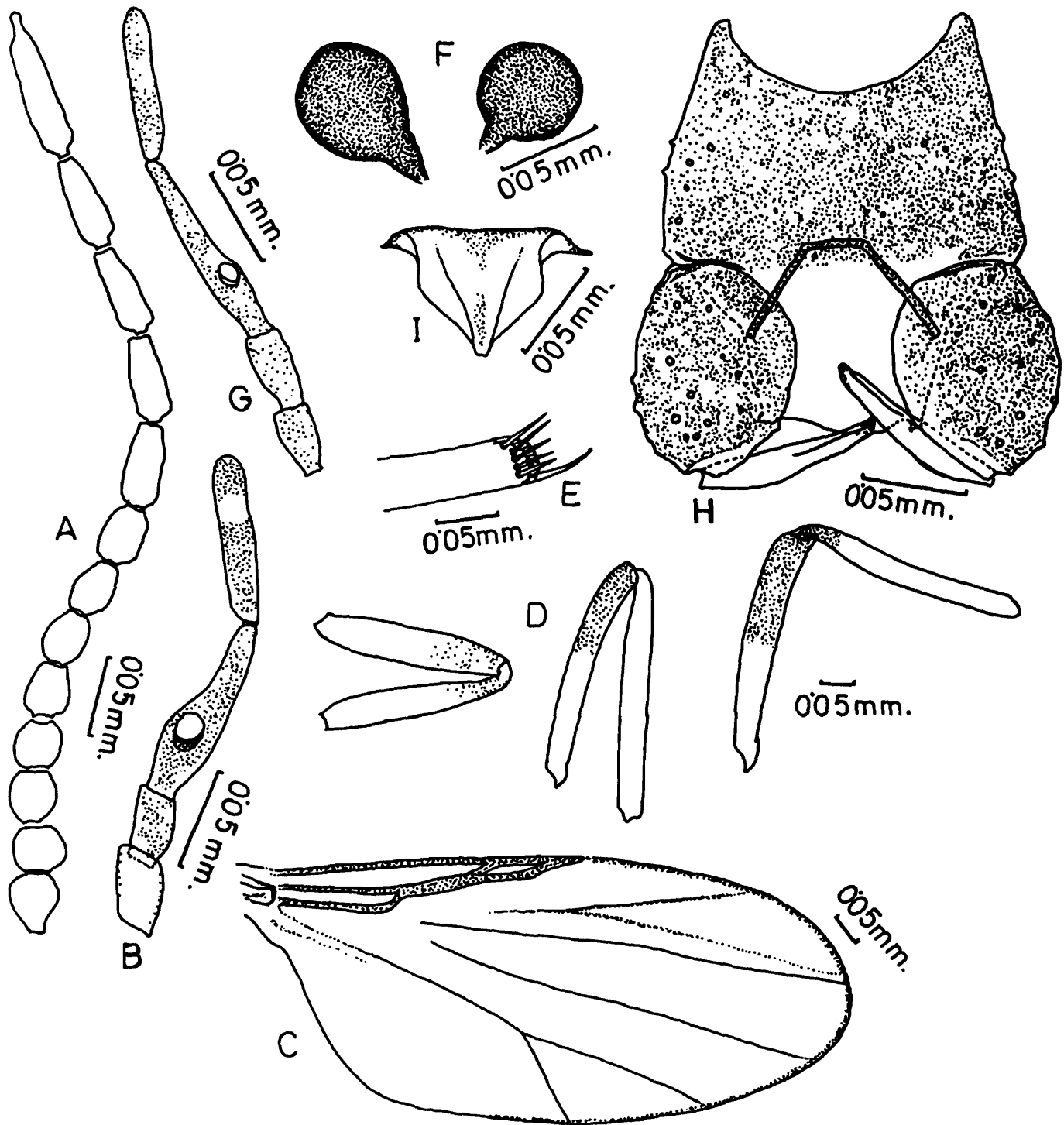
Female : A - antenna, B - maxillary palp, C - wing, D - femora-tibial part of fore leg (i) mid (ii) and hind leg (iii); E - hind tibial comb, F - spermatheca.



**Figure 13 (A-F) *Forcipomyia (Euprojoannisia) palusithecica*, n. sp.**  
 Female : A - antenna, B - maxillary palp, C - wing, D - femora-tibial part of fore leg (i) mid (ii) and hind leg (iii); E - hind tibial comb, F - spermathecae.



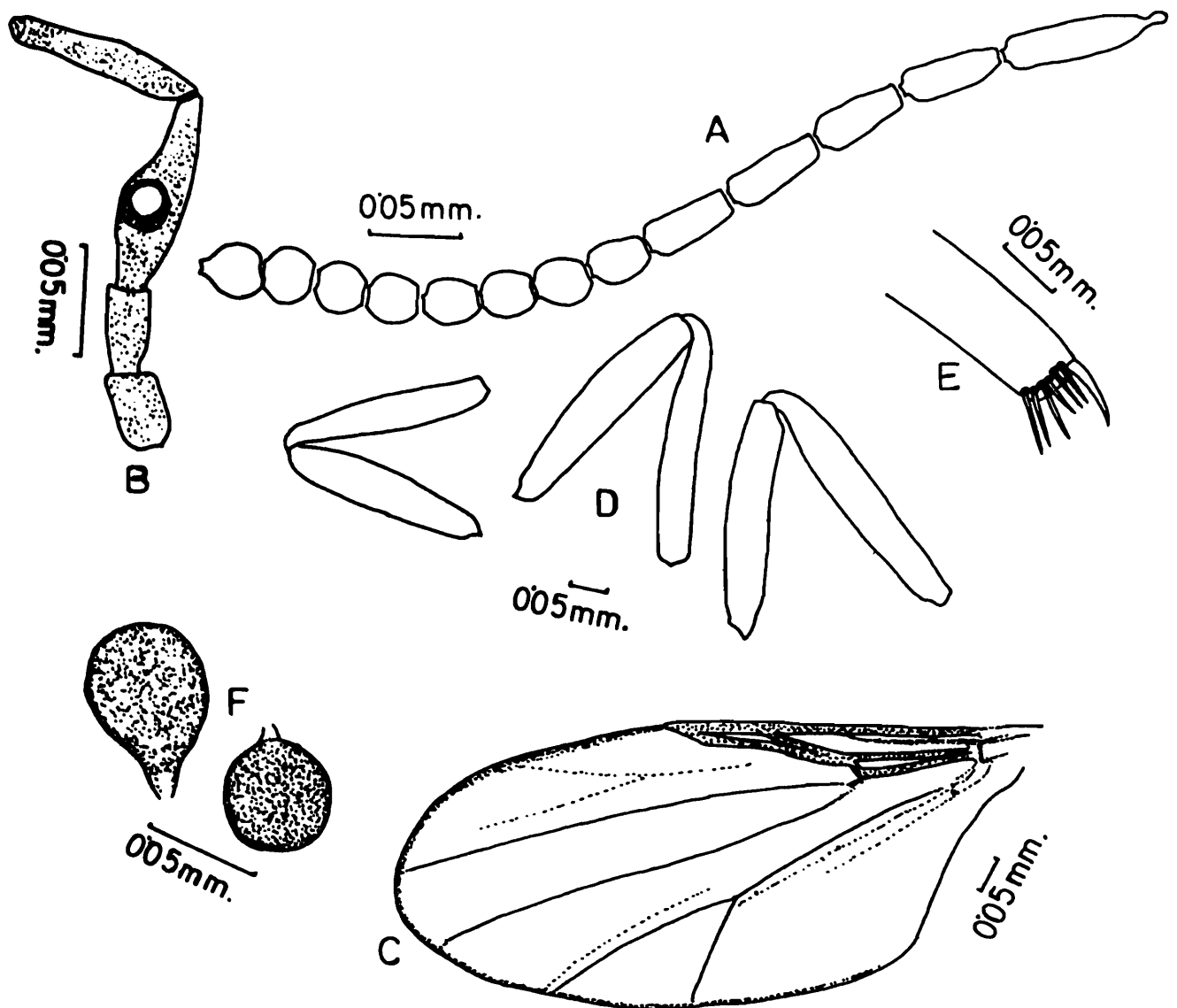
**Figure 14 (A-F) *Forcipomyia (Euprojoannisia) propenavaiaae*, n. sp.**  
 Female : A - antenna, B - maxillary palp, C - wing, D - femora-tibial part of fore leg (i) mid (ii) and hind leg (iii); E - hind tibial comb, F - spermathecae.



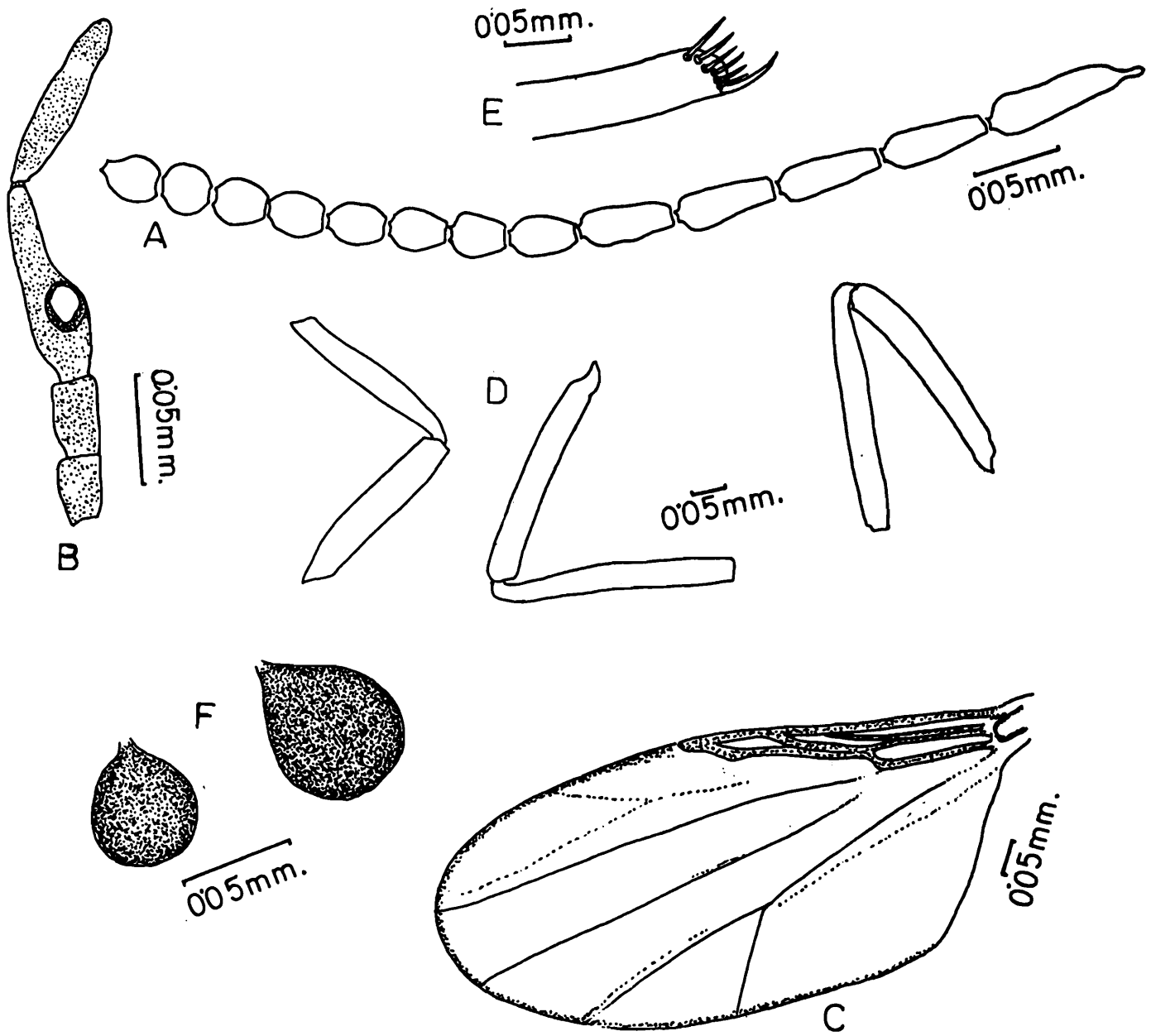
**Figure 15 (A-I)** *Forcipomyia (Euprojoannisia) pseudocalcarata*, n. sp.

Female : A - antenna, B - maxillary palp, C - wing, D - femora-tibial part of fore leg (i) mid (ii) and hind leg (iii); E - hind tibial comb, F - spermathecae.

Male : G - maxillary palp, H - Genitalia (without aedeagus), I - aedeagus.

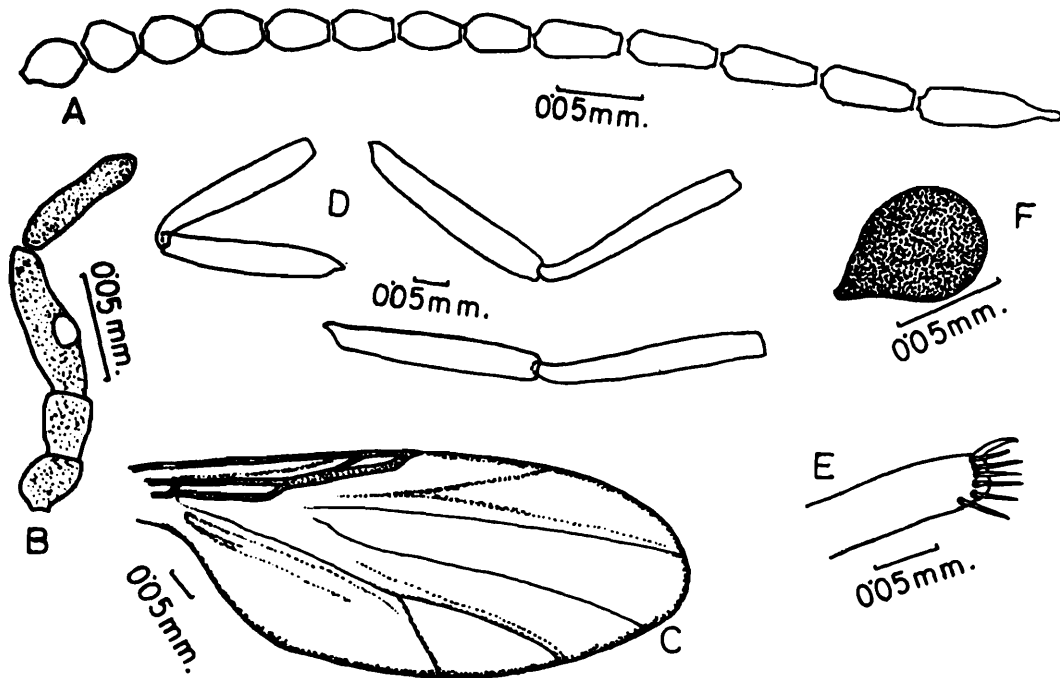


**Figure 16 (A-F) *Forcipomyia (Euprojoannisia) subcalcarata*, n. sp.**  
 Female : A - antenna, B - maxillary palp, C - wing, D - femora-tibial part of fore leg (i) mid (ii) and hind leg (iii); E - hind tibial comb, F - spermathecae.



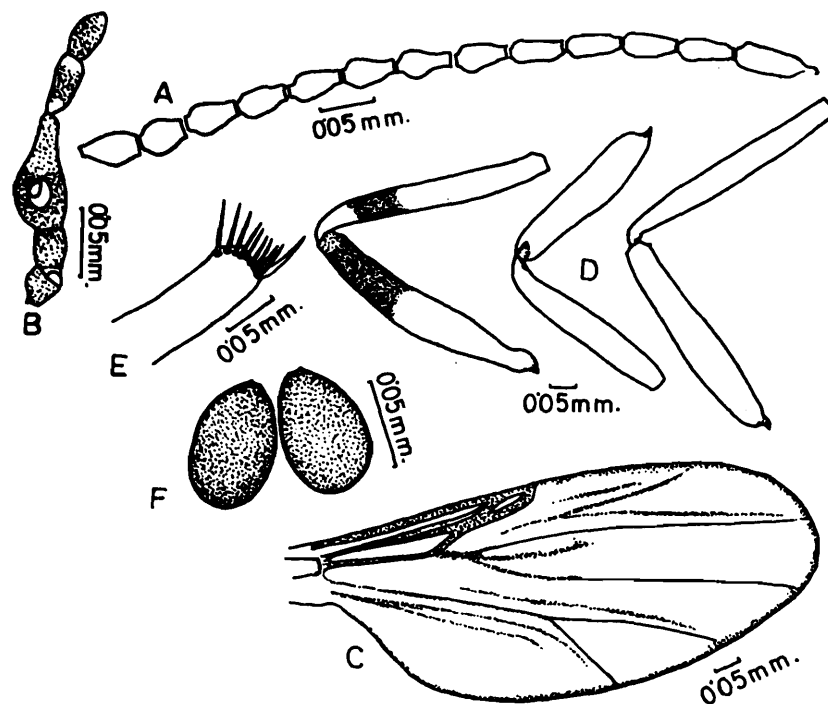
**Figure 17 (A-F) *Forcipomyia (Euprojoannisia) subingrami*, n. sp.**

Female : A - antenna, B - maxillary palp, C - wing, D - femora-tibial part of fore leg (i) mid (ii) and hind leg (iii); E - hind tibial comb, F - spermathecae.



**Figure 18 (A-F) *Forcipomyia (Euprojoannisia) subunitheca*, n. sp.**

Female : A - antenna, B - maxillary palp, C - wing, D - femora-tibial part of fore leg (i) mid (ii) and hind leg (iii); E - hind tibial comb, F - spermatheca.



**Figure 19 (A-F) *Forcipomyia (Forcipomyia) albiradialis* Tokunaga.**

Female : A - antenna, B - maxillary palp, C - wing, D - femora-tibial part of fore leg (i) mid (ii) and hind leg (iii); E - hind tibial comb, F - spermathecae.

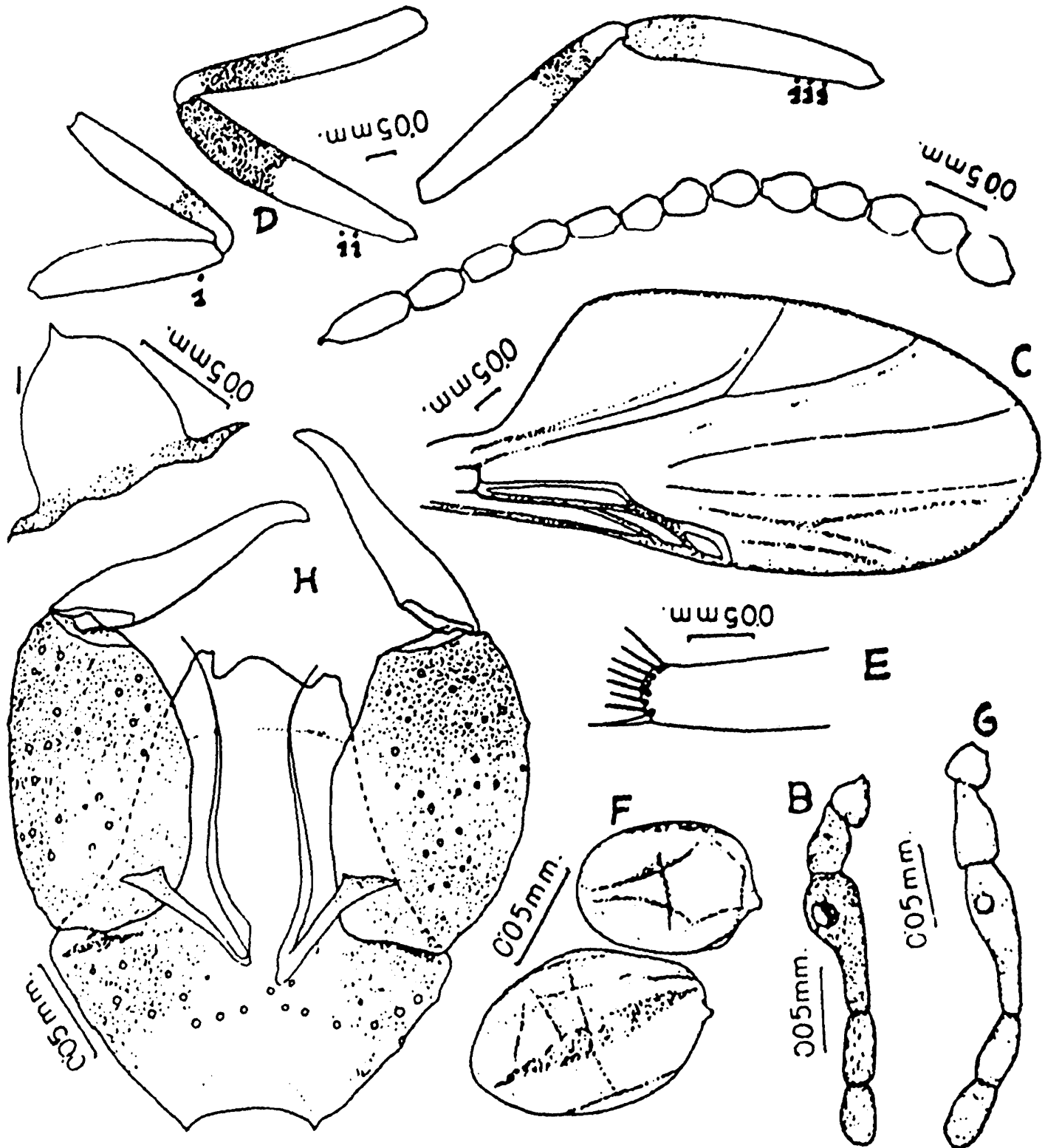
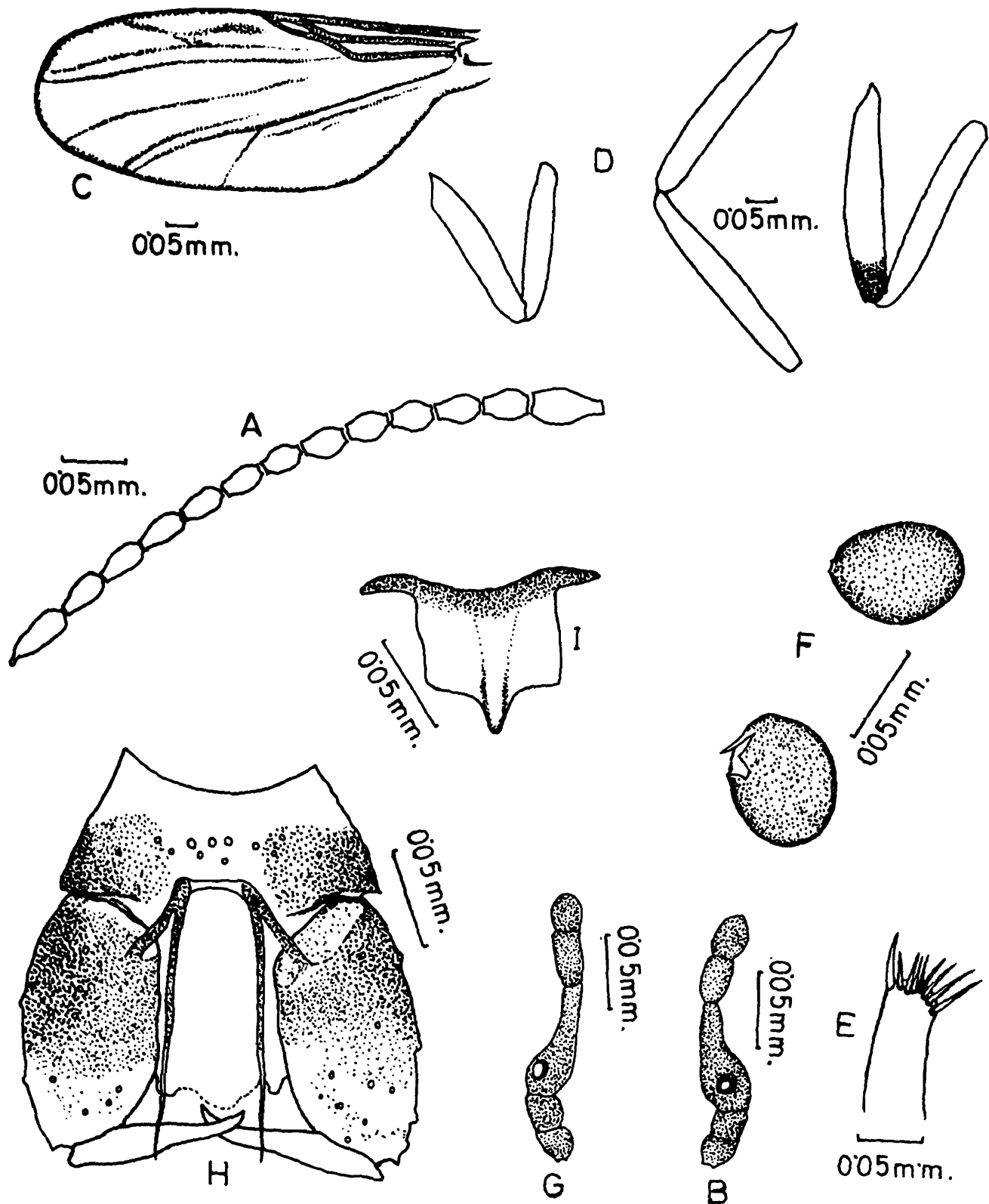


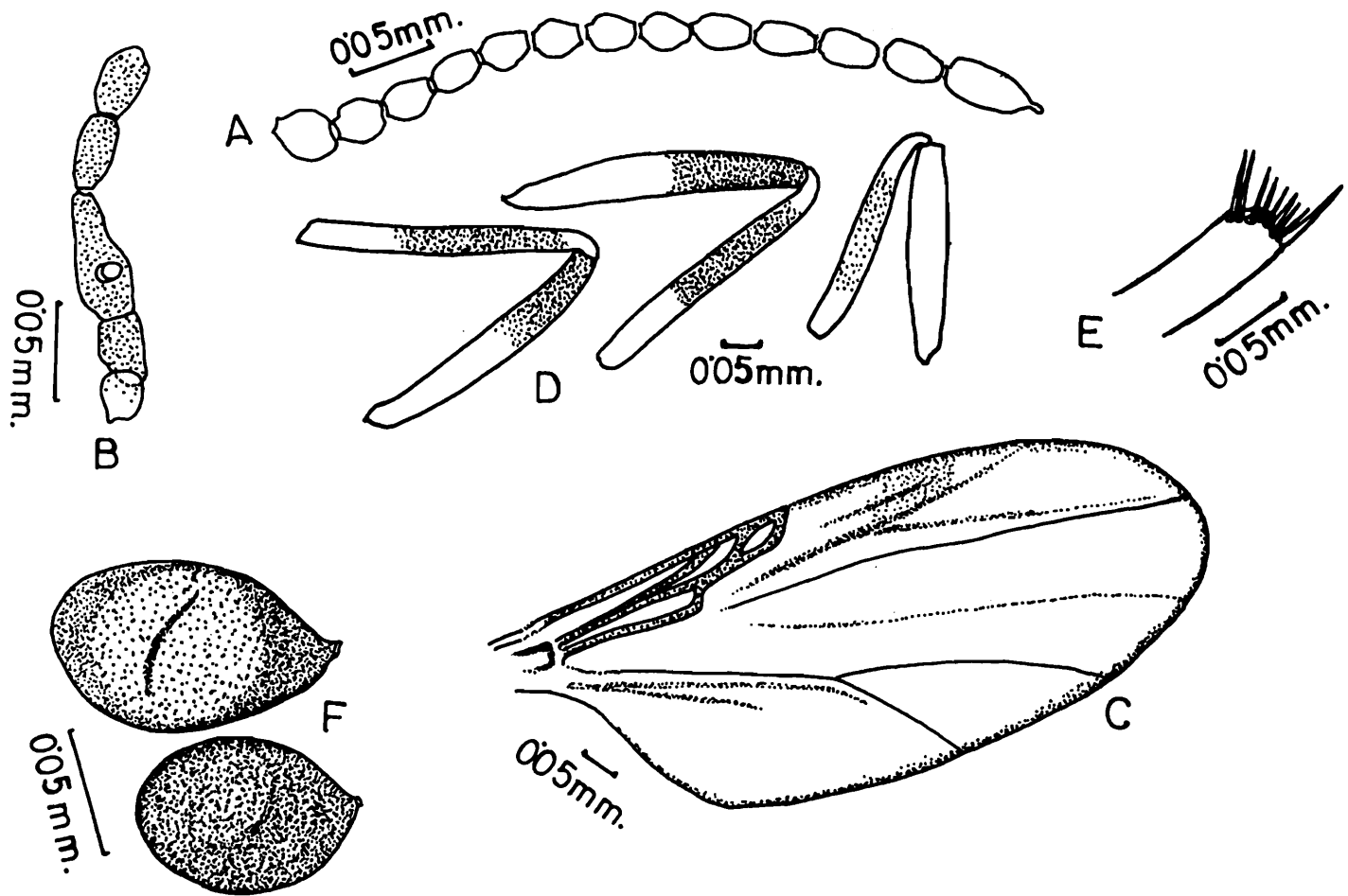
Figure 20 (A-I) *Forcipomyia (Forcipomyia) bikanni* Chan & LeRoux.

Female : A - antenna, B maxillary palp, C wing, D - femora-tibial part of fore leg (i) mid (ii) and hind leg (iii); E hind tibial comb, F spermathecae.

Male : G maxillary palp, H Genitalia (without aedeagus), I aedeagus.

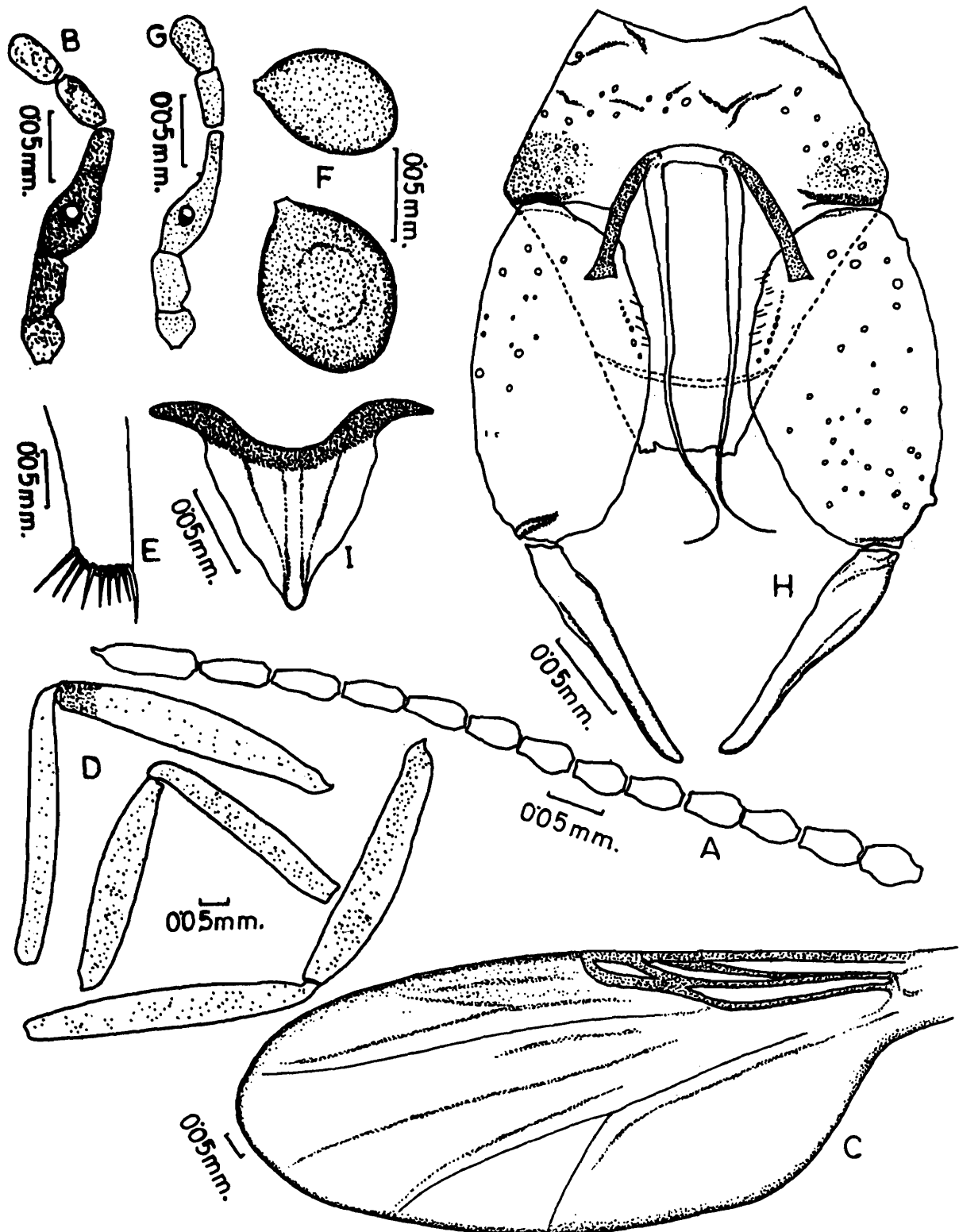


**Figure 21 (A-I) *Forcipomyia (Forcipomyia) brevipalpis*, n. sp.**  
 Female : A antenna, B maxillary palp, C wing, D- femora-tibial part of fore leg (i) mid (ii) and hind leg (iii); E- hind tibial comb, F- spermathecae.  
 Male : G - maxillary palp, H - Genitalia (without aedeagus), I aedeagus.

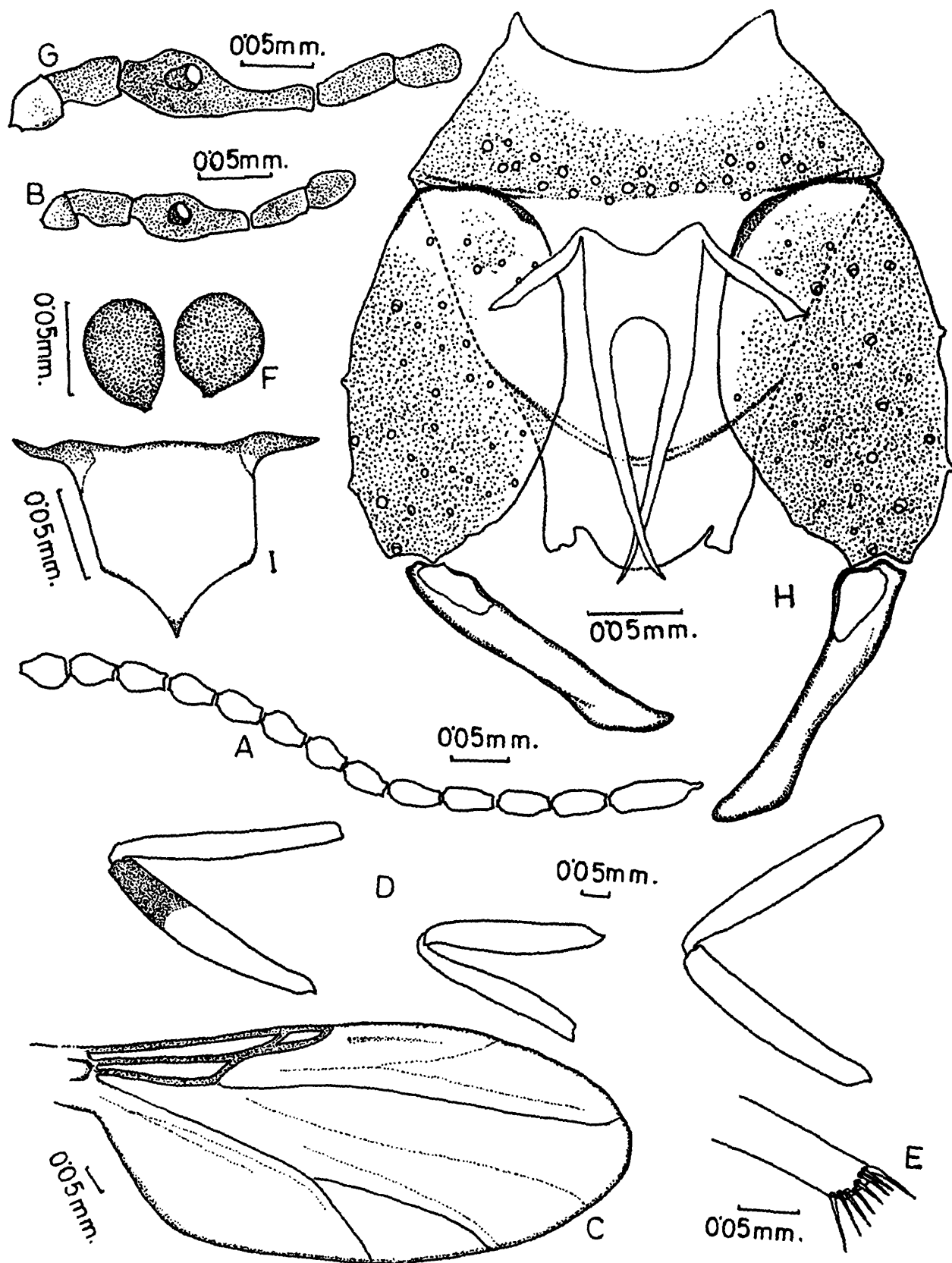


**Figure 22 (A-F) *Forcipomyia (Forcipomyia) fascilatipes*, n. sp.**

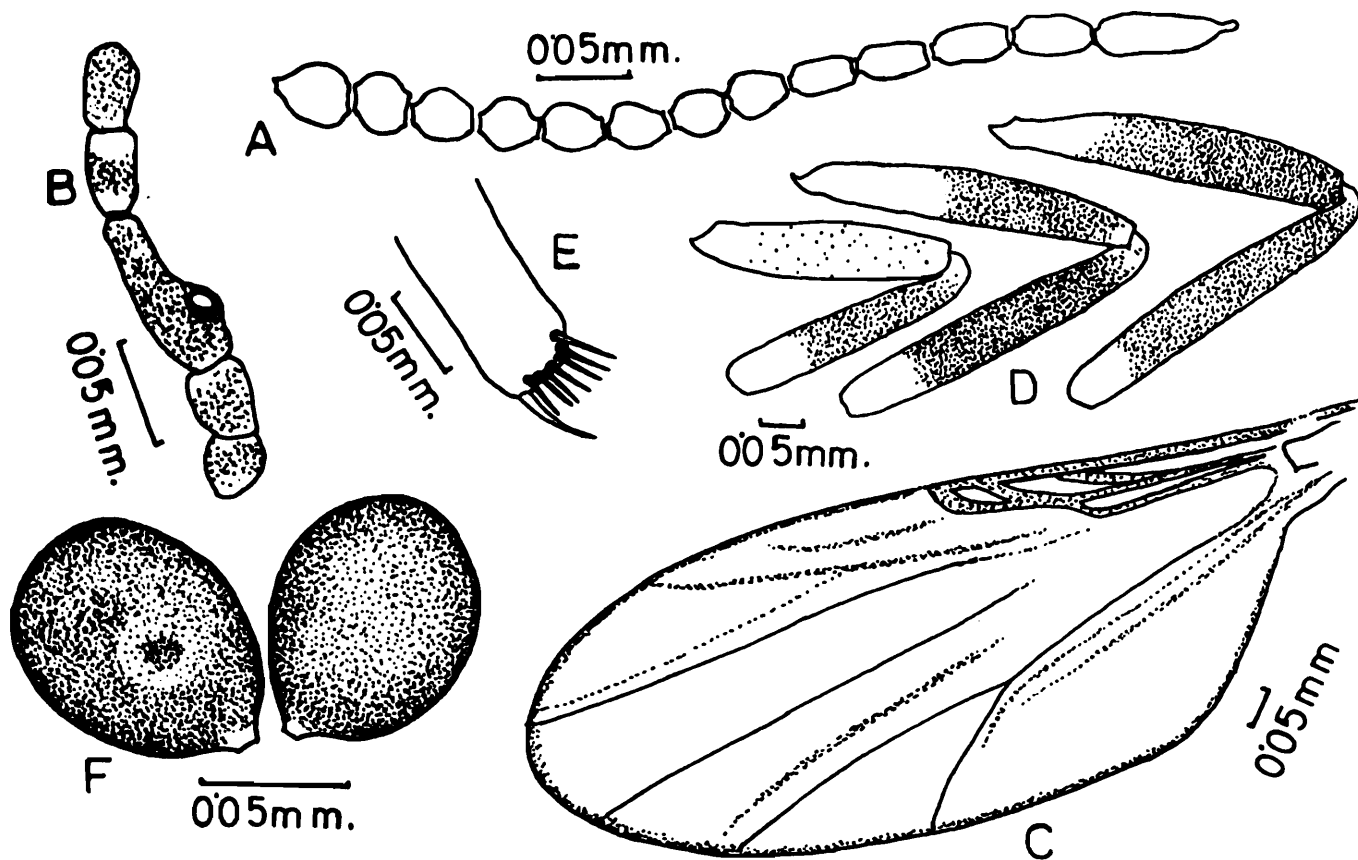
Female : A - antenna, B - maxillary palp, C - wing, D - femora-tibial part of fore leg (i) mid (ii) and hind leg (iii); E - hind tibial comb, F - spermathecae.



**Figure 23 (A-I) *Forcipomyia (Forcipomyia) fulvipes*, n. sp.**  
 Female : A - antenna, B - maxillary palp, C wing, D- femora-tibial part of fore leg (i) mid (ii) and hind leg (iii); E - hind tibial comb, F - spermathecae.  
 Male : G - maxillary palp, H - Genitalia (without aedeagus), I - aedeagus.

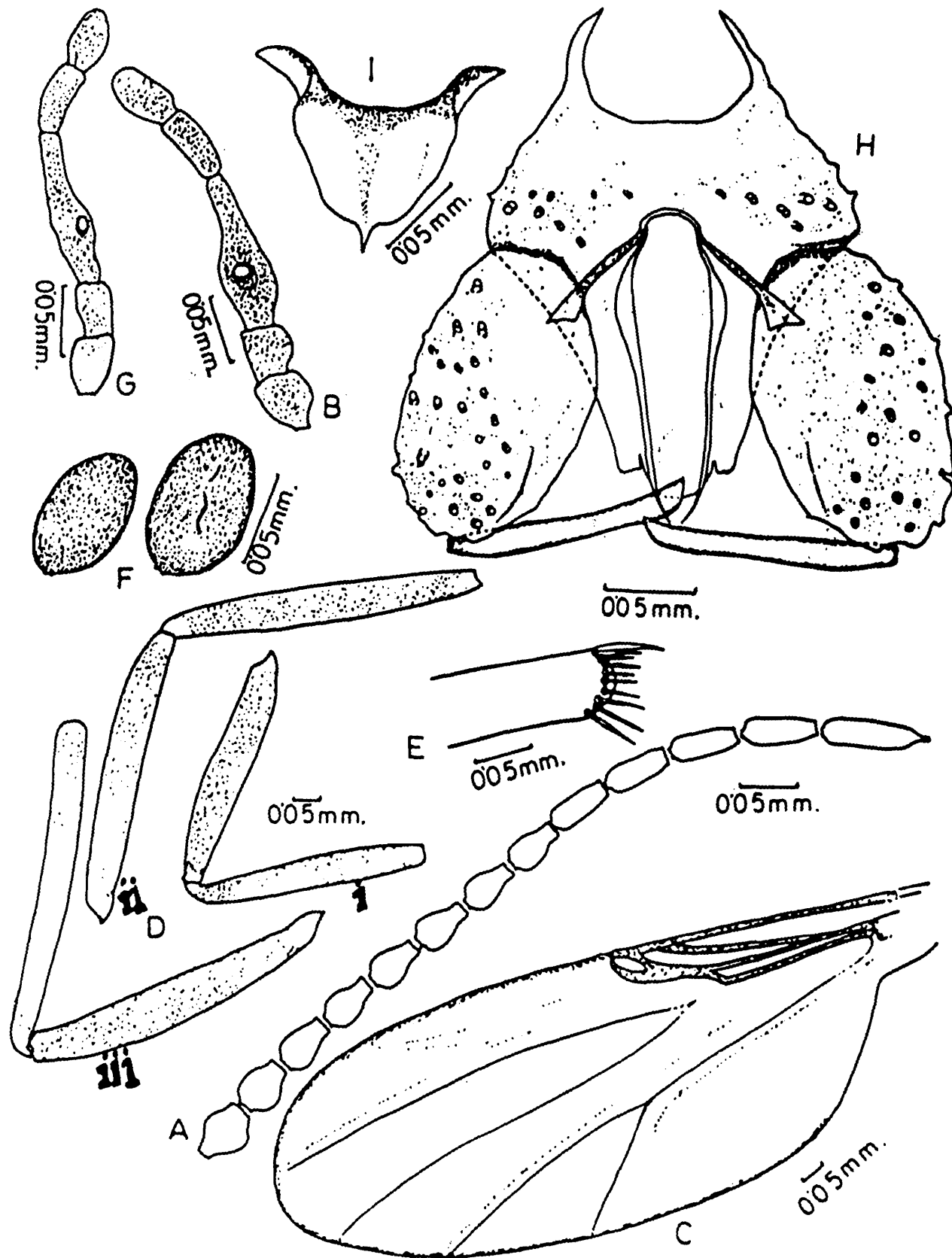


**Figure 24 (A-I) *Forcipomyia (Forcipomyia) fulvotibialis*, n. sp.**  
 Female : A - antenna, B maxillary palp, C wing, D - femora-tibial part of fore leg (i) mid (ii) and hind leg (iii); E - hind tibial comb, F - spermathecae.  
 Male : G maxillary palp, H - Genitalia (without aedeagus), I - aedeagus.

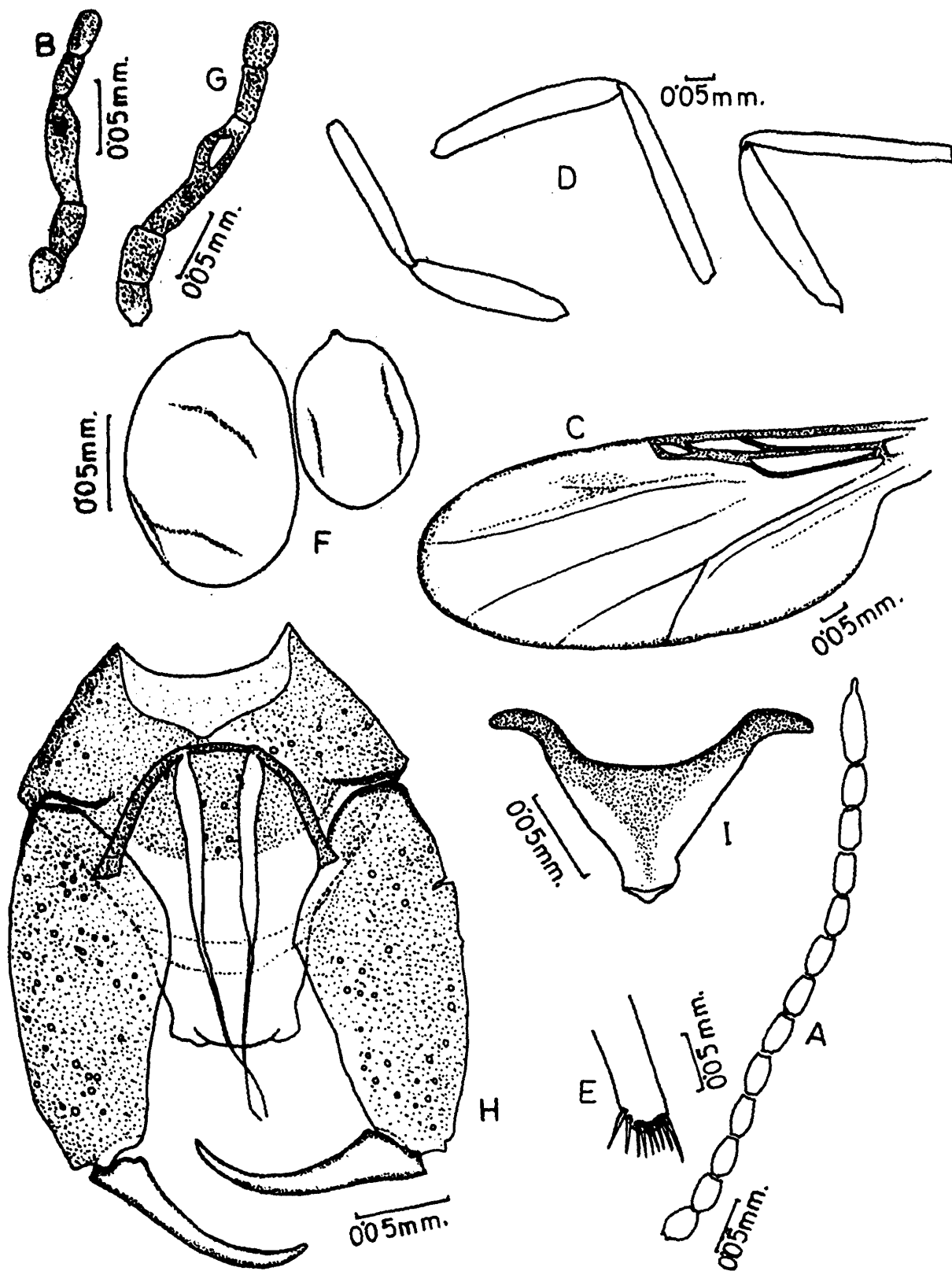


**Figure 25 (A-F) *Forcipomyia (Forcipomyia) globofuscitheca*, n. sp.**

Female : A - antenna, B - maxillary palp, C - wing, D - femora-tibial part of fore leg (i) mid (ii) and hind leg (iii); E - hind tibial comb, F - spermathecae.



**Figure 26 (A-I)** *Forcipomyia (Forcipomyia) holofuscicuris*, n. sp.  
 Female: A antenna, B maxillary palp, C wing, D - femora-tibial part of fore leg (i) mid (ii) and hind leg (iii); E hind tibial comb, F spermathecae.  
 Male : G - maxillary palp, H - Genitalia (without aedeagus), I - aedeagus.



**Figure 27 (A-I)** *Forcipomyia (Forcipomyia) imparitheca*, n. sp.  
 Female : A - antenna, B - maxillary palp, C wing, D - femora-tibial part of fore leg (i) mid (ii) and hind leg (iii); E - hind tibial comb, F spermathecae.  
 Male : G - maxillary palp, H Genitalia (without aedeagus), I aedeagus.

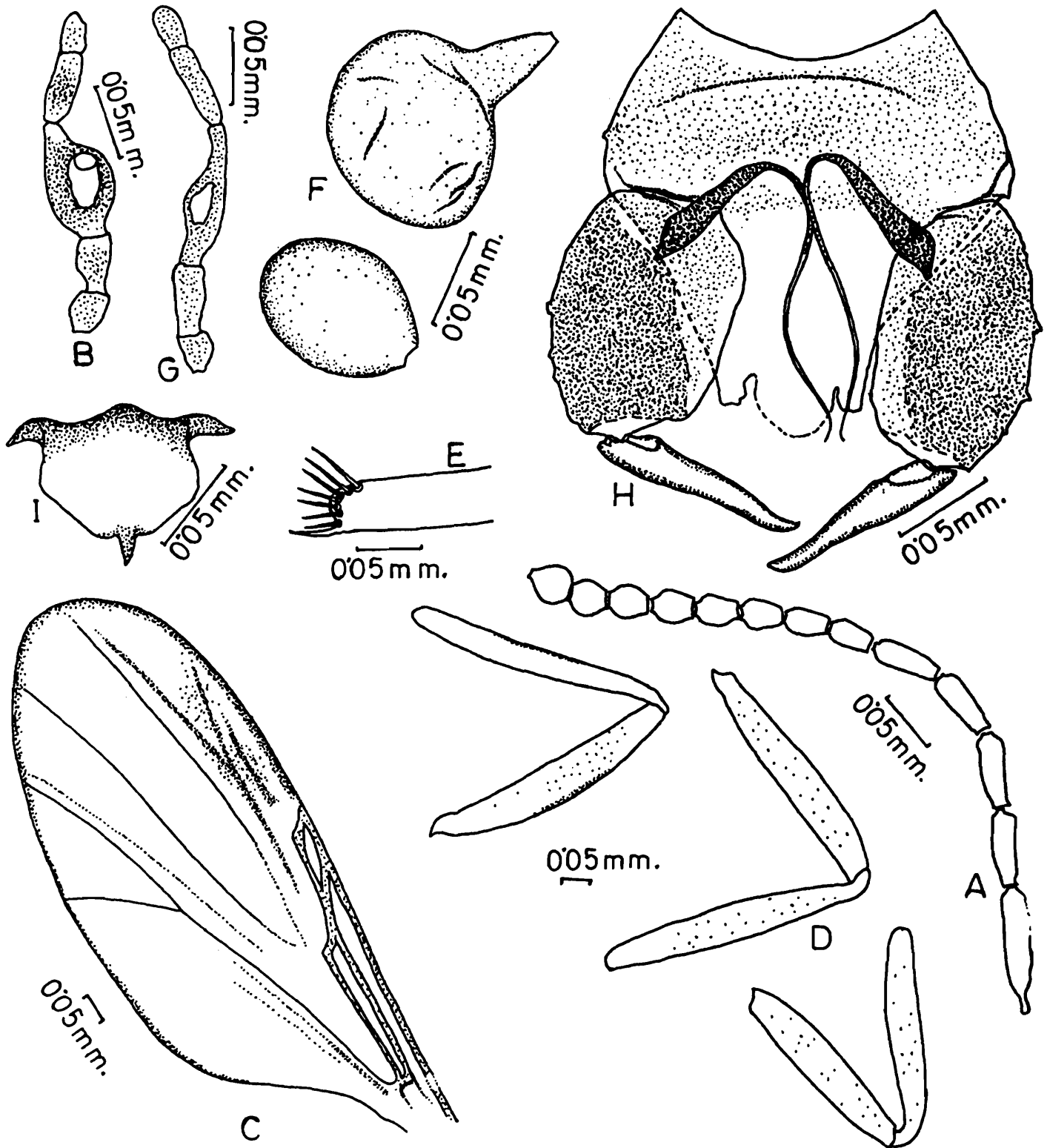
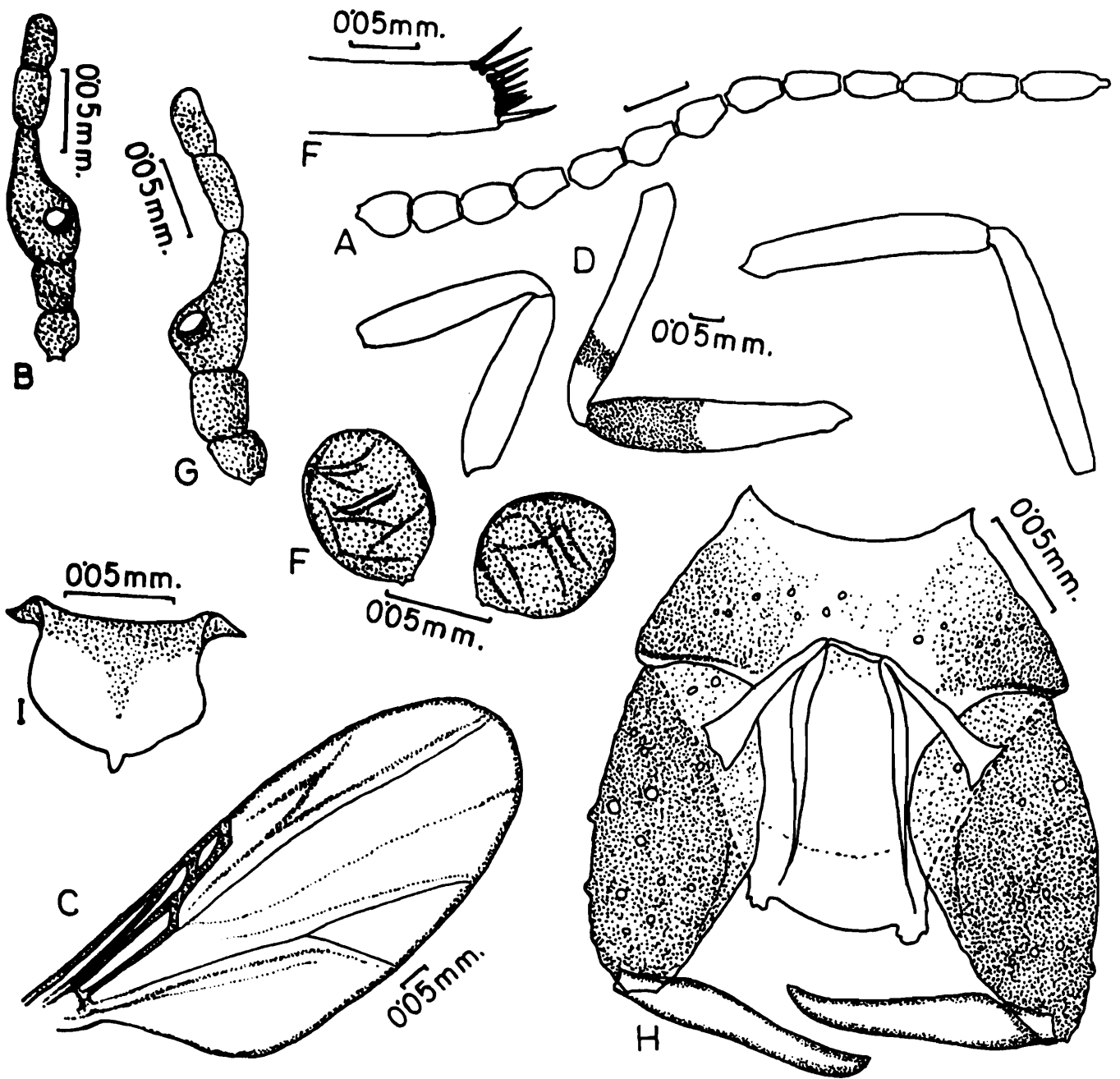


Figure 28 (A-F) *Forcipomyia (Forcipomyia) lurida*, n. sp.

Female: A - antenna, B maxillary palp, C wing, D - femora-tibial part of fore leg (i) mid (ii) and hind leg (iii); E hind tibial comb, F spermathecae.



**Figure 29 (A-I) *Forcipomyia (Forcipomyia) paenealbiradialis*, n. sp.**  
 Female : A - antenna, B - maxillary palp, C wing, D femora-tibial part of fore leg (i) mid (ii) and hind leg (iii); E - hind tibial comb, F - spermathecae.  
 Male : G - maxillary palp, H - Genitalia (without aedeagus), I aedeagus.

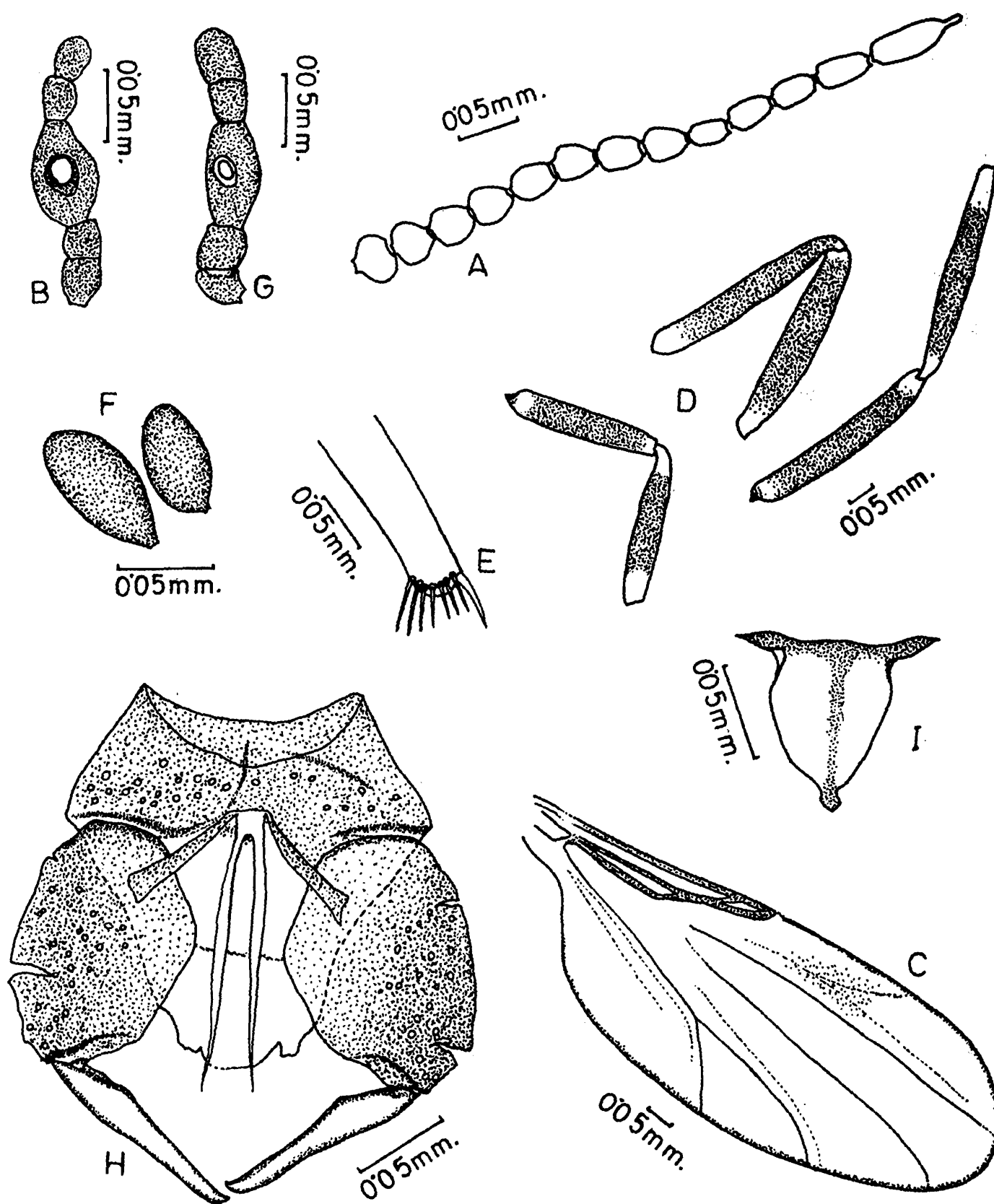
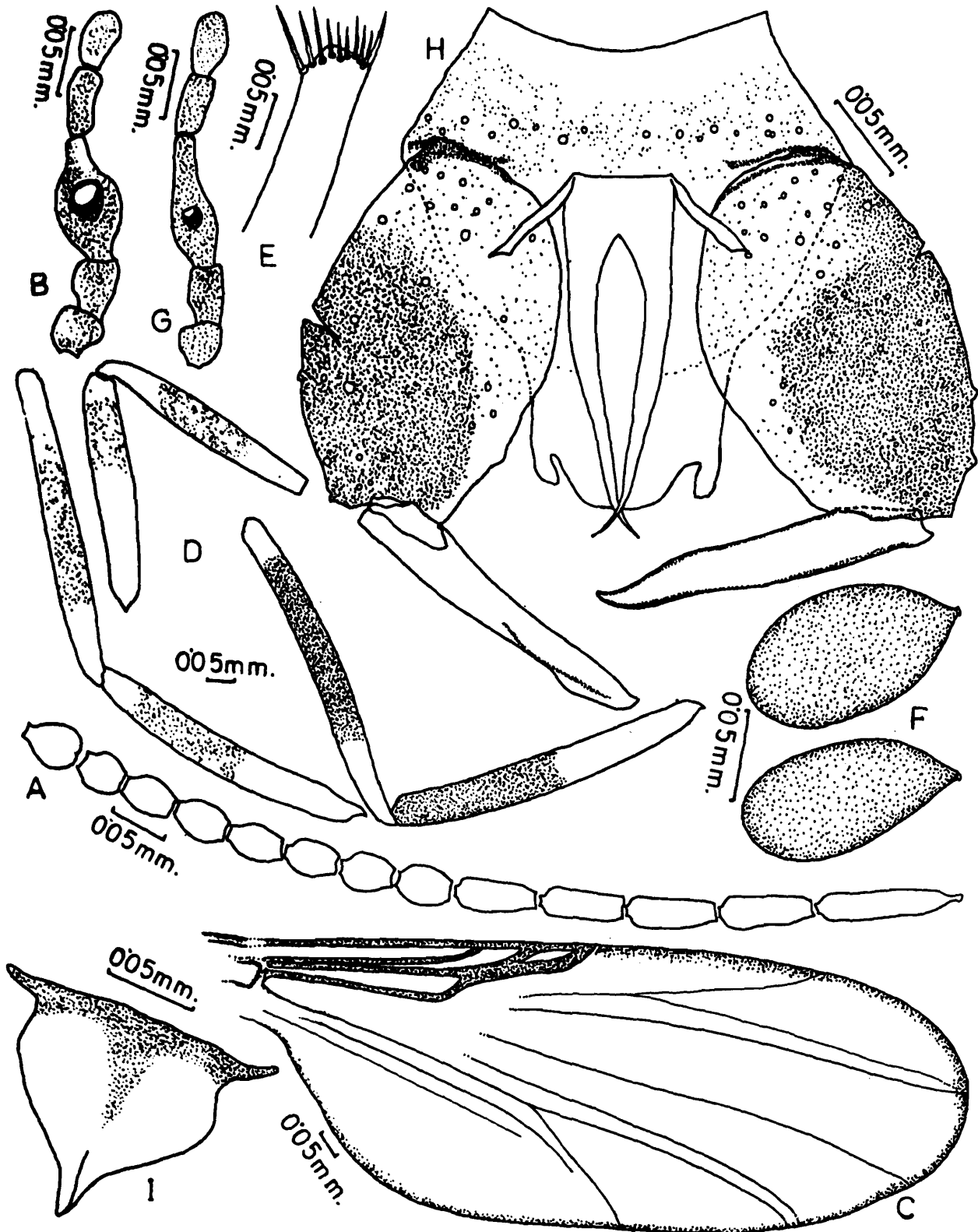


Figure 30 (A-I) *Forcipomyia (Forcipomyia) palpipotens*, n. sp.

Female : A - antenna, B - maxillary palp, C - wing, D femora-tibial part of fore leg (i) mid (ii) and hind leg (iii); E - hind tibial comb, F - spermathecae.

Male : G - maxillary palp, H Genitalia (without aedeagus), I - aedeagus.



**Figure 31 (A-I) *Forcipomyia (Forcipomyia) pseudobipunctata*, n. sp.**

**Female :** A - antenna, B - maxillary palp, C - wing, D - femora-tibial part of fore leg (i) mid (ii) and hind leg (iii); E - hind tibial comb, F - spermathecae.

**Male :** G - maxillary palp, H - Genitalia (without aedeagus), I - aedeagus.

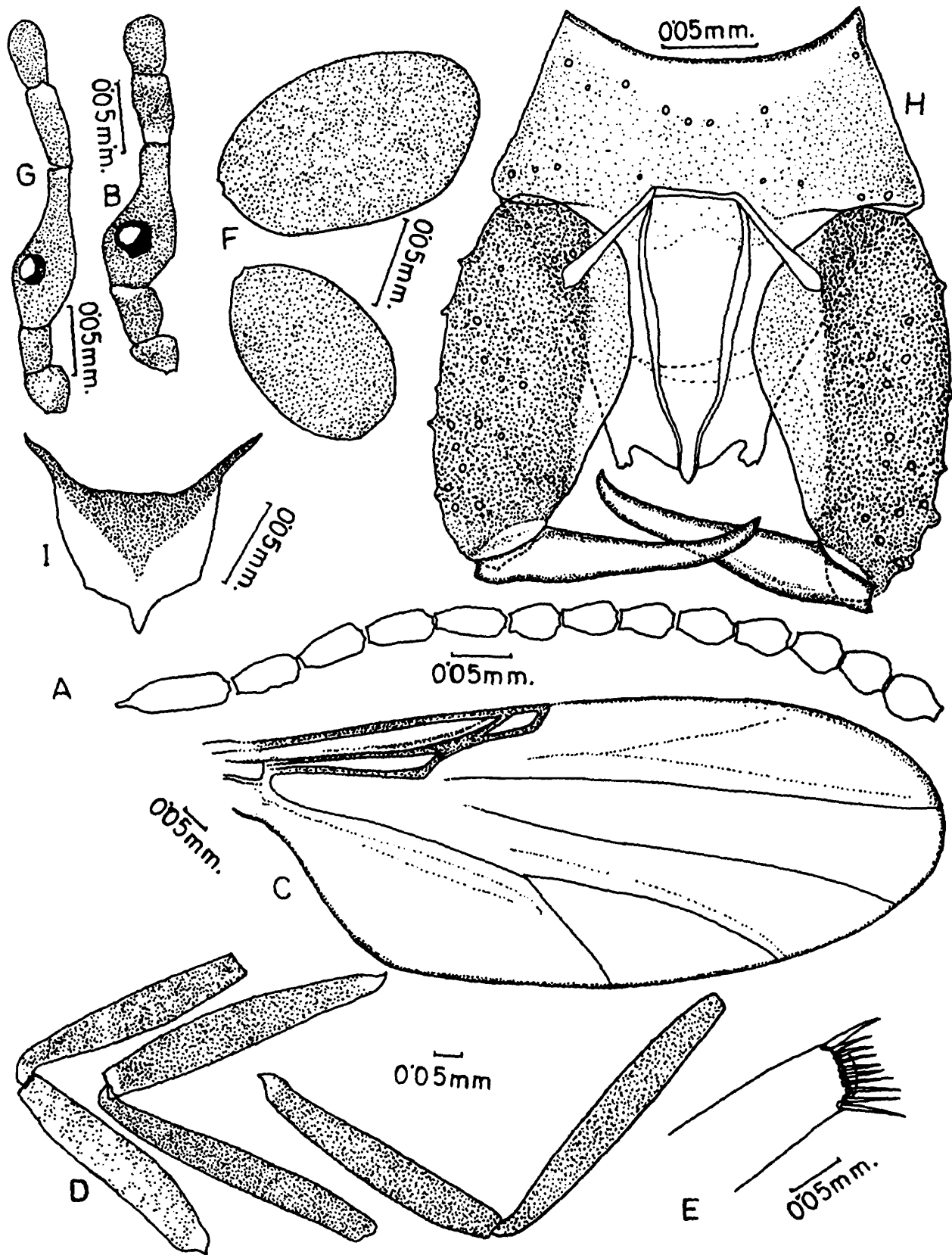
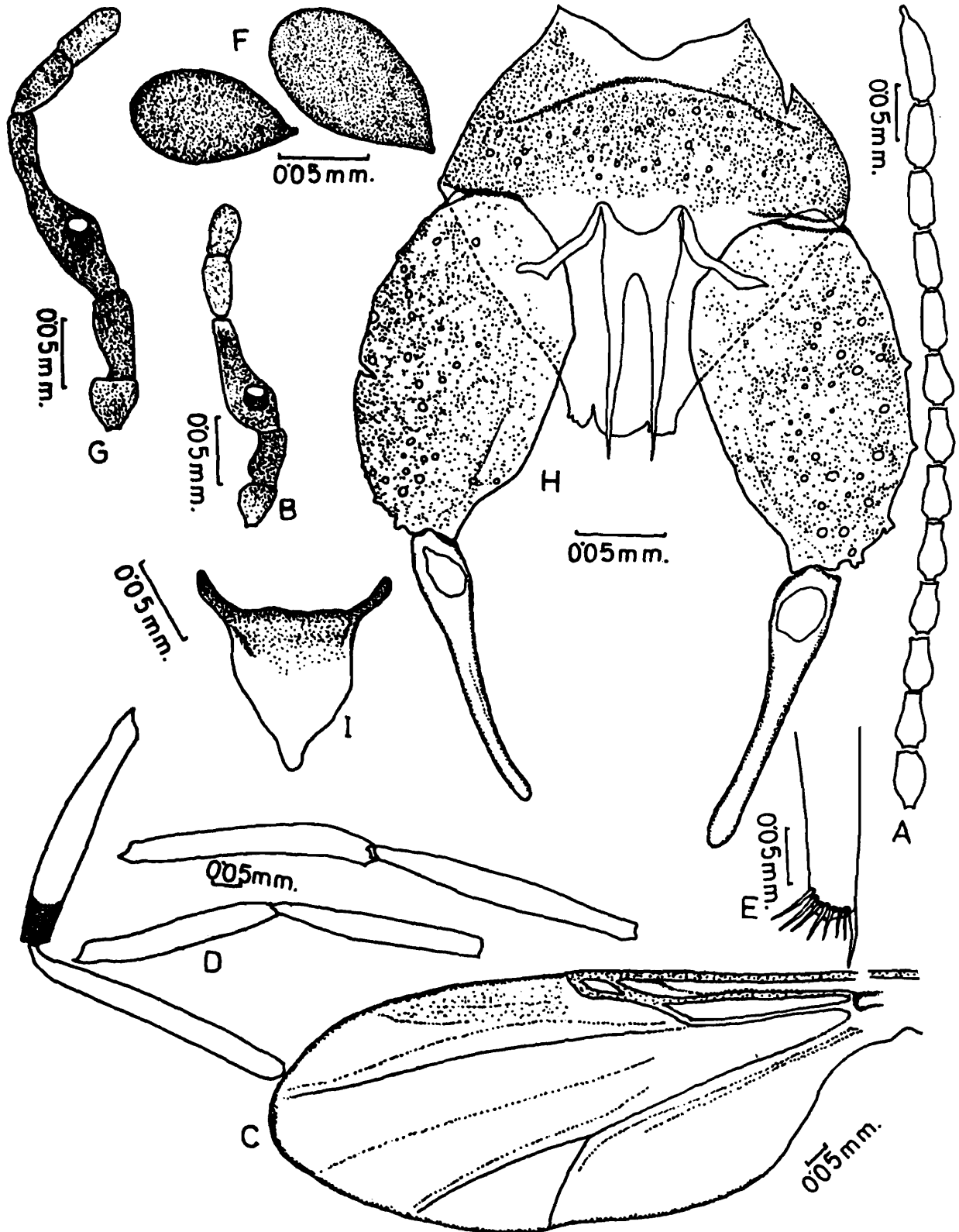


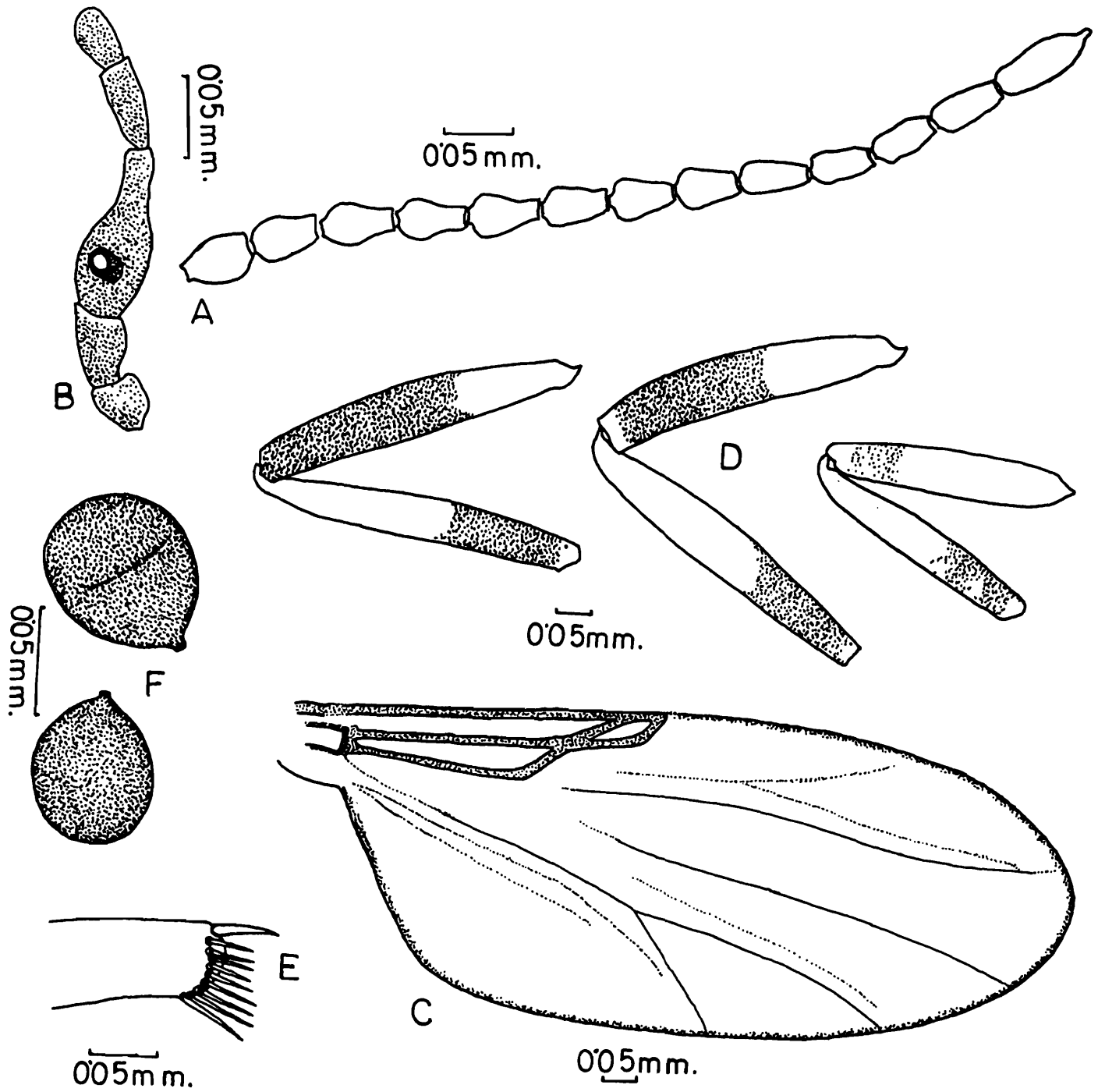
Figure 32 (A-I) *Forcipomyia (Forcipomyia) pulluspadicruris*, n. sp.

Female : A - antenna, B - maxillary palp, C - wing, D - femora-tibial part of fore leg (i) mid (ii) and hind leg (iii); E - hind tibial comb, F - spermathecae.

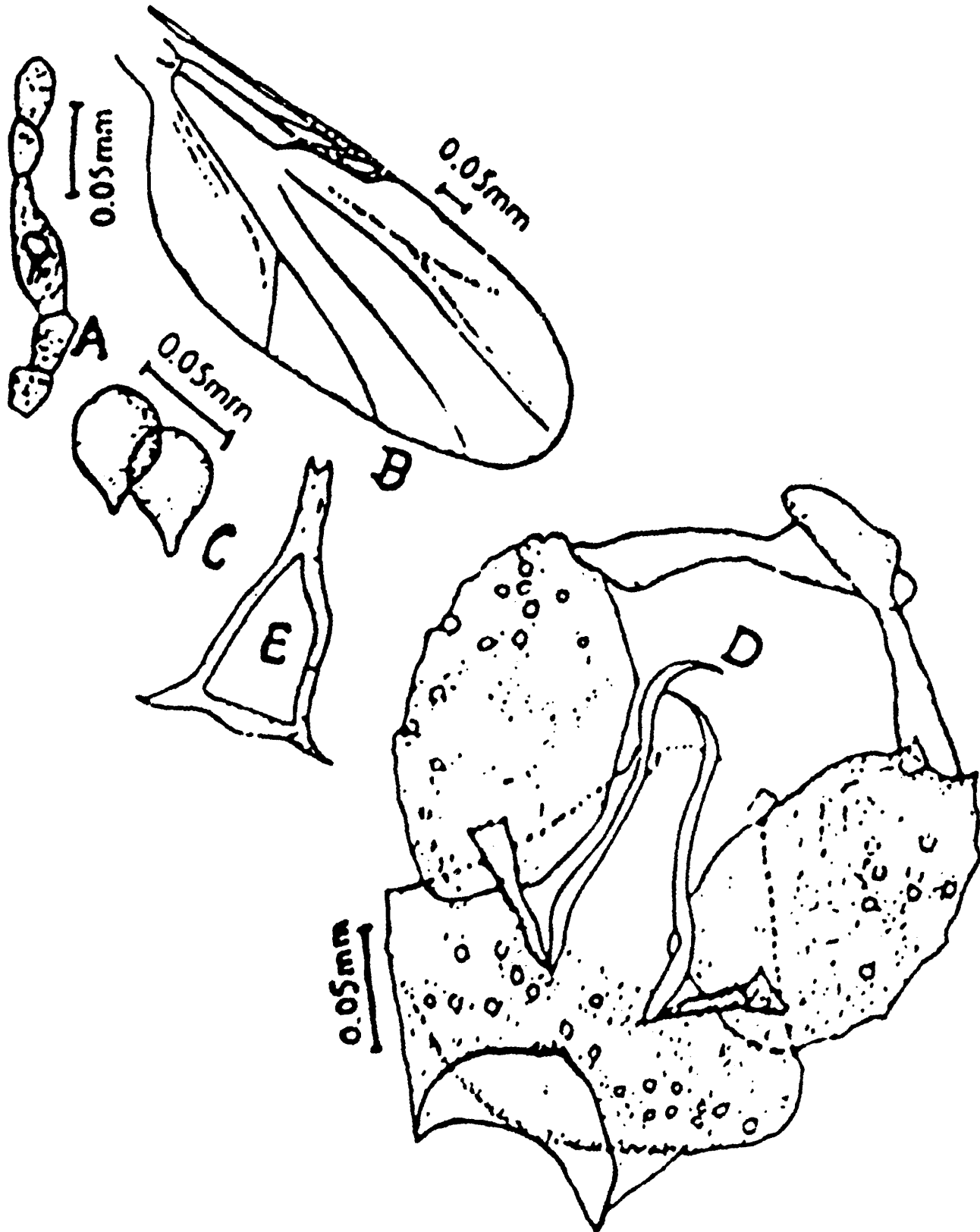
Male : G - maxillary palp, H - Genitalia (without aedeagus), I - aedeagus.



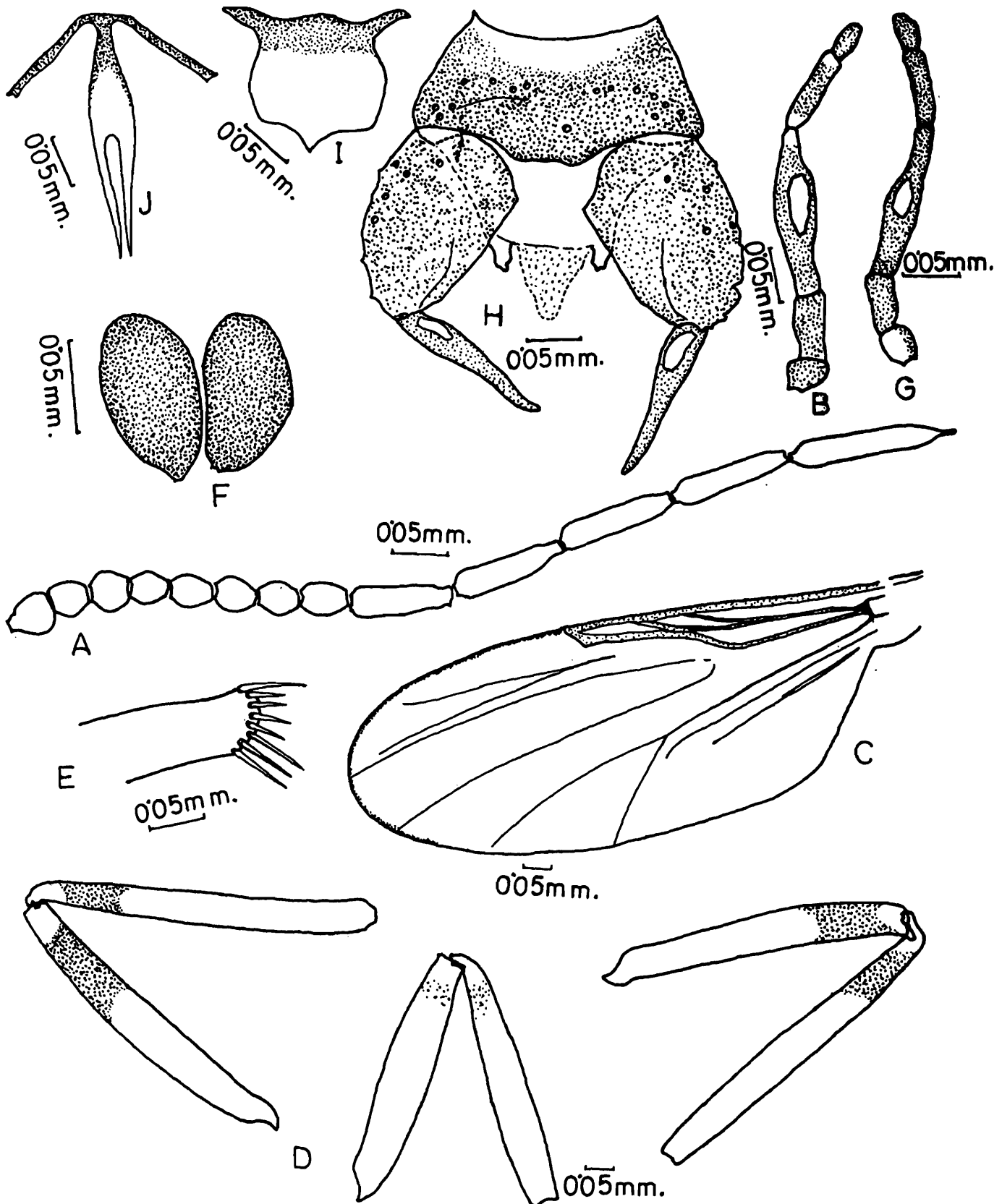
**Figure 33 (A-I) *Forcipomyia (Forcipomyia) quasialbiradialis*, n. sp.**  
 Female : A - antenna, B - maxillary palp, C - wing, D - femora-tibial part of fore leg (i) mid (ii) and hind leg (iii); E - hind tibial comb, F - spermathecae.  
 Male : G - maxillary palp, H - Genitalia (without aedeagus), I - aedeagus.



**Figure 34 (A-F) *Forcipomyia (Forcipomyia) variicrus* Kieffer**  
 Female : A - antenna, B - maxillary palp, C - wing, D - femora-tibial part of fore leg (i) mid (ii) and hind leg (iii); E - hind tibial comb, F - spermathecae.



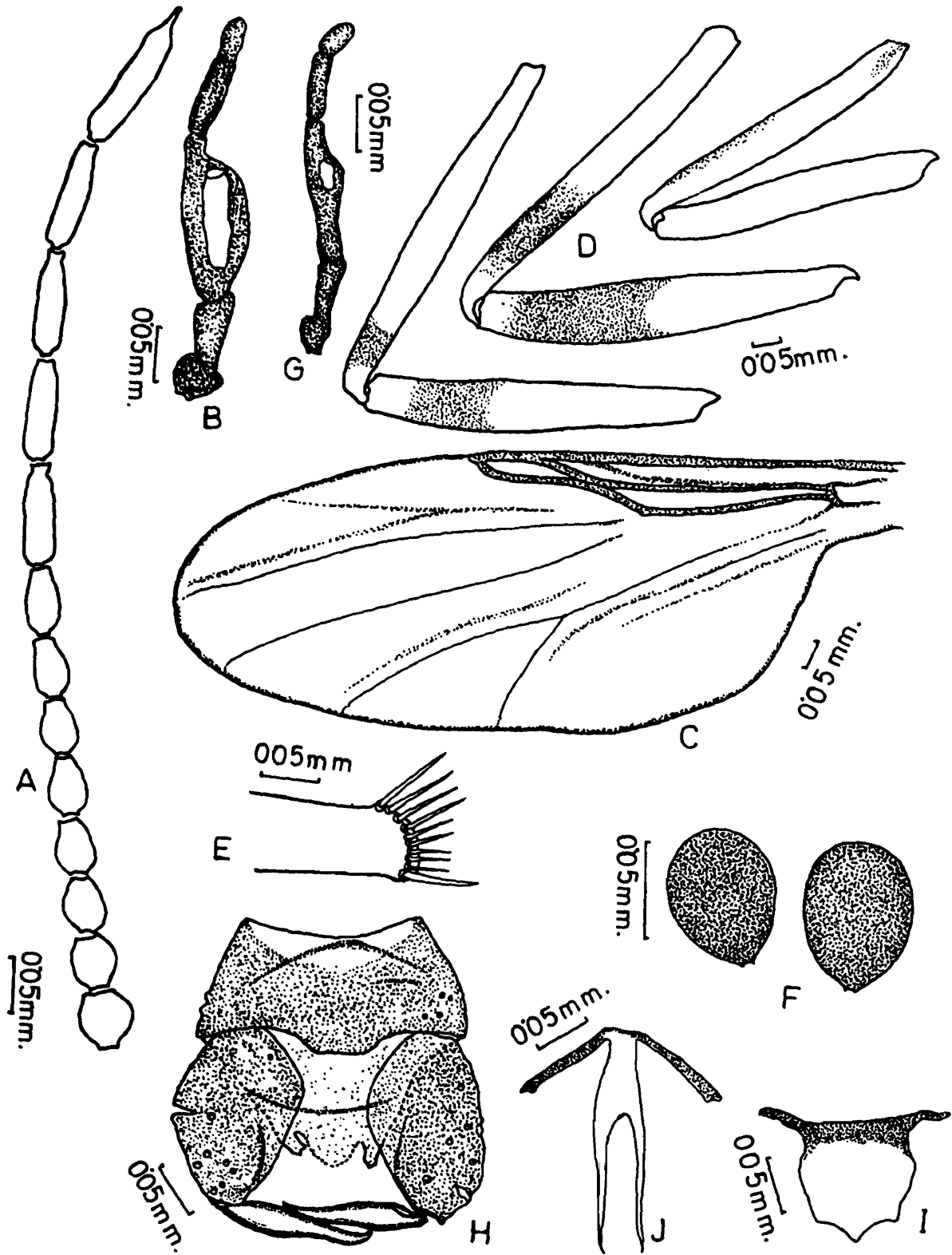
**Figure 35 (A-E)** *Forcipomyia (Lepidohelea) chrysolopha* (Kieffer)  
 Female : A - maxillary palp, B - wing, C - spermathecae.  
 Male : D - Genitalia (with aedeagus), E - parameres.



**Figure 36 (A-J) *Forcipomyia (Microhelea) angustipalpis*, n. sp.**

Female : A - antenna, B - maxillary palp, C wing, D - femora-tibial part of fore leg (i) mid (ii) and hind leg (iii); E - hind tibial comb, F spermathecae.

Male : G - maxillary palp, H Genitalia (without aedeagus and parameres), I - aedeagus, J - parameres.



**Figure 37 (A-J) *Forcipomyia (Microhelea) fuliginosa* (Meigen)**

Female : A - antenna, B - maxillary palp, C - wing, D - femora-tibial part of fore leg (i) mid (ii) and hind leg (iii); E - hind tibial comb, F - spermathecae.

Male : G - maxillary palp, H - Genitalia (without aedeagus and parameres), I - aedeagus, J - parameres.

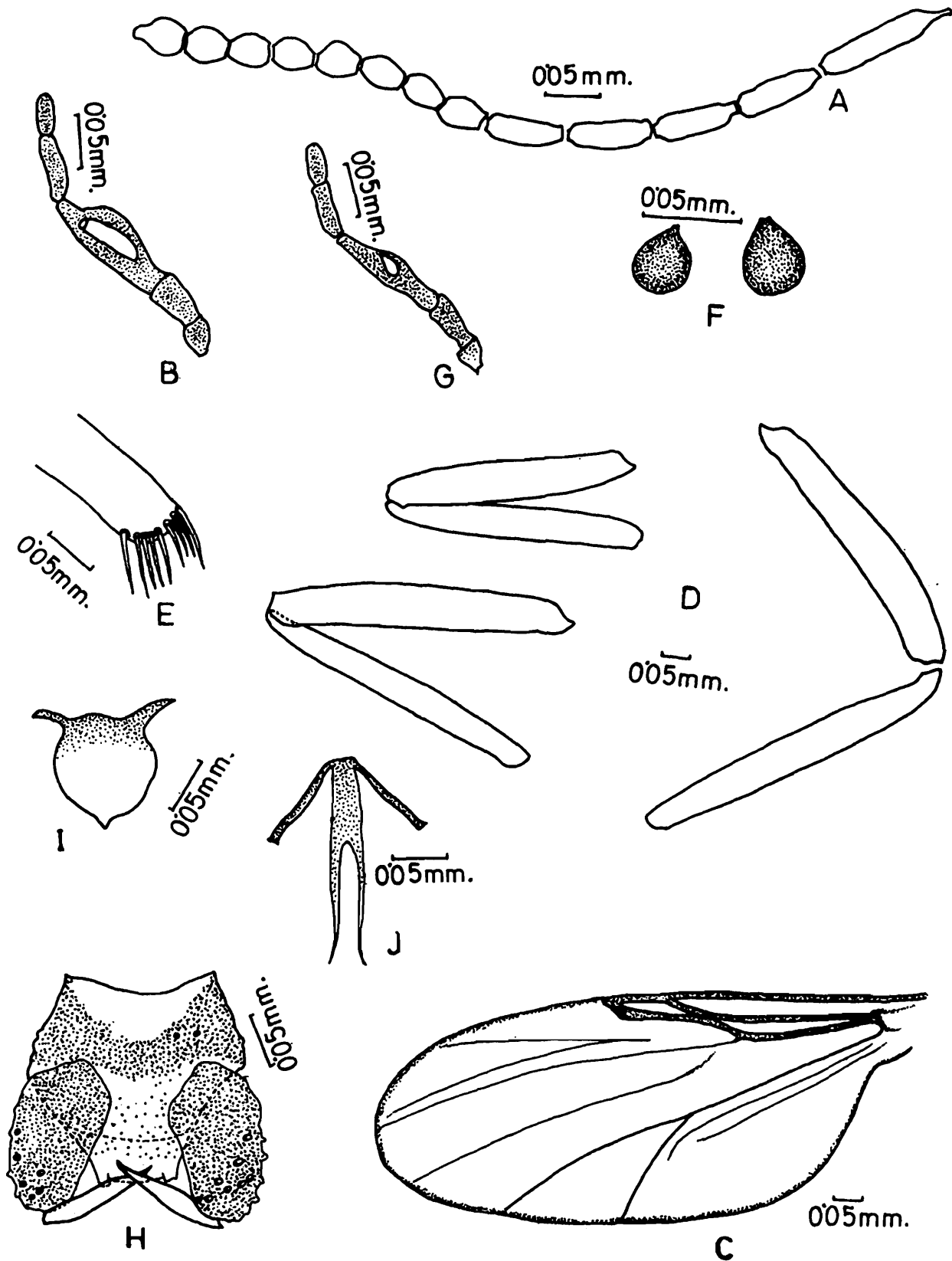
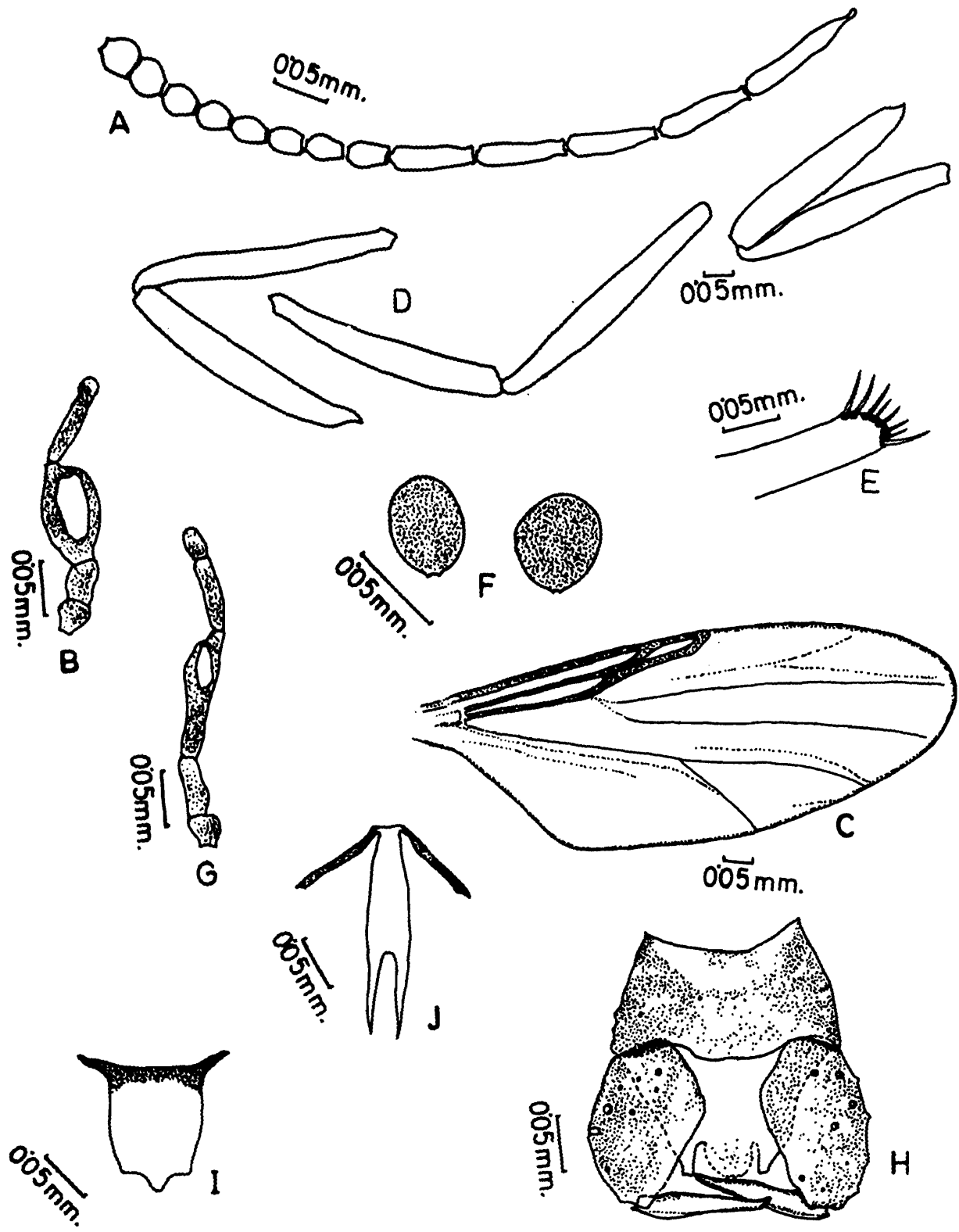


Figure 38 (A-J) *Forcipomyia (Microhelea) gracilatithea*, n. sp.

Female : A - antenna, B maxillary palp, C - wing, D - femora-tibial part of fore leg (i) mid (ii) and hind leg (iii); E - hind tibial comb, F spermathecae.

Male : G - maxillary palp, H - Genitalia (without aedeagus and parameres), I - aedeagus, J - parameres).



**Figure 39 (A-J) *Forcipomyia (Microhelea) nudifascipes*, n. sp.**

**Female :** A - antenna, B - maxillary palp, C - wing, D - femora-tibial part of fore leg (i) mid (ii) and hind leg (iii); E - hind tibial comb, F - spermathecae.

**Male :** G - maxillary palp, H - Genitalia (without aedeagus and parameres), I - aedeagus, J - parameres).

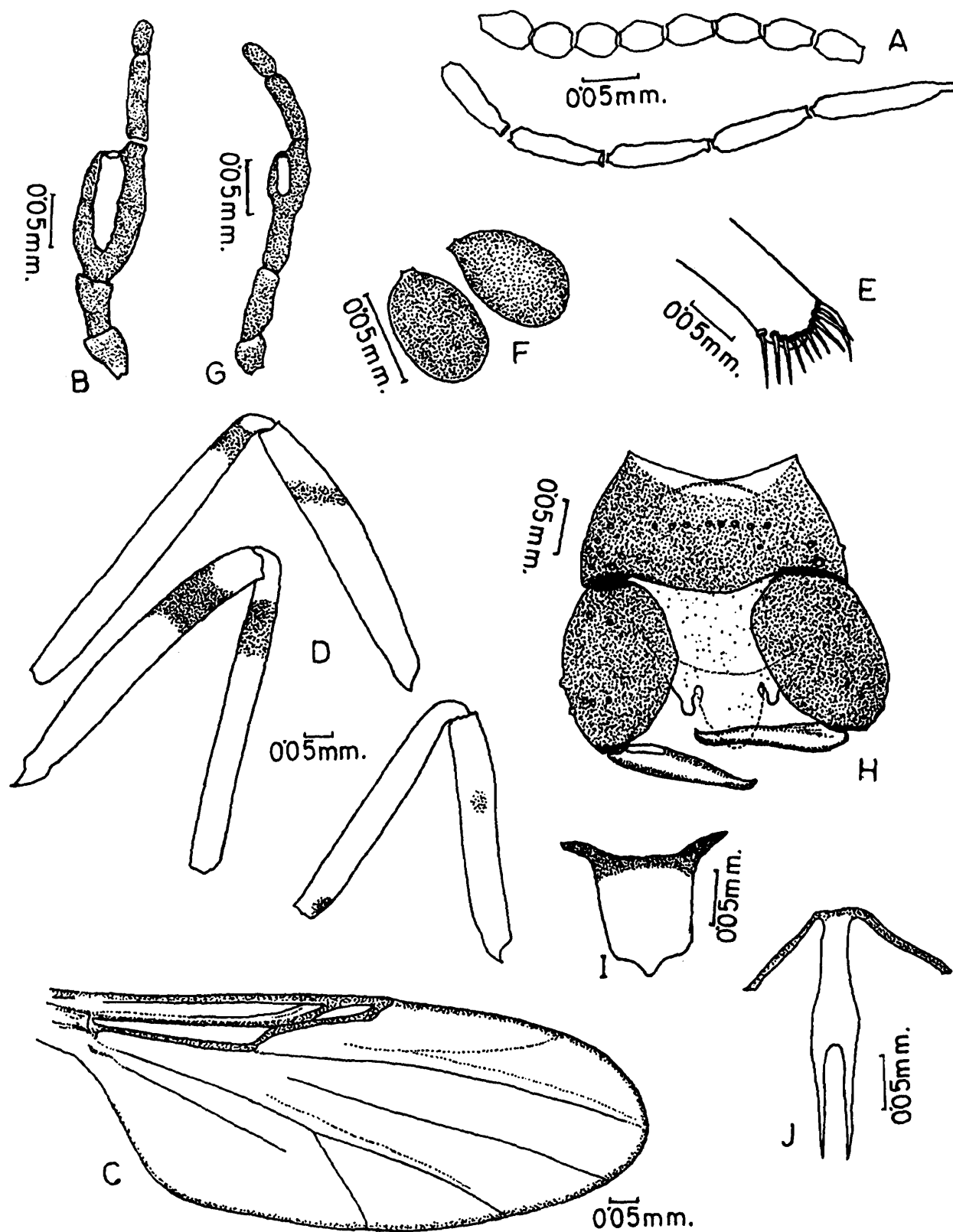
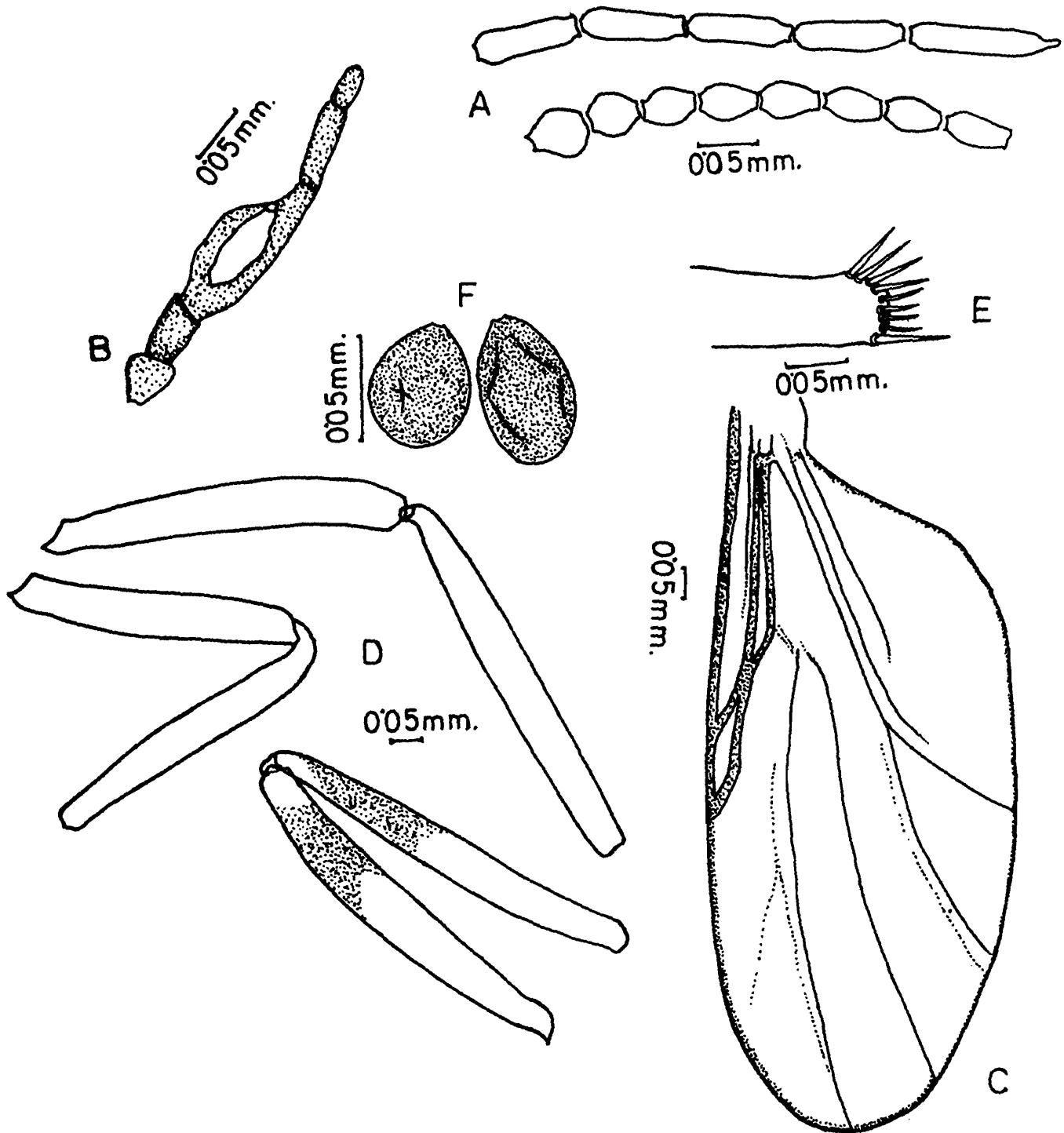


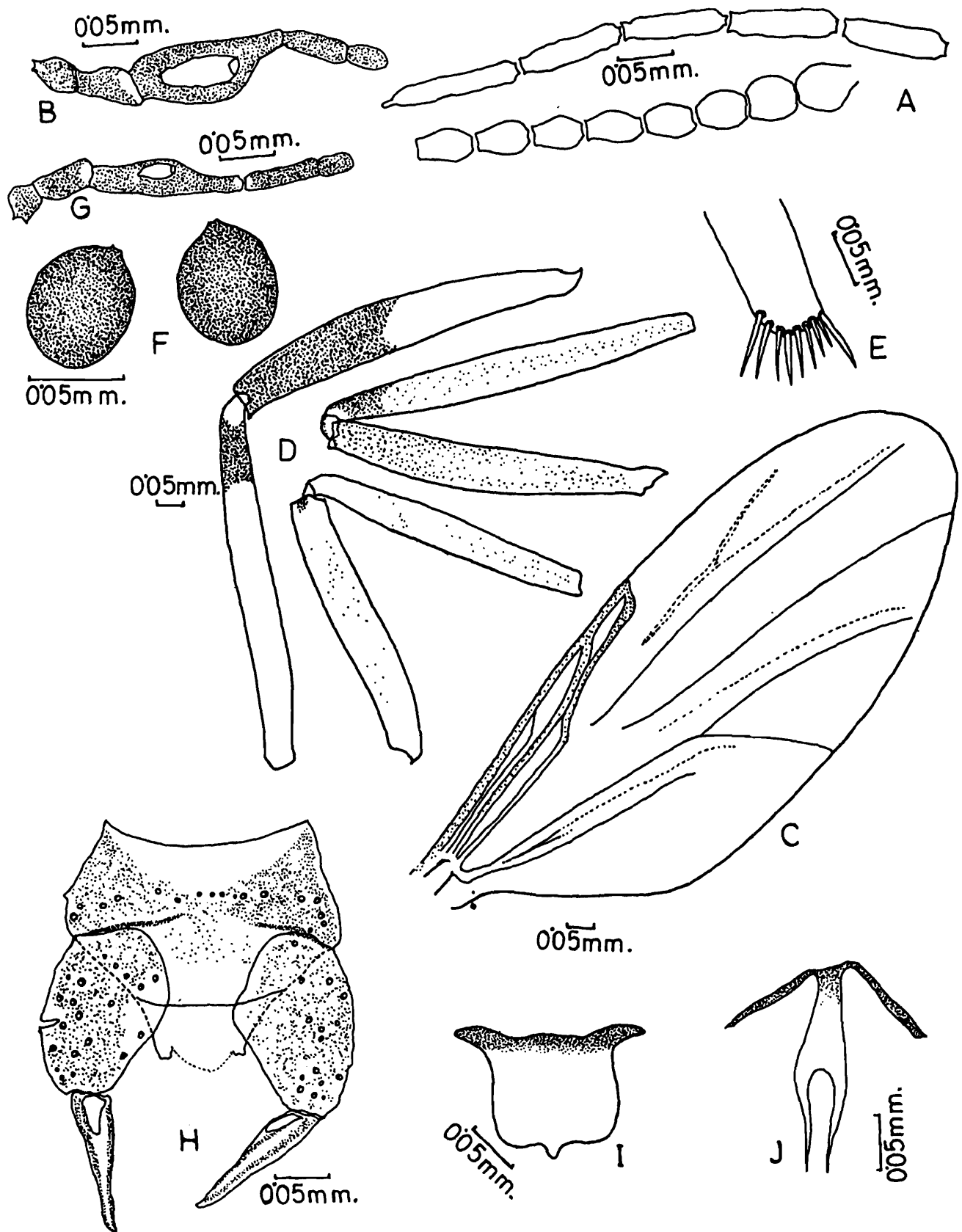
Figure 40 (A-J) *Forcipomyia (Microhelea) ovatitheca*, n. sp.

Female : A - antenna, B - maxillary palp, C - wing, D - femora-tibial part of fore leg (i) mid (ii) and hind leg (iii); E - hind tibial comb, F - spermathecae.

Male : G - maxillary palp, H - Genitalia (without aedeagus and parameres), I - aedeagus, J - parameres.



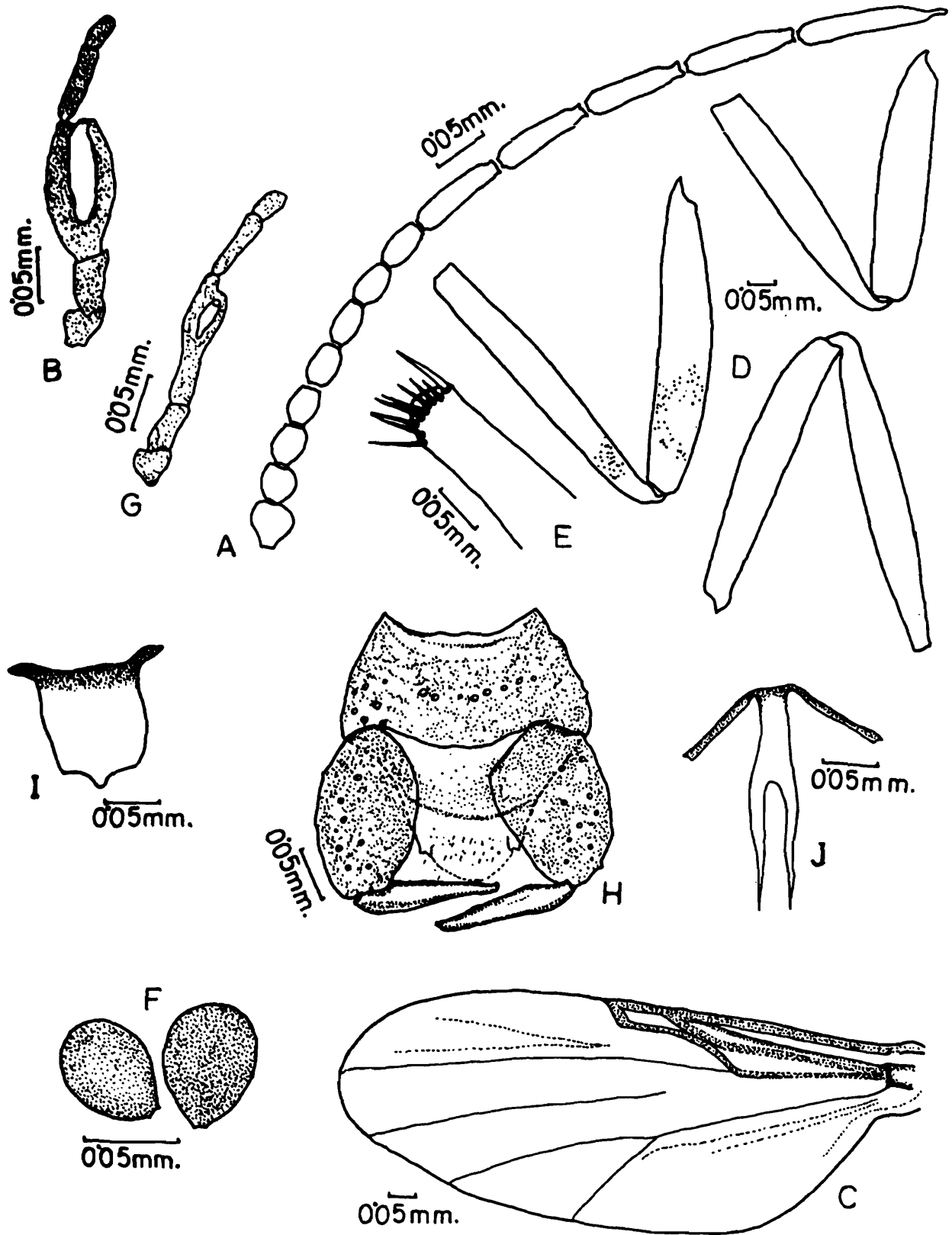
**Figure 41 (A-F)** *Forcipomyia (Microhelea) paenefuliginosa*, n. sp.  
 Female : A - antenna, B - maxillary palp, C - wing, D femora-tibial part of fore leg (i) mid (ii) and hind leg (iii); E - hind tibial comb, F - spermathecae.



**Figure 42 (A-J)** *Forcipomyia (Microhelea) similitheca*, n. sp.

Female : A - antenna, B - maxillary palp, C - wing, D - femora-tibial part of fore leg (i) mid (ii) and hind leg (iii); E - hind tibial comb, F - spermathecae.

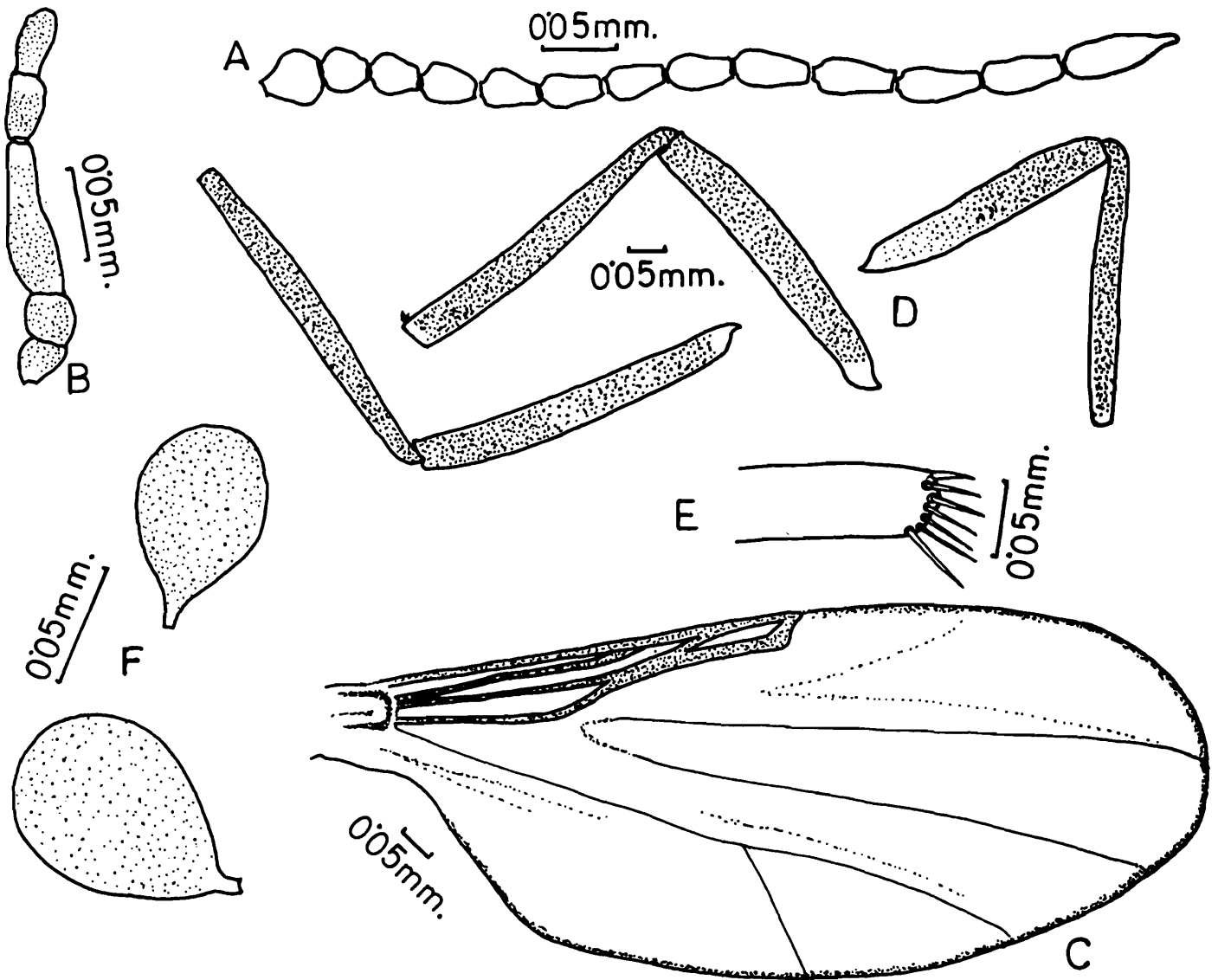
Male : G - maxillary palp, H - Genitalia (without aedeagus and parameres), I - aedeagus, J - parameres.



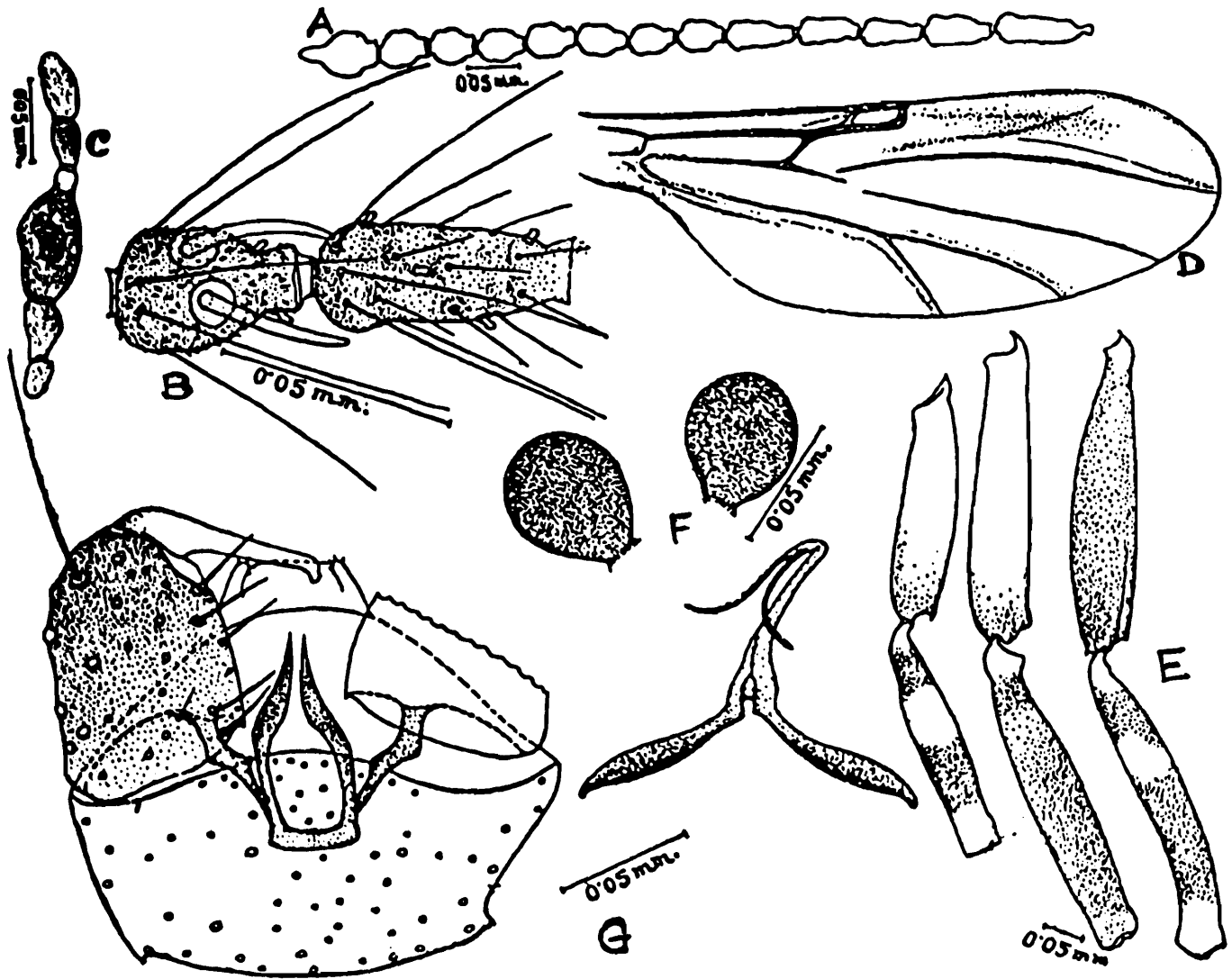
**Figure 43 (A-J) *Forcipomyia (Microhelea) tenuifascicuris*, n. sp.**

**Female :** A - antenna, B - maxillary palp, C wing, D femora-tibial part of fore leg (i) mid (ii) and hind leg (iii); E - hind tibial comb, F - spermathecae.

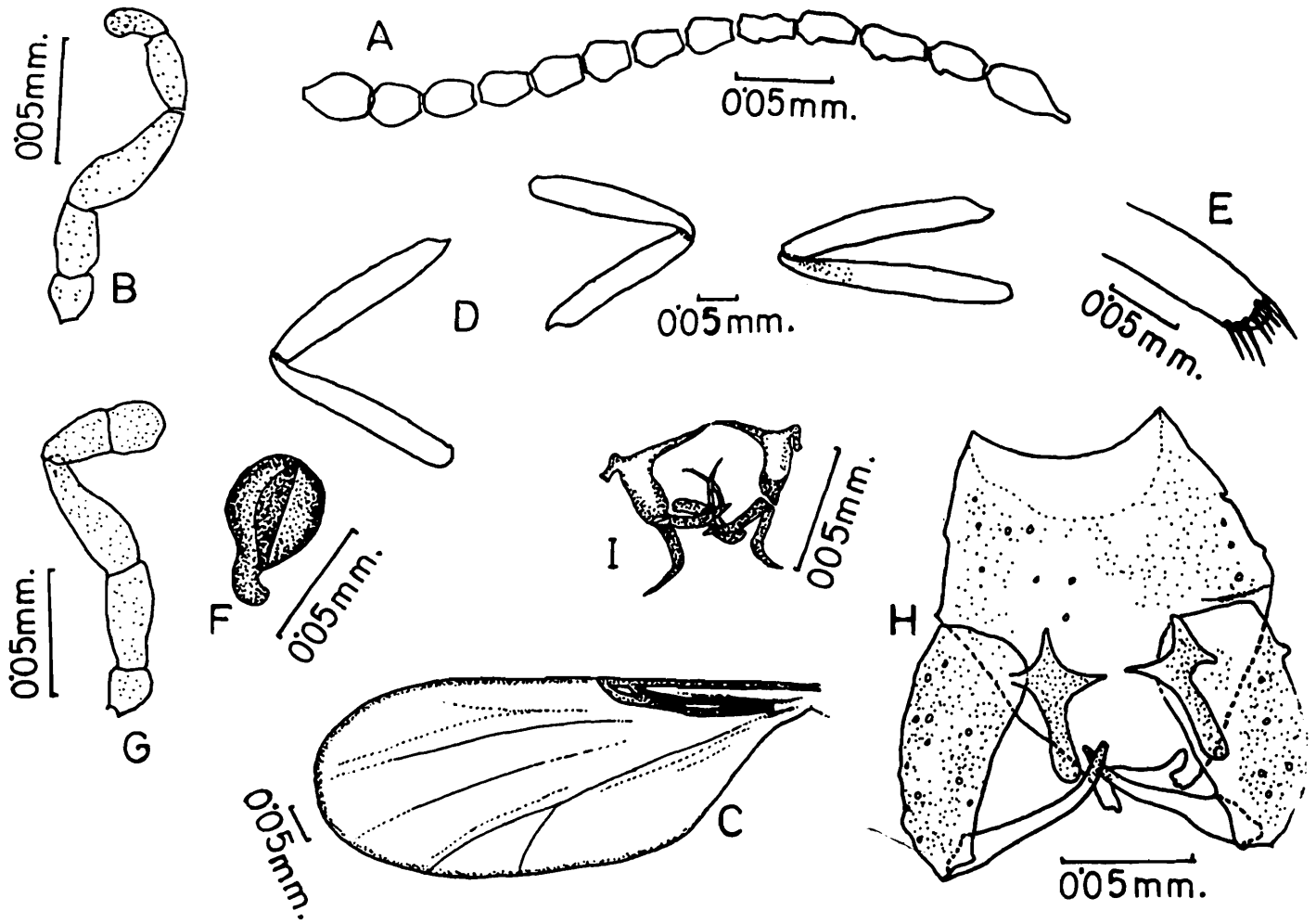
**Male :** G - maxillary palp, H - Genitalia (without aedeagus and parameres), I - aedeagus, J - parameres.



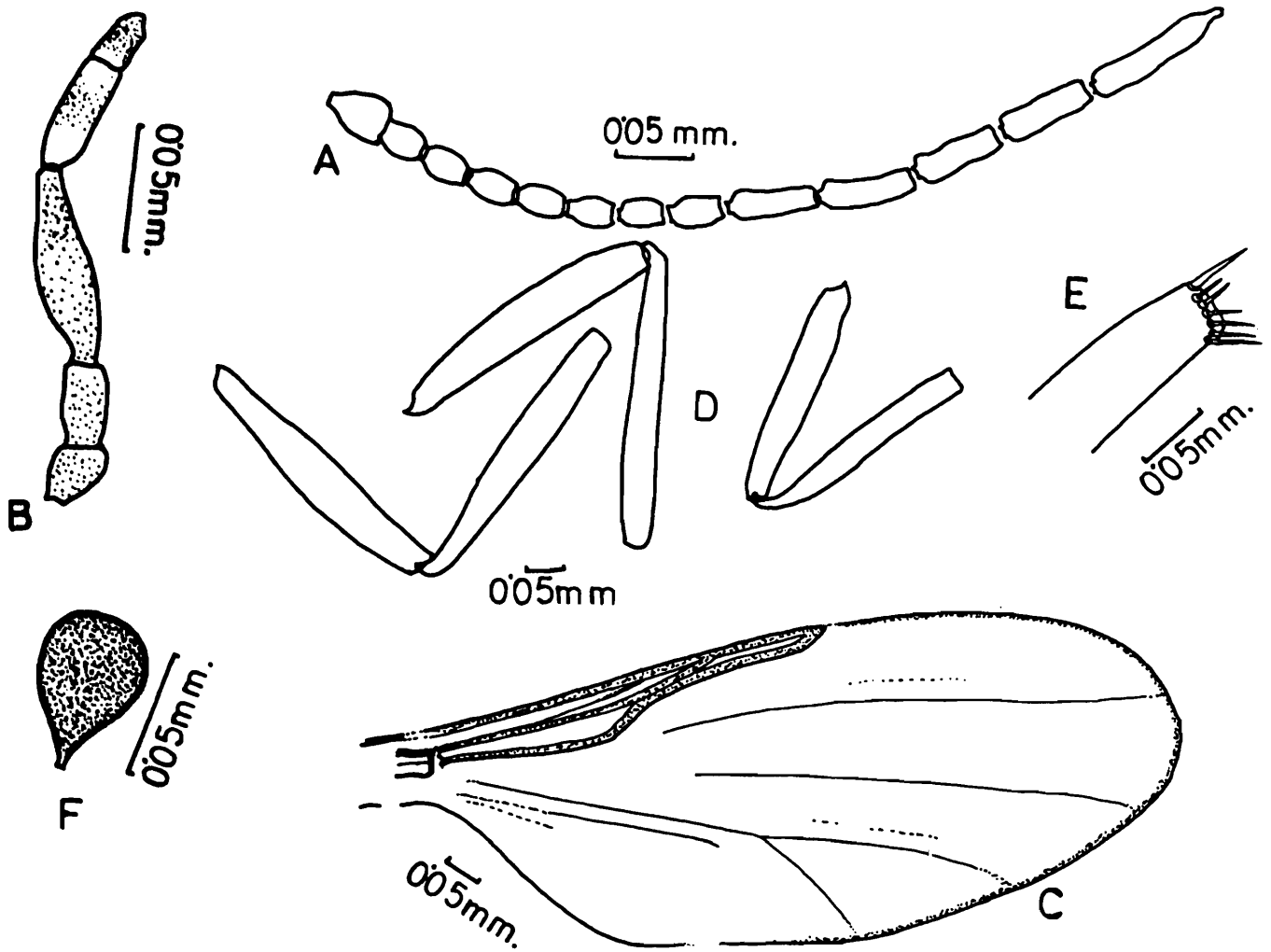
**Figure 44 (A-F) *Forcipomyia (Rhynchoforcipomyia) flavisimplexa* n.sp.**  
 Female : A - antenna, B maxillary palp, C - wing, D - femora-tibial part of fore leg (i) mid (ii) and hind leg (iii); E - hind tibial comb, F spermathecae.



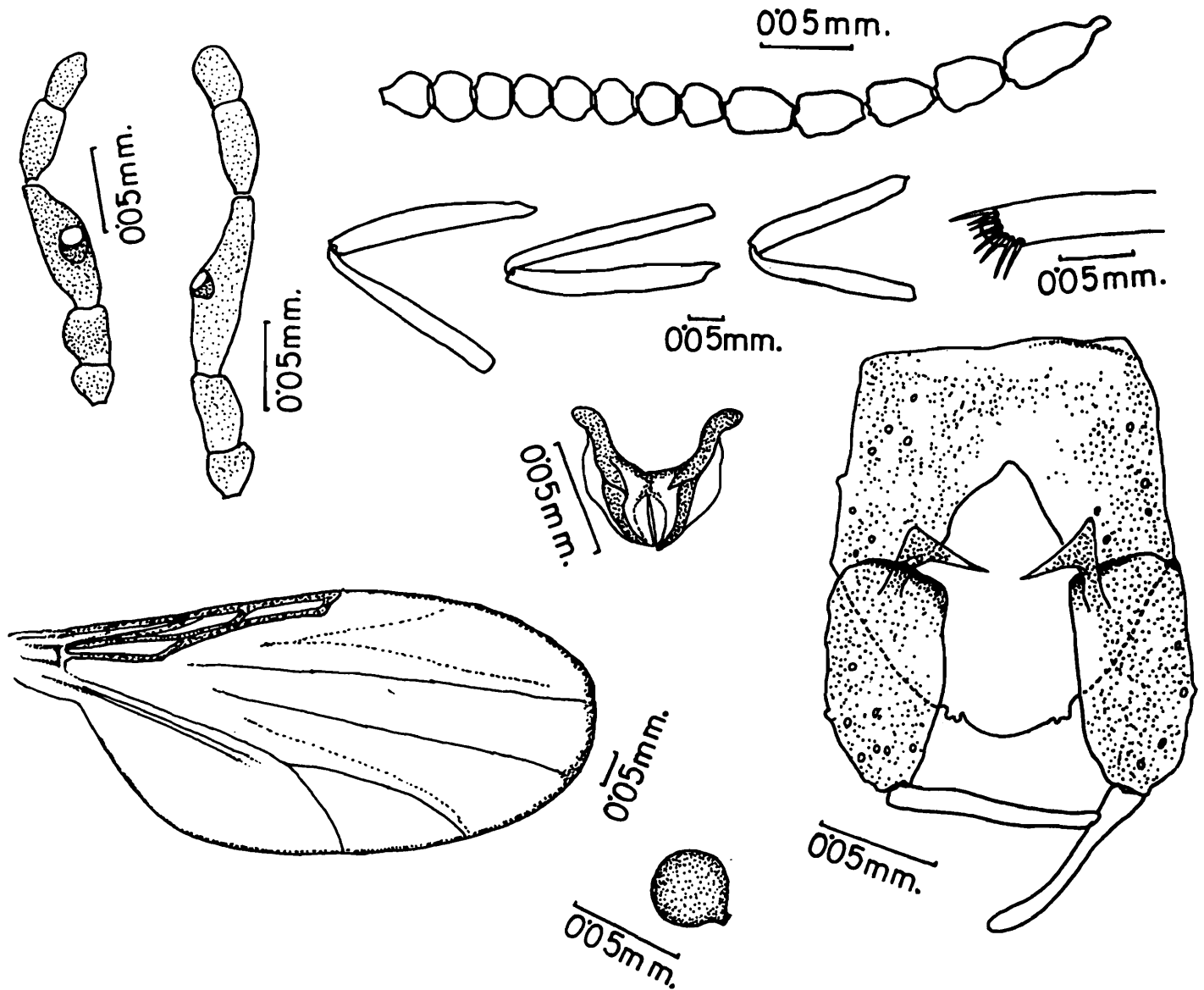
**Figure 45 (A-G) *Forcipomyia (Schizoforcipomyia) borbonica* Clastrier**  
 Female : A - antenna, B - X XI segments of antenna showing chaetation details, C maxillary palp in outline, D - wing outline (trichiation omitted), E tibial-femora part of fore leg to middle leg showing colour pattern, F - spermathecal apparatus, G male genitalia (external, with aedeagus drawn as an outside piece).



**Figure 46 (A-I) *Forcipomyia (Synthyridomyia) flexoductithecra* n.sp.**  
 Female : A - antenna, B maxillary palp, C wing, D femora-tibial part of fore leg (i) mid (ii) and hind leg (iii); E hind tibial comb, F spermathecae.  
 Male : G maxillary palp, H Genitalia (without aedeagus), I aedeagus.



**Figure 47 (A-F) *Forcipomyia (Thyridomyia) cineornata* n. sp.**  
 Female : A - antenna, B maxillary palp, C wing, D - femora-tibial part of fore leg (i) mid (ii) and hind leg (iii); E - hind tibial comb, F spermathecae.



**Figure 48 (A-I) *Forcipomyia (Thyridomyia) fererugosa* n. sp.**

Female : A - antenna, B maxillary palp, C wing, D - femora-tibial part of fore leg (i) mid (ii) and hind leg (iii); E - hind tibial comb, F - spermathecae.

Male : G - maxillary palp, H Genitalia (without aedeagus), I - aedeagus.