

Figure 1. Map of the study area in Labrador and Nunavut, Canada with latitudinal gradients.

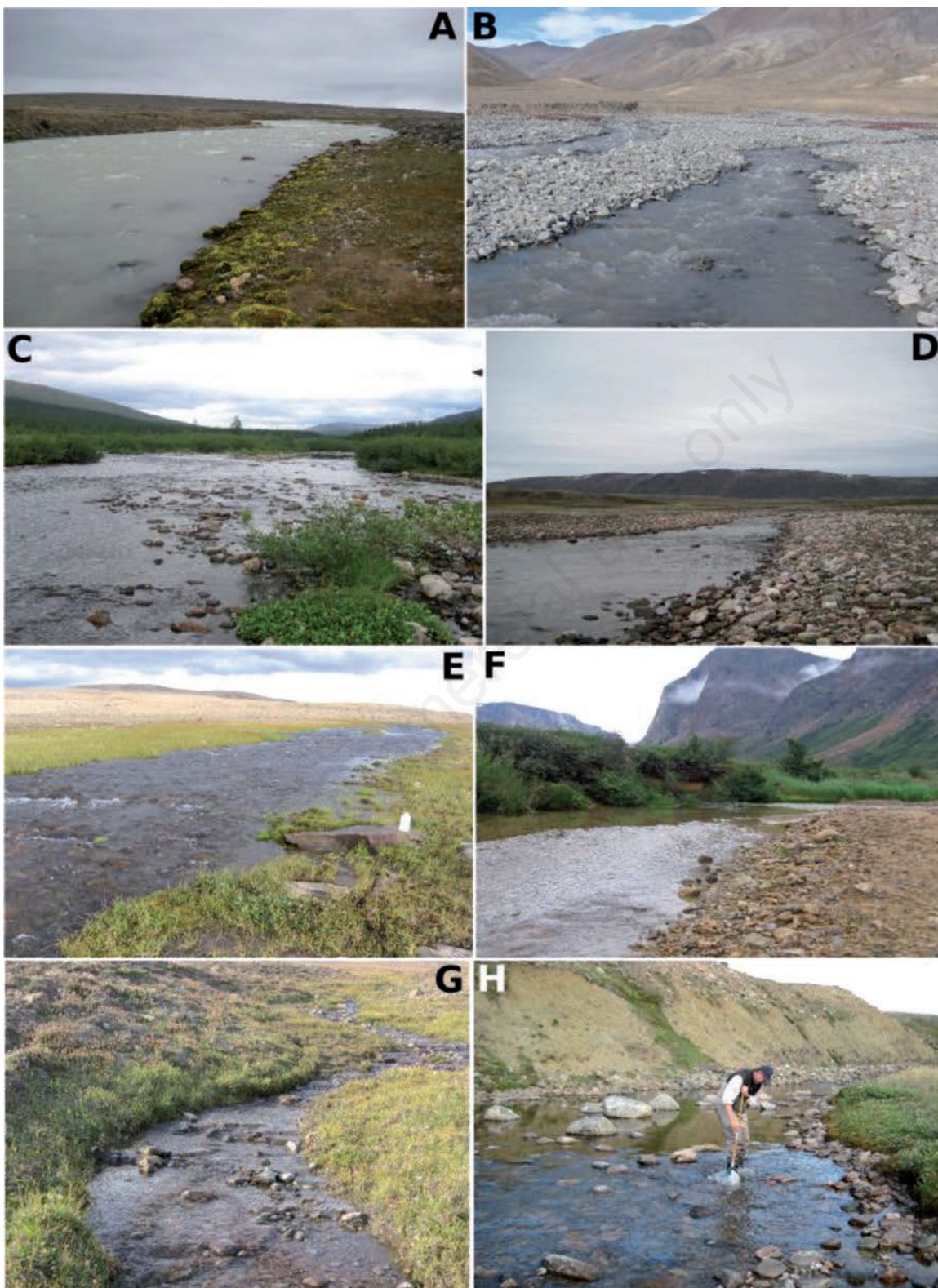


Figure 2. A) Glacier stream in Baffin Island; B) Glacial stream in Lake Hazen area; C) Nival stream in Torngat Mountains National Park; D) Lake-fed stream in Baffin Island; E) Lake-fed stream in Lake Hazen area; F) Lake-fed stream in Torngats Mountains National Park; G) Nival stream in Lake Hazen area; H) Nival stream in Baffin Island (In photo Dr. Joseph Culp sampling benthos).

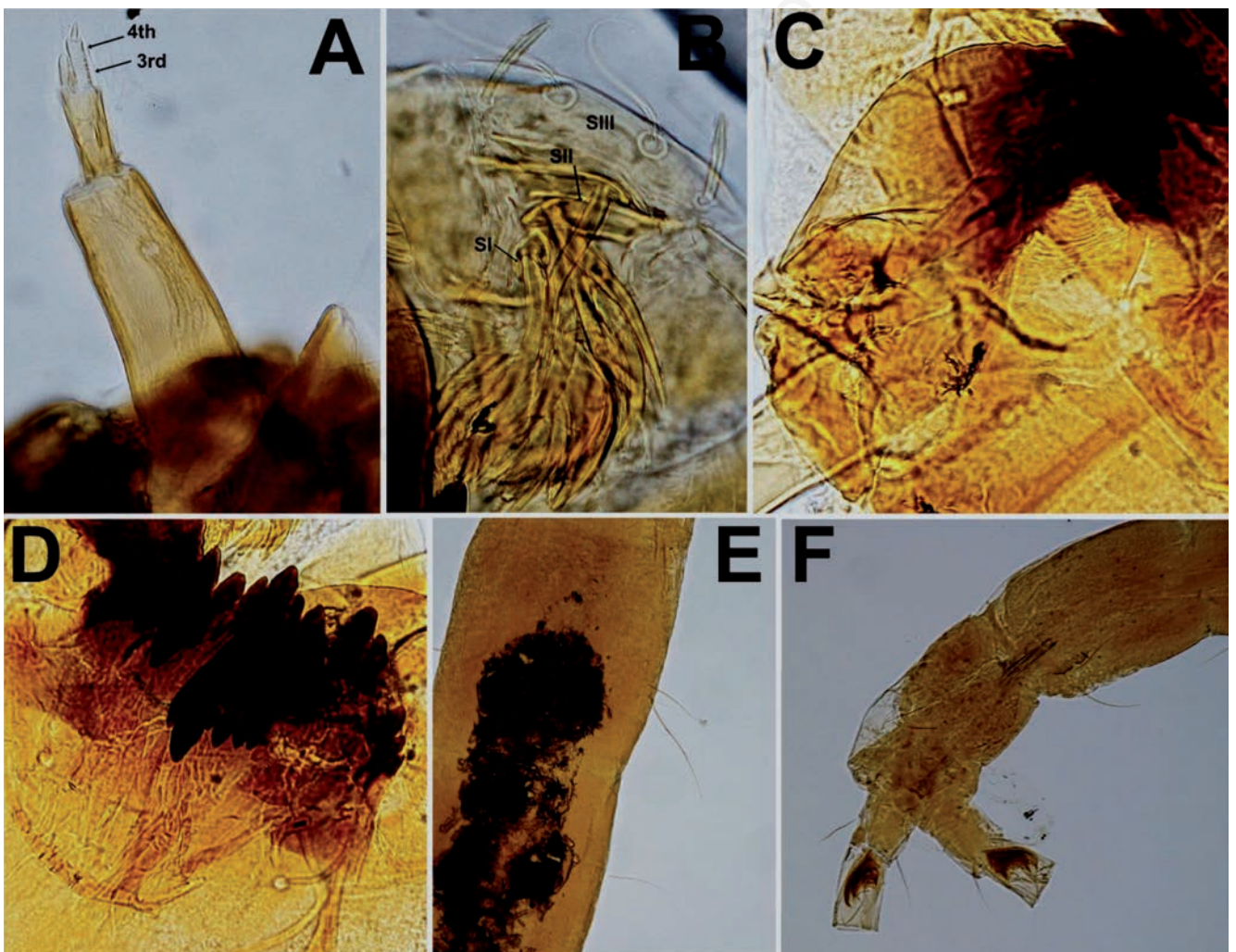


Figure 3. *Parochlus kiefferi* (Garrett), larva (A-F). A) Antenna; B) Labrum; C) Mandible D) Mentum; E) Body setae; F) Posterior portion of the body, posterior parapods.

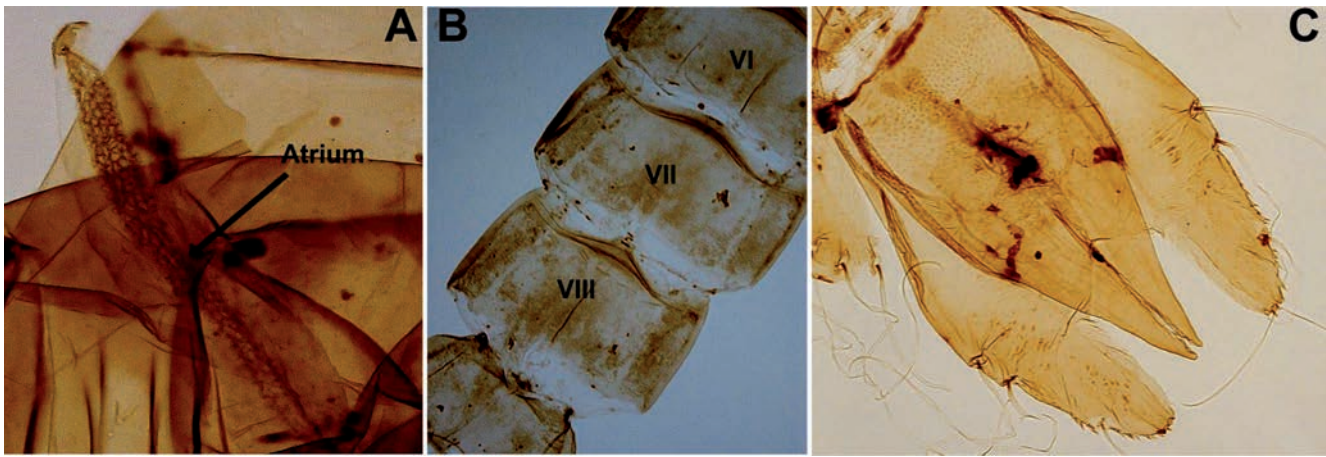


Figure 4. *Trichotanypus posticalis* (Lundbeck), pupa (A-C). A) Thoracic horn; B) Segments VI-VIII, weakly developed microsculptures; C) Genitalia sacs and anal lobes.

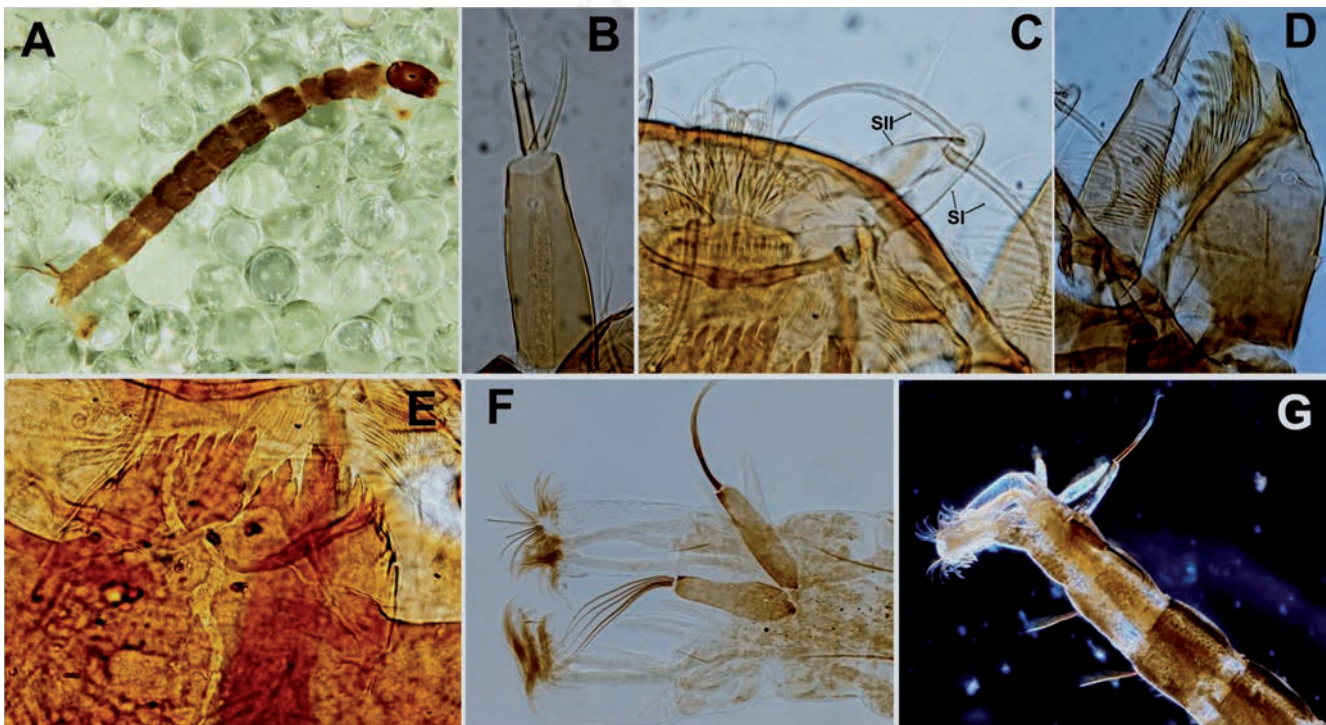


Figure 5. *Trichotanypus posticalis* (Lundbeck), larva (A-G). A) larvae; B) Antenna; C) Labrum, SI and SII, arrows indicate the tubercles, SI and SII; D) Mandible; E) Mentum; F) Mounted posterior portion of the larva; G) Posterior portion of the larvae and body setae.

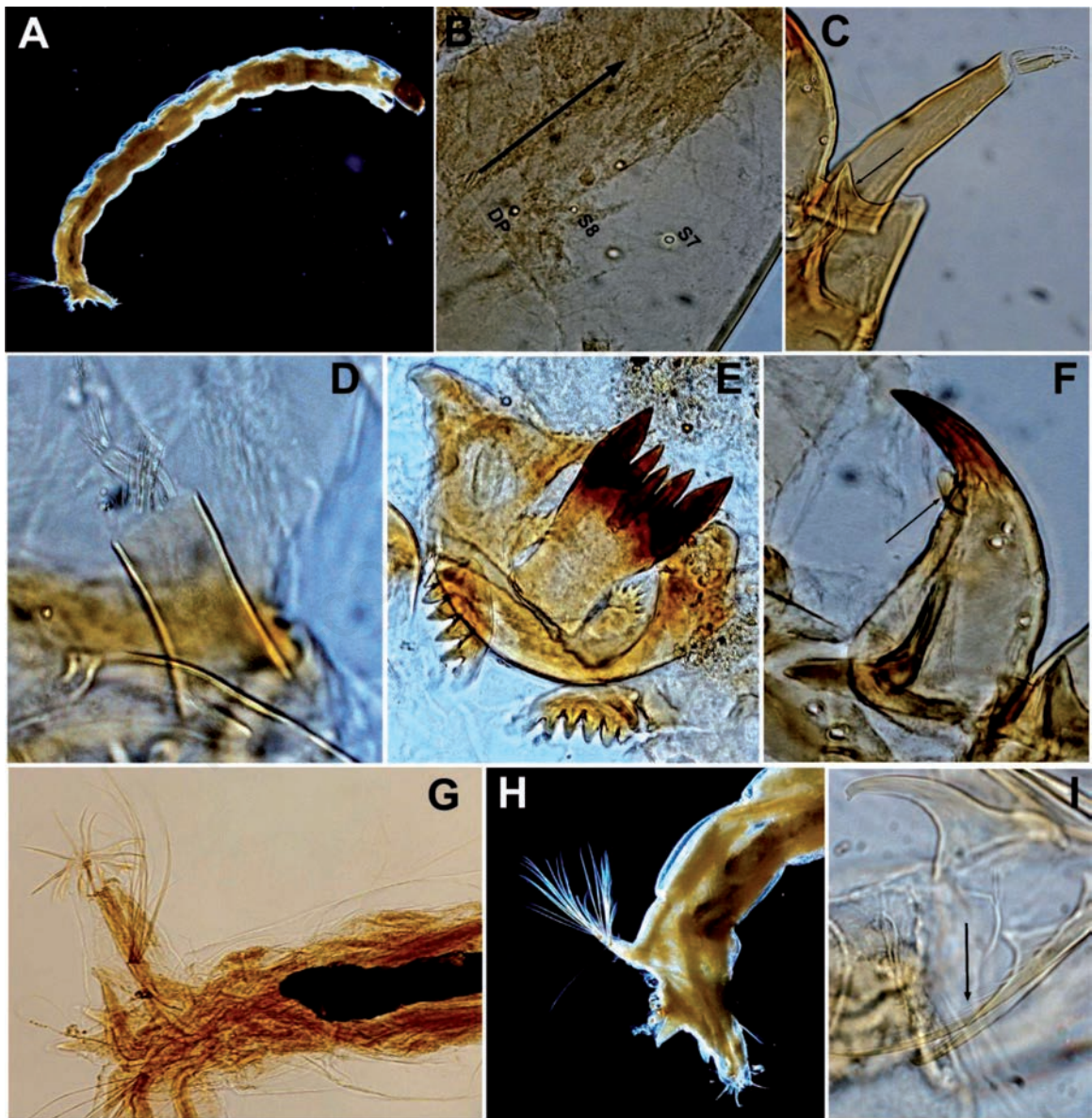


Figure 6. *Procladius (Holotanypus)* sp., larva (A-I). A) Larva; B) Dorsal cephalic setae, arrow indicates the direction and orientation of the head capsule (*i.e.* anterior); C) Antenna, arrow indicates the spine on antennal pedestals; D) Maxillary palp; E) Ligula, paraligula and m-appendages; F) Mandible, arrow indicates the mola; G) Mounted anterior portion of the larvae; H) Anterior of the larvae; I) Claws of posterior parapods, arrow indicates the spines on larger claws.

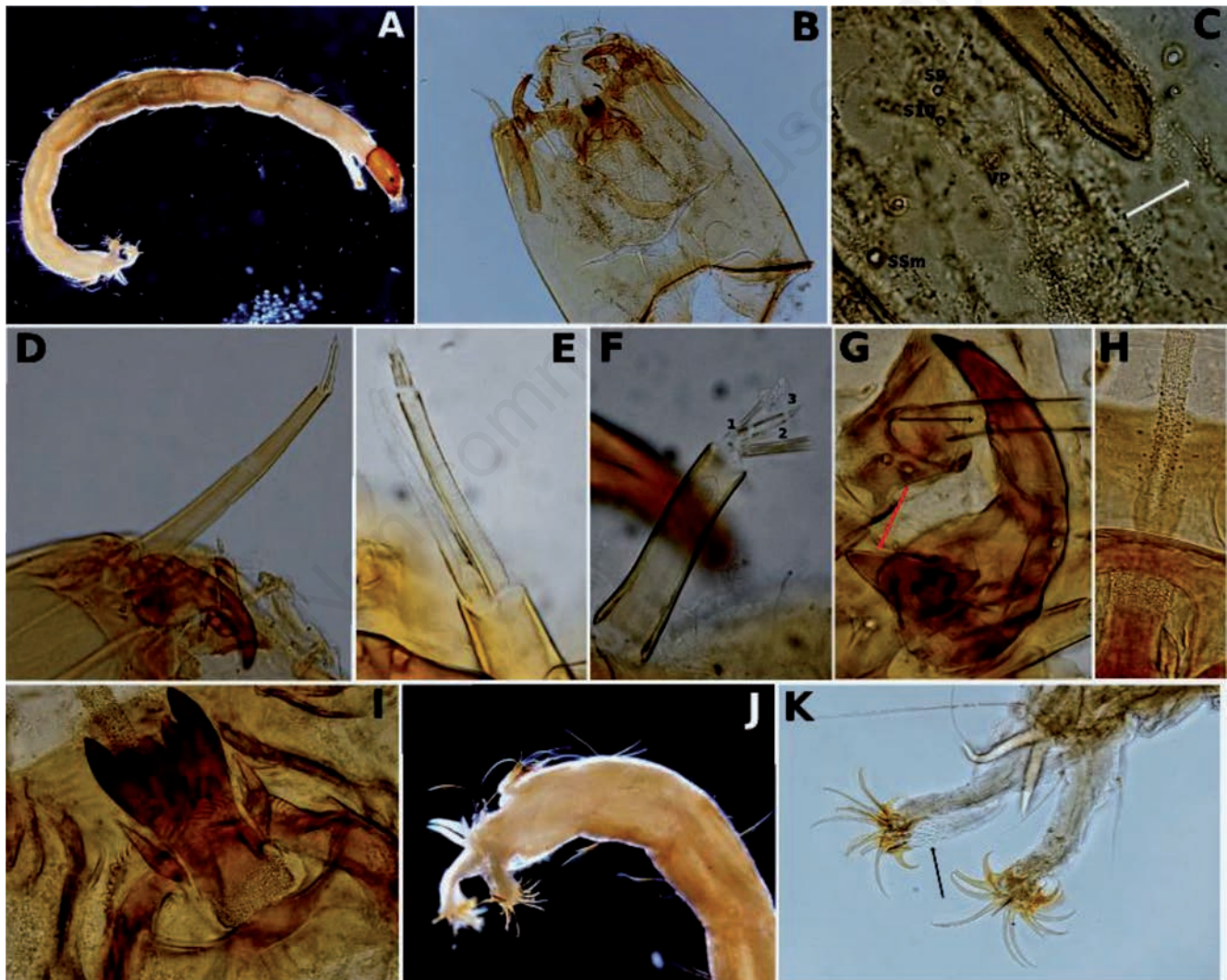


Figure 7. *Conchapelopia* sp. 1, larva (A-K). A) Larva; B) Head capsule; C) Ventral cephalic setae, white arrow indicates the side of head capsule and black arrow indicates the direction and orientation of head capsule (*i.e.* anterior) D) Antenna; E) Antenna segments 2-4 and blade; F) MP; G) Mandible, black arrow indicates the small inner teeth and red arrow indicates the MF; H) Pseudoradula; I) Ligula, paraligula and m-appendages; J) posterior portion of the larvae; K) Mounted posterior portion, arrow indicates the spines on posterior parapods.

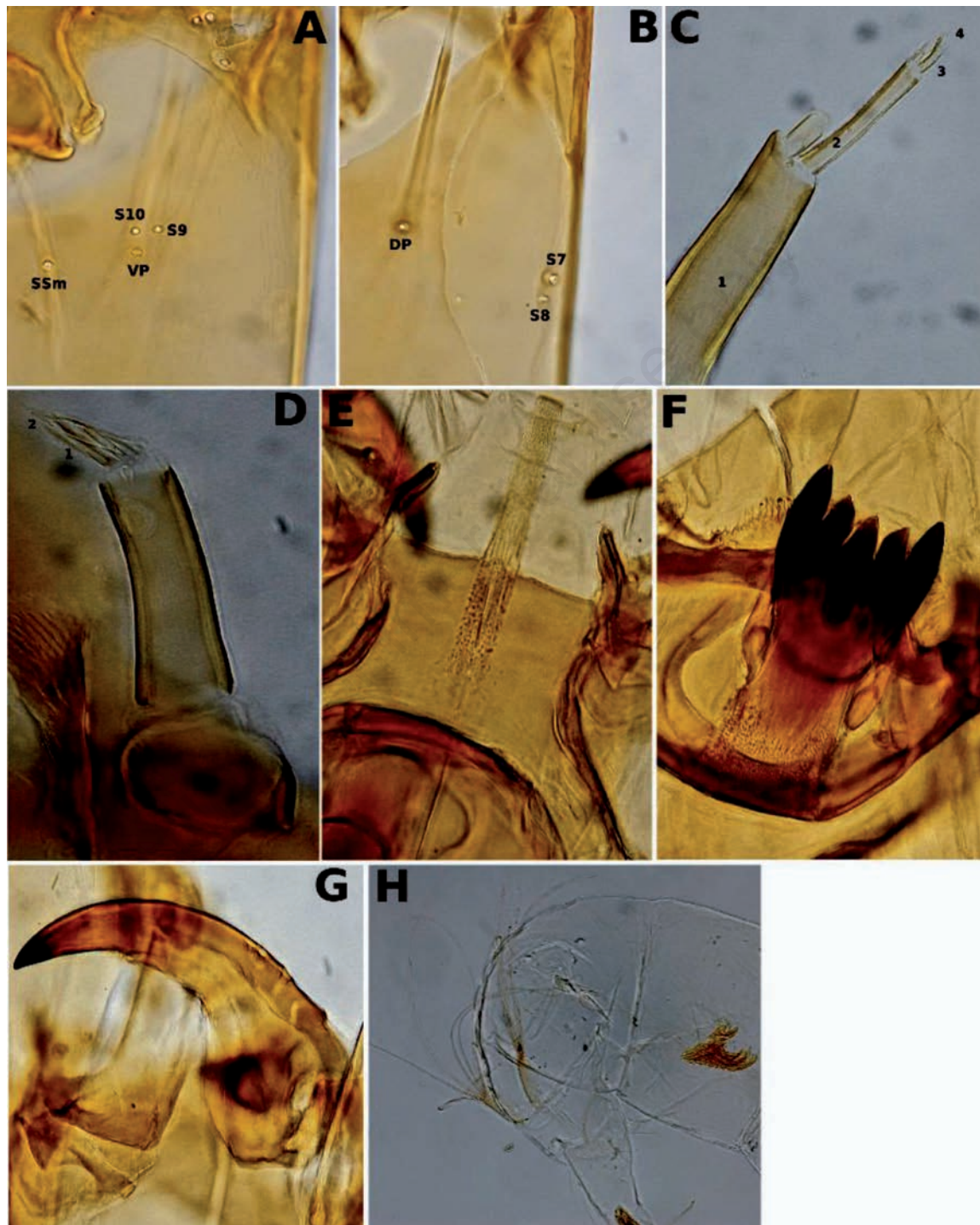


Figure 8. *Thienemannimyia* sp., larva (A-G). A) Ventral cephalic setae; B) Dorsal cephalic setae; C) Antenna last segments D) MP E) Pseudoradula F) Ligula, paraligula and m-appendages G) Mandible; H) Posterior position of the larvae.

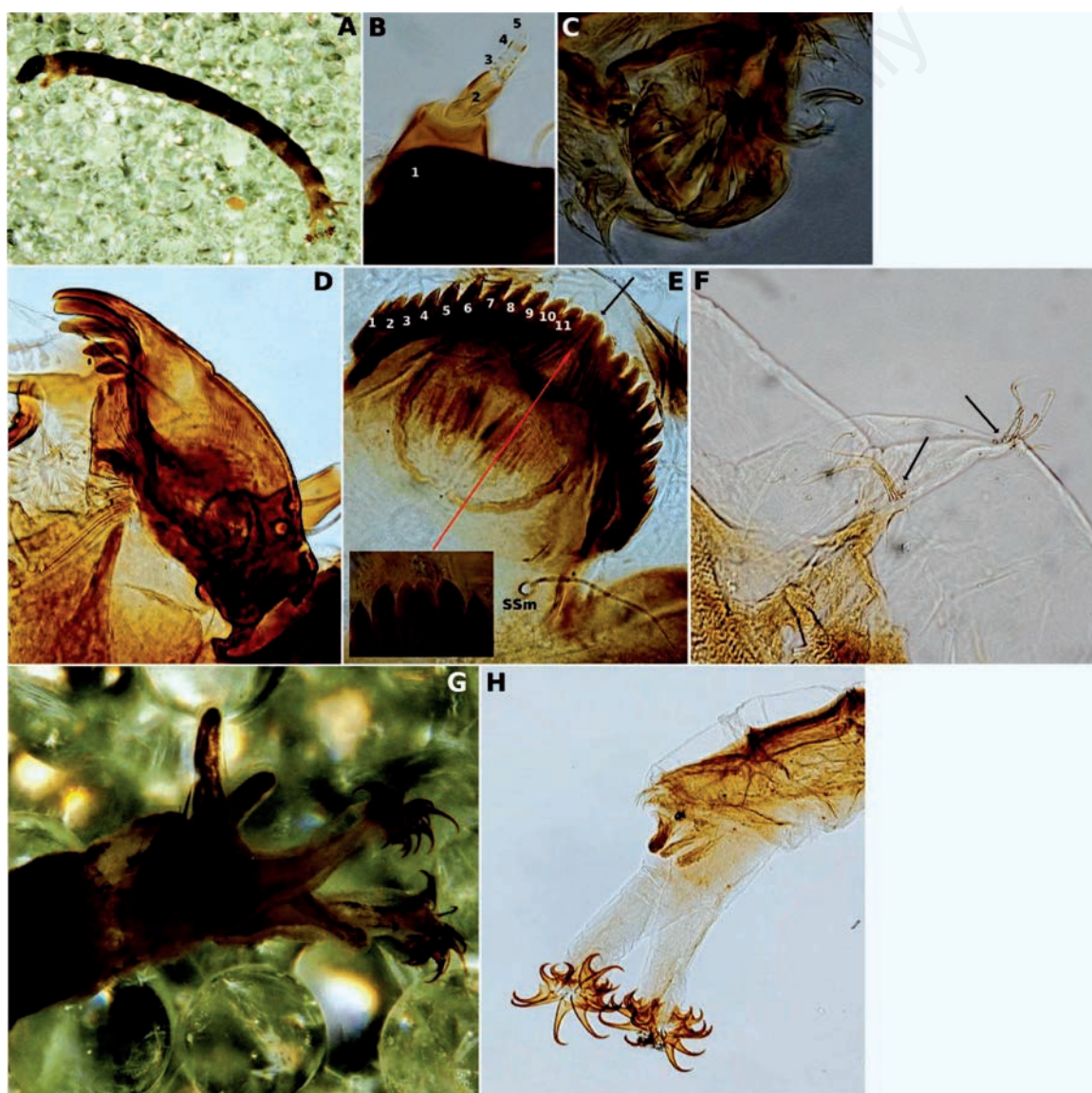


Figure 9. *Diamesa amplexivirilia* Hansen, larva (A-H). A) Larva; B) Antenna; C) Pecten epipharyngis; D) Mandible; E) Mentum, arrow indicates the location of notch; F) Procercus and anal setae, arrow indicates the position of procercus; G) Posterior portion of the larvae; H) Mounted posterior portion of the larva.

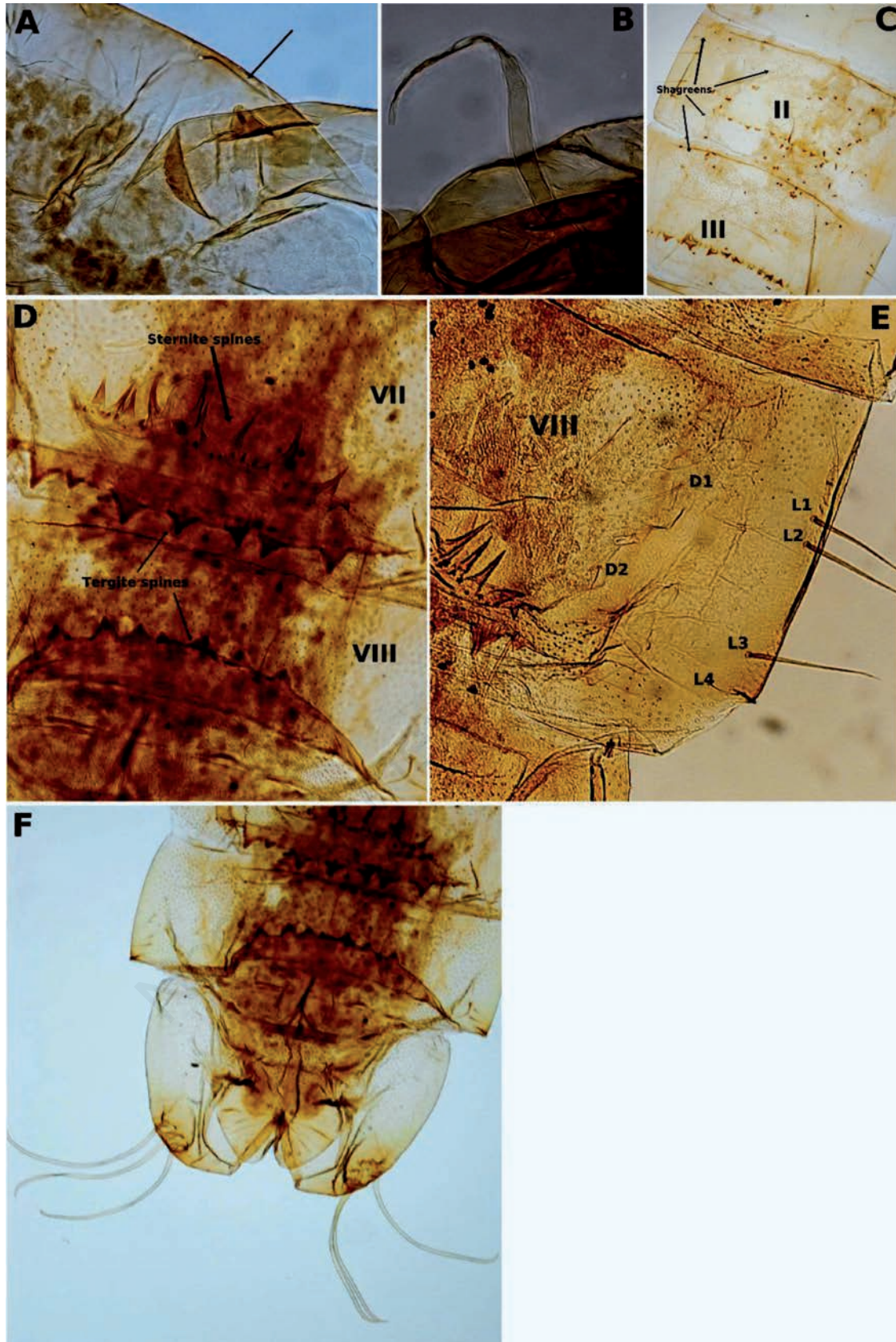


Figure 10. *Diamesa arctica* (Boheman), pupa (A-F). A) Frontal apotome, arrow indicates the frontal setae; B) Thoracic horn; C) Shagreened areas on segments II-III; D) Sternites on segment VII and Tergites on segments VII-VIII; E) Dorsal and lateral setae on segment VIII; F) posterior portion of the pupa, anal lobes, genitalia sacs and macrosetae.

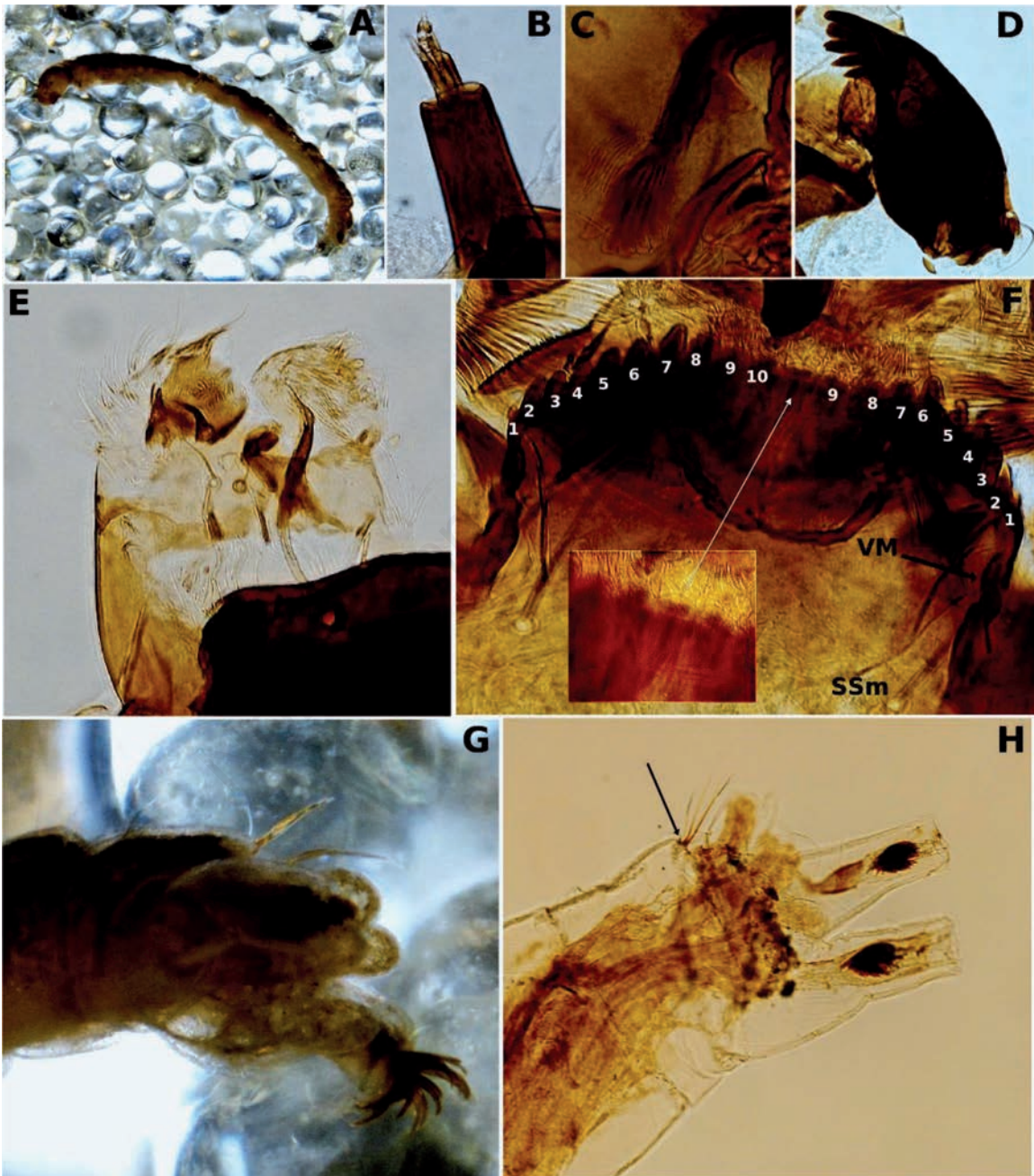


Figure 11. *Diamesa arctica* (Boheman), larva (A-H). A) Larvae; B) Antenna; C) Premandible; D) Mandible; E) Maxilla; F) Mentum, VmP and SSm; G) Posterior portion of the larvae H) Posterior portion of the larvae, arrow indicates the procerus and anal setae.

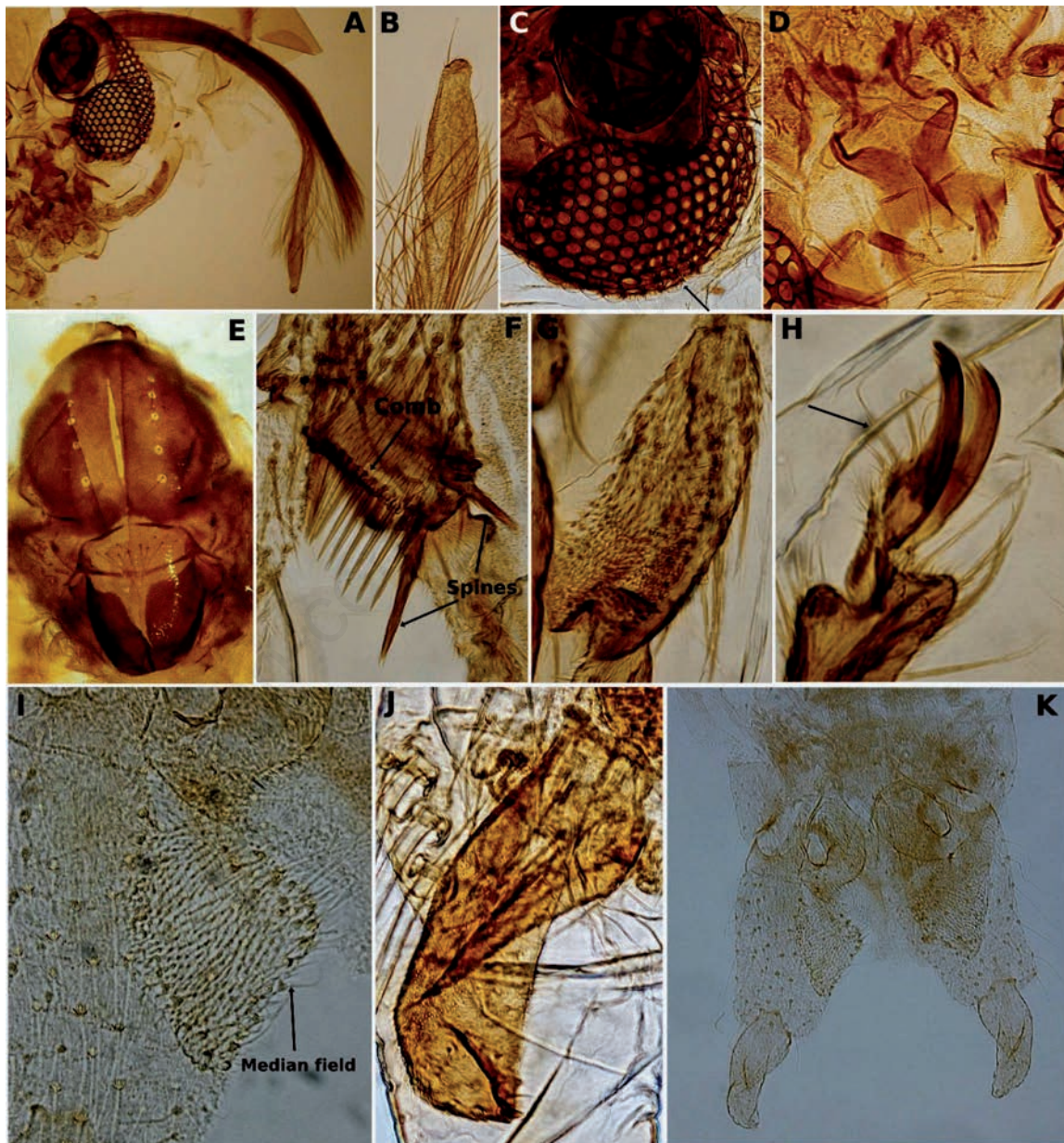


Figure 12. *Diamesa bertrami* Edwards, pharate male (A-K). A) Head, eye, clypeus and palp; B) Antennal ultimate flagellomere; C) Eye, arrow indicates the hairs; D) cibarial pump; E) Dorsal portion of thorax, dorsocentrals and scutellum; F) Comb and spines of hind tibia; G) Legs t_4 ; H) Claws, arrow indicates the pulvillus; I) Median fields of male genitalia; J) Gonostyle; K) Male genitalia, gonocoxite and gonostyle.

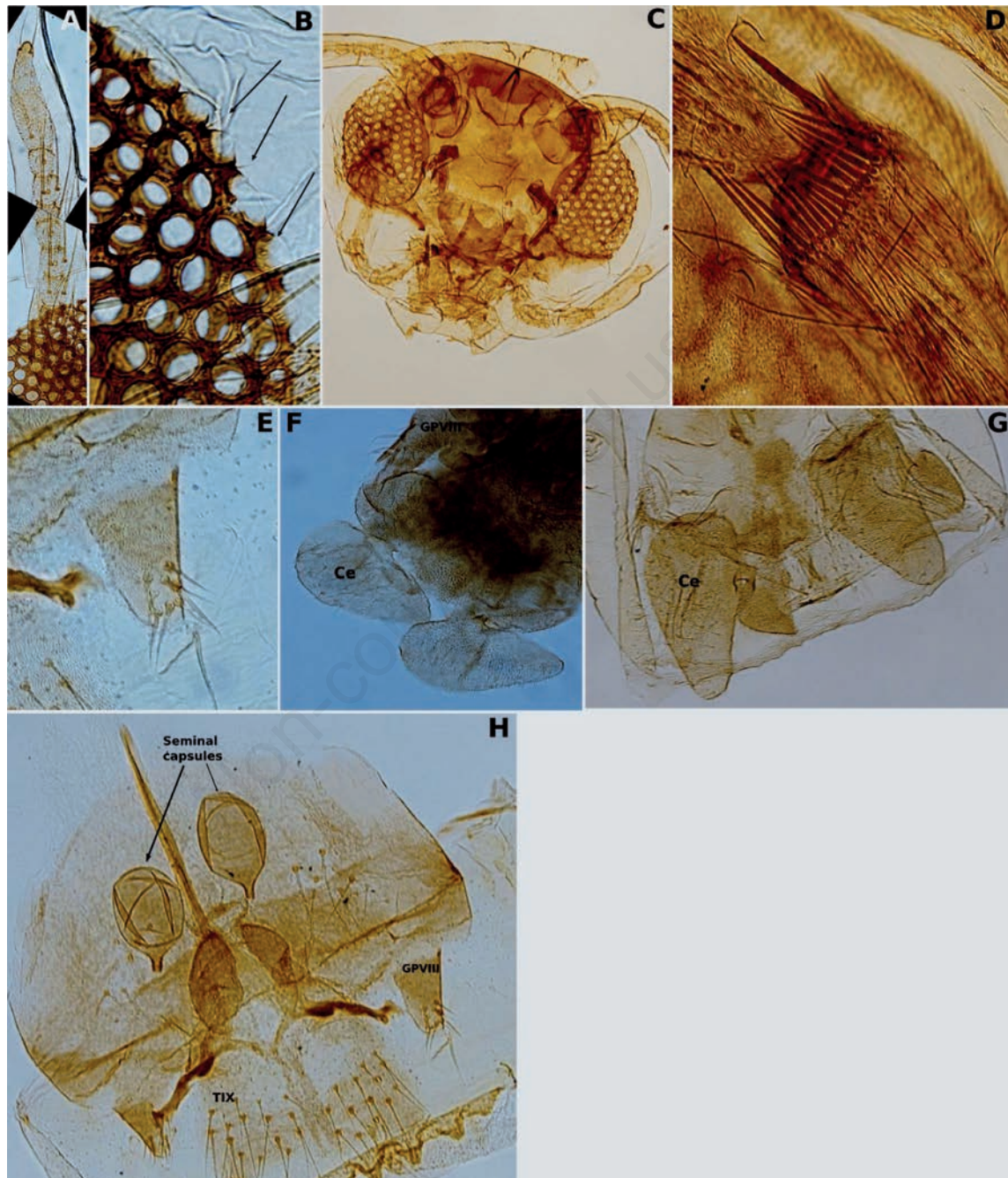


Figure 13. *Diamesa bertrami* Edwards, pharate female (A-H). A) Antenna; B) Outer ridge of the eye, arrows indicate the hairs; C) Head, eyes, clypeus and palpomere; D) Comb and spines of hind tibia; E) GPVIII; F) Posterior portion of the female, genitalia, Ce; G) Ce lateral view; H) Seminal capsules, GPVIII and TIX.

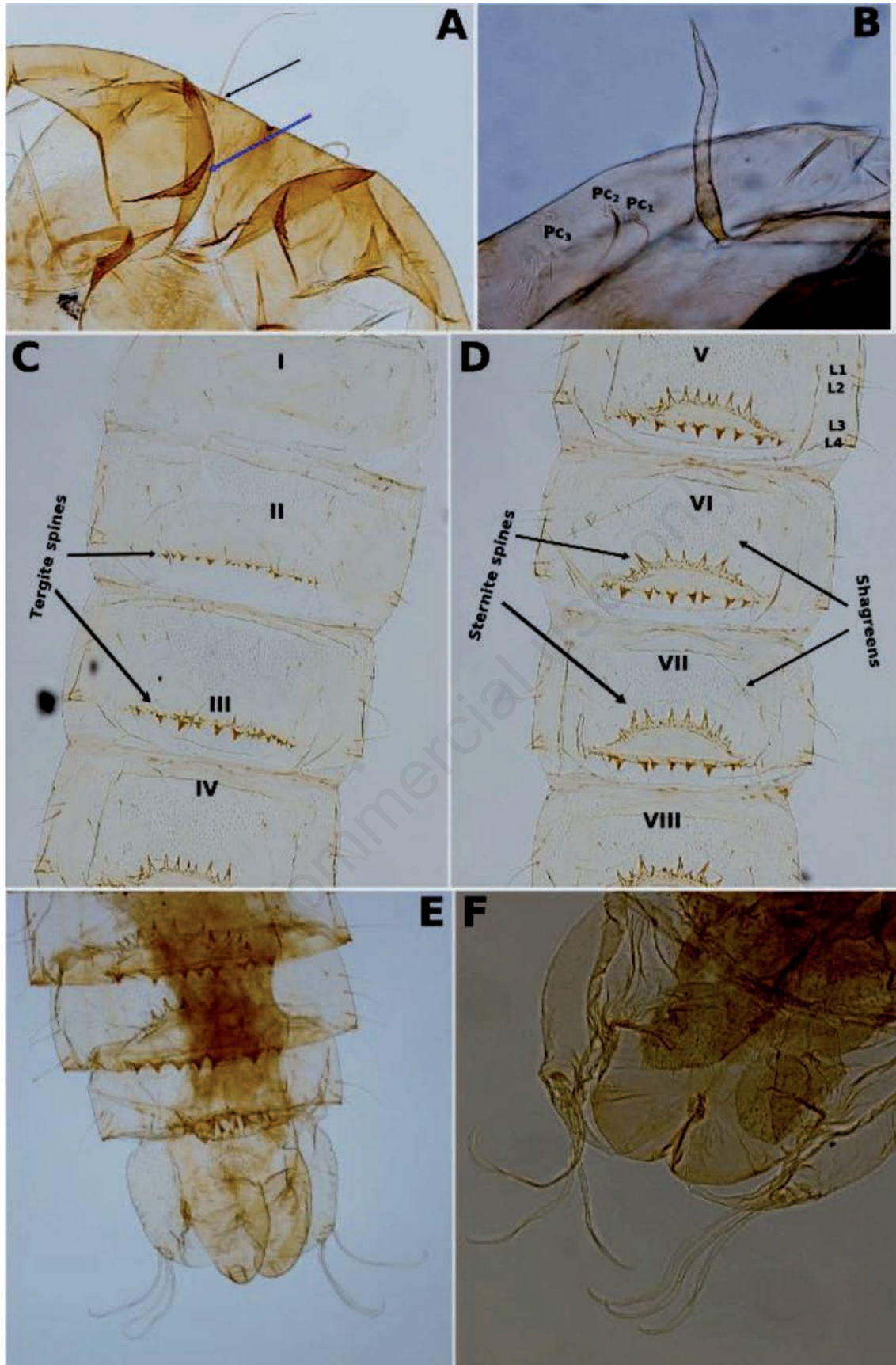


Figure 14. *Diamesa bertrami* Edwards, pupa (A-F). A) Frontal apotome, black arrow indicates the frontal setae and blue arrow indicates pedicel sheet tubercle; B) Thoracic horn and precorneal setae; C) Segments I-IV, spines of the tergites; D) Segments V-VIII, sternite spines, shagreened areas and lateral setae; E) Male posterior portion and macrosetae; F) Female posterior portion.

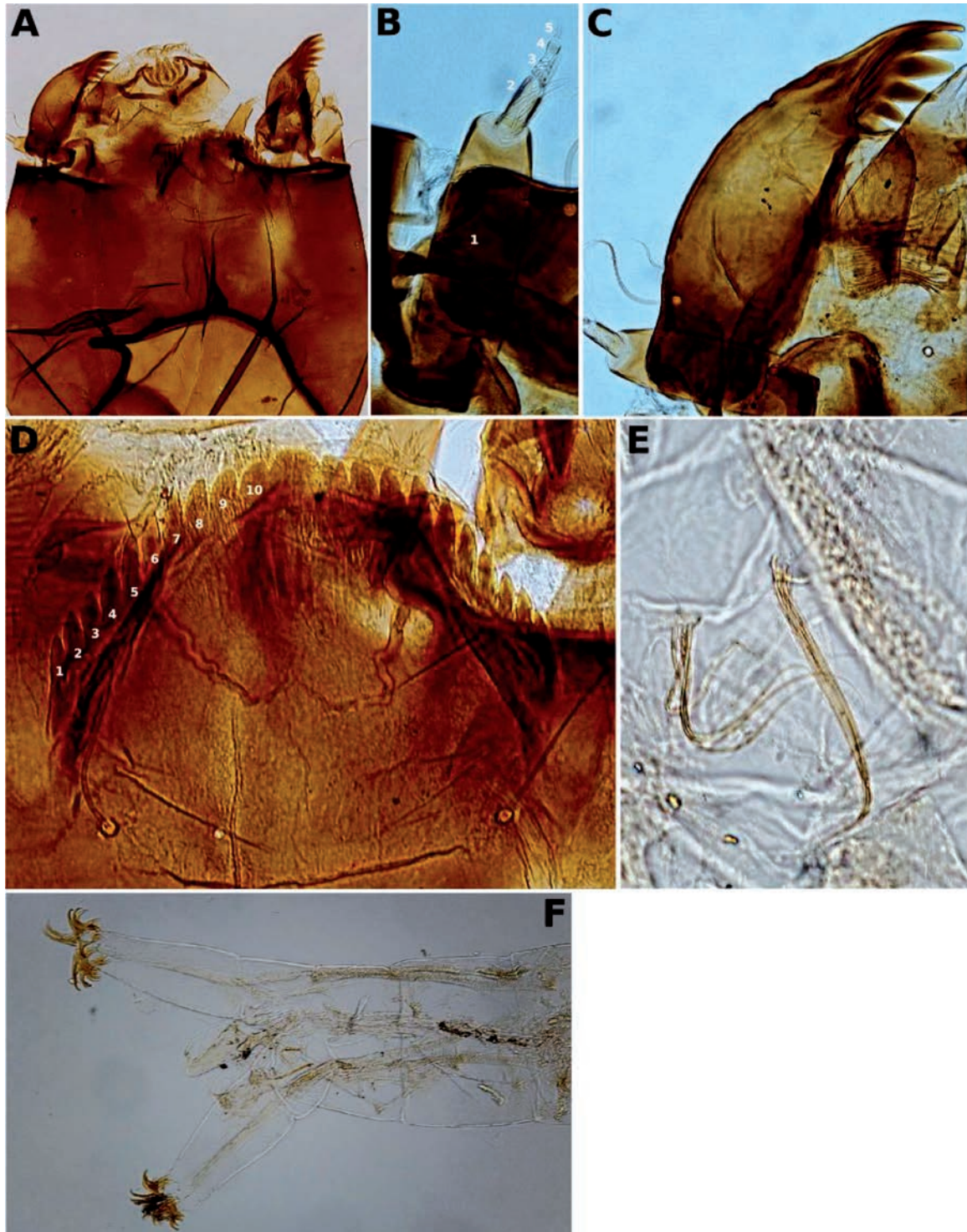


Figure 15. *Diamesa spinacies* Sæther, larva (A-F). A) Head; B) Antenna; C) Mandible; D) Mentum; E) Procercus and anal setae; F) Posterior portion of the larvae.

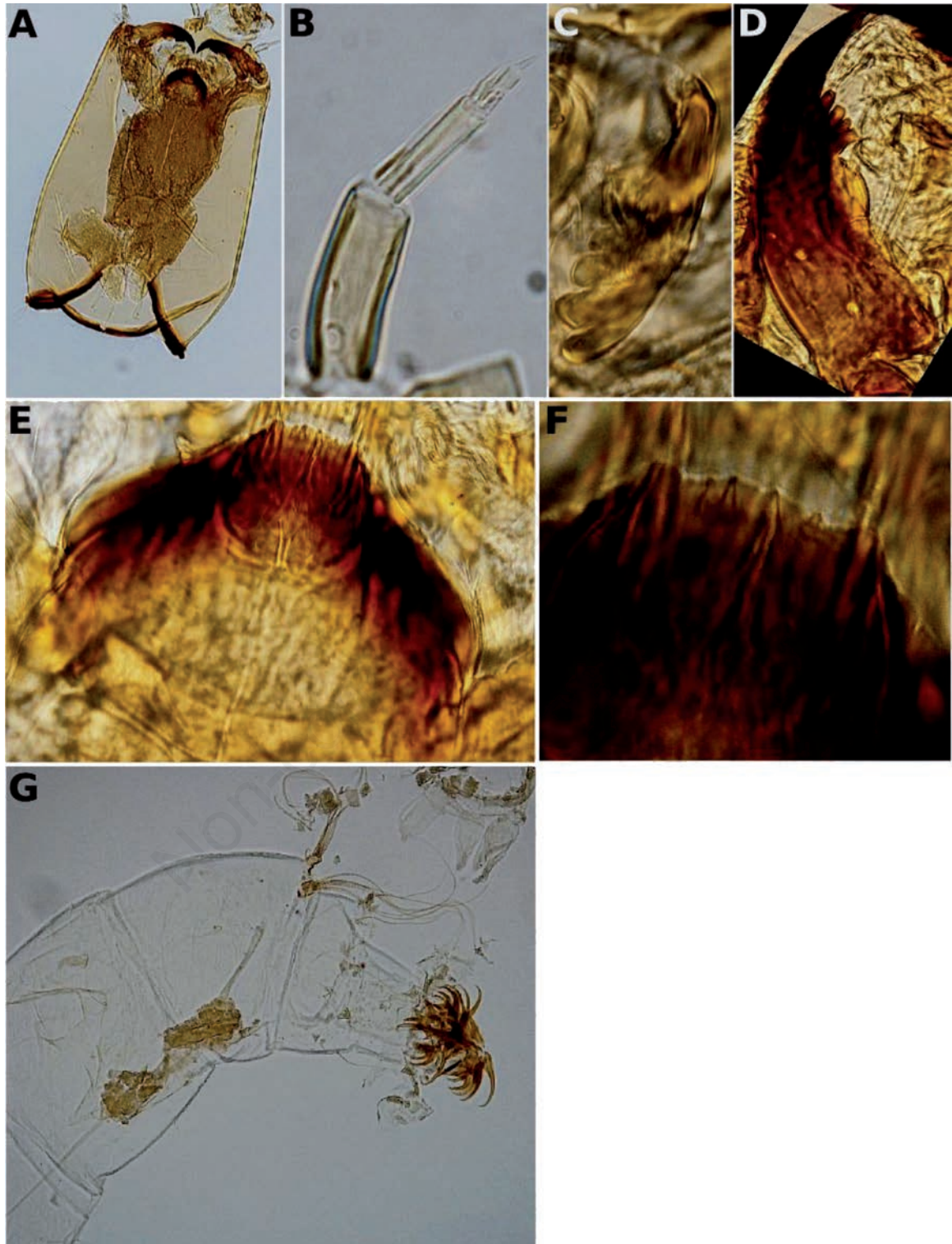


Figure 16. *Pagastia orthogonia* Oliver, larva (A-G). A) Head; B) Antenna; C) Premandible; D) Mandible; E) Mentum; F) Mentum Central teeth; G) Posterior portion of the larvae, procercus, anal setae and posterior parapods.

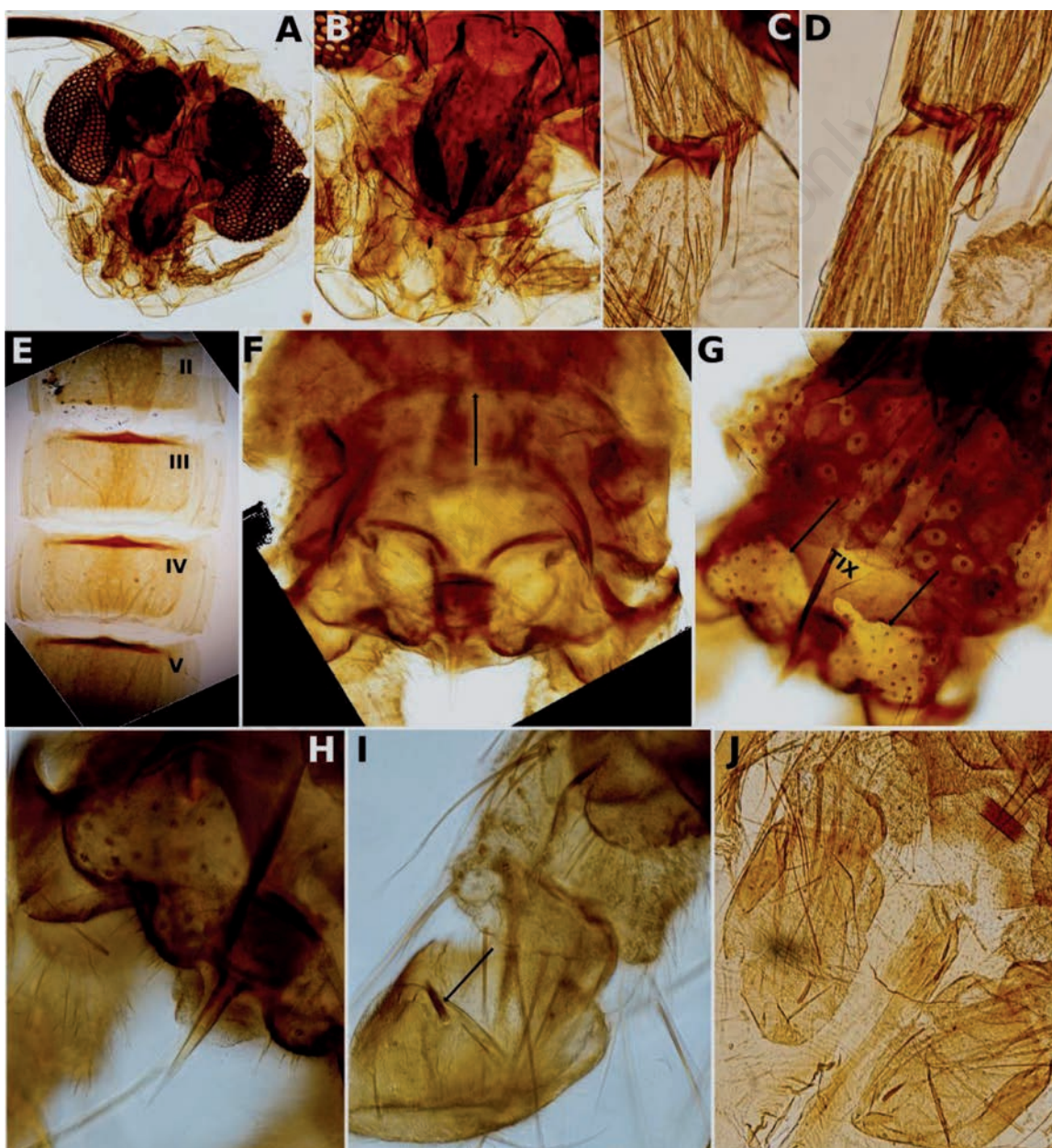


Figure 17. *Pseudodiamesa (Pseudodiamesa) branickii* (Nowicki), pharate male (A-J). A) Head, eyes, palpomere; B) Clypeus; C) Fore tibia spur; D) Mid tibia spur; E) Segments II-V of the abdomen; F) Sternapodeme (arrow), phallapodeme and superior volsella; G- Tergite IX, arrow indicate the patches; H) Anal point; I) Gonostyle (upturned anteriorly), arrow indicates the mega setae; J) Gonostyles.

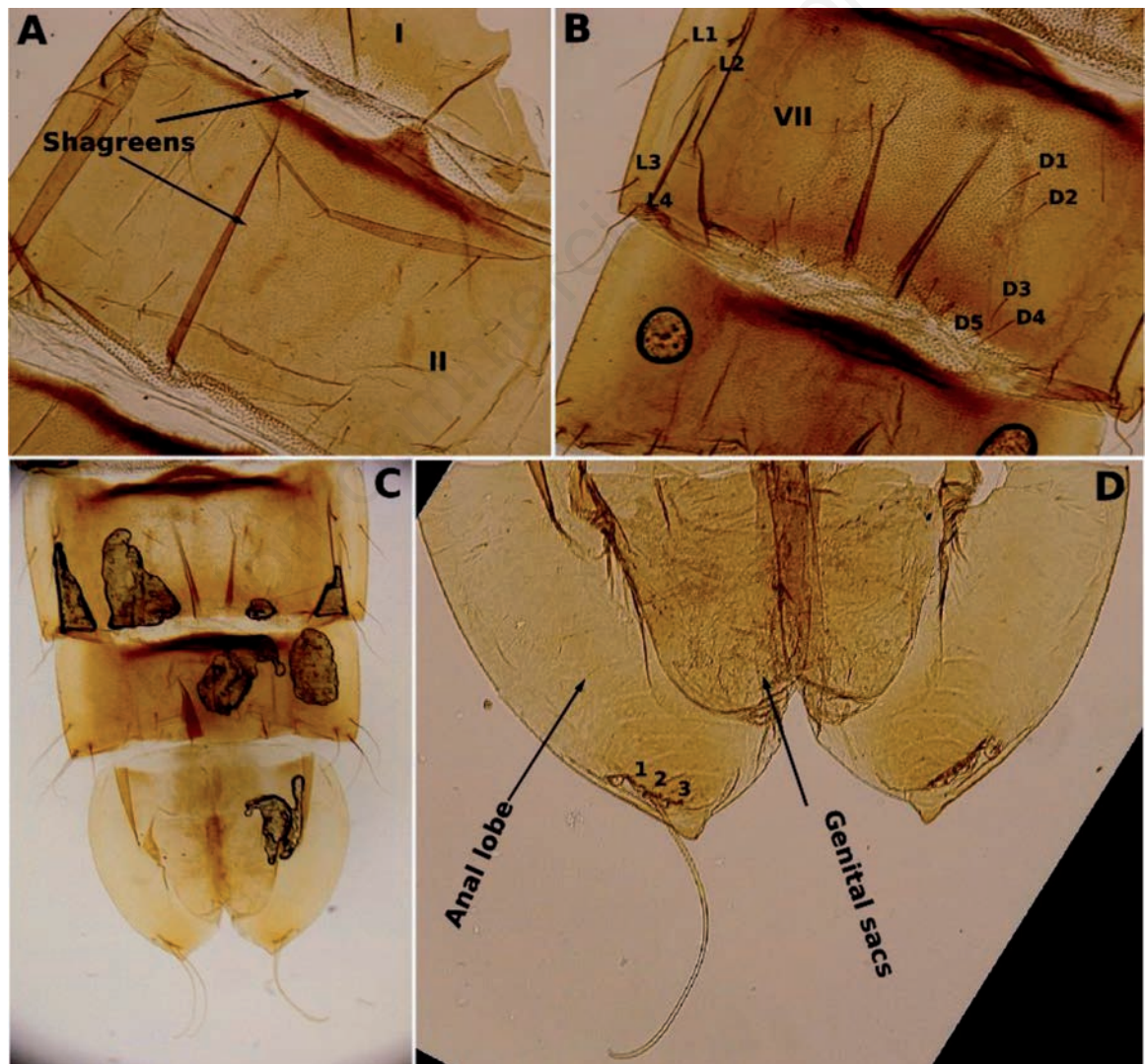


Figure 18. *Pseudodiamesa (Pseudodiamesa) branicki* (Nowicki), pupa (A-D). A) Segments I-II, shagreened; B) Dorsal and lateral setae on segment VII; C) Posterior portion of the pupa; D) Anal lobe and genitalia sacs of male pupae, numbers indicate the position of macrosetae.

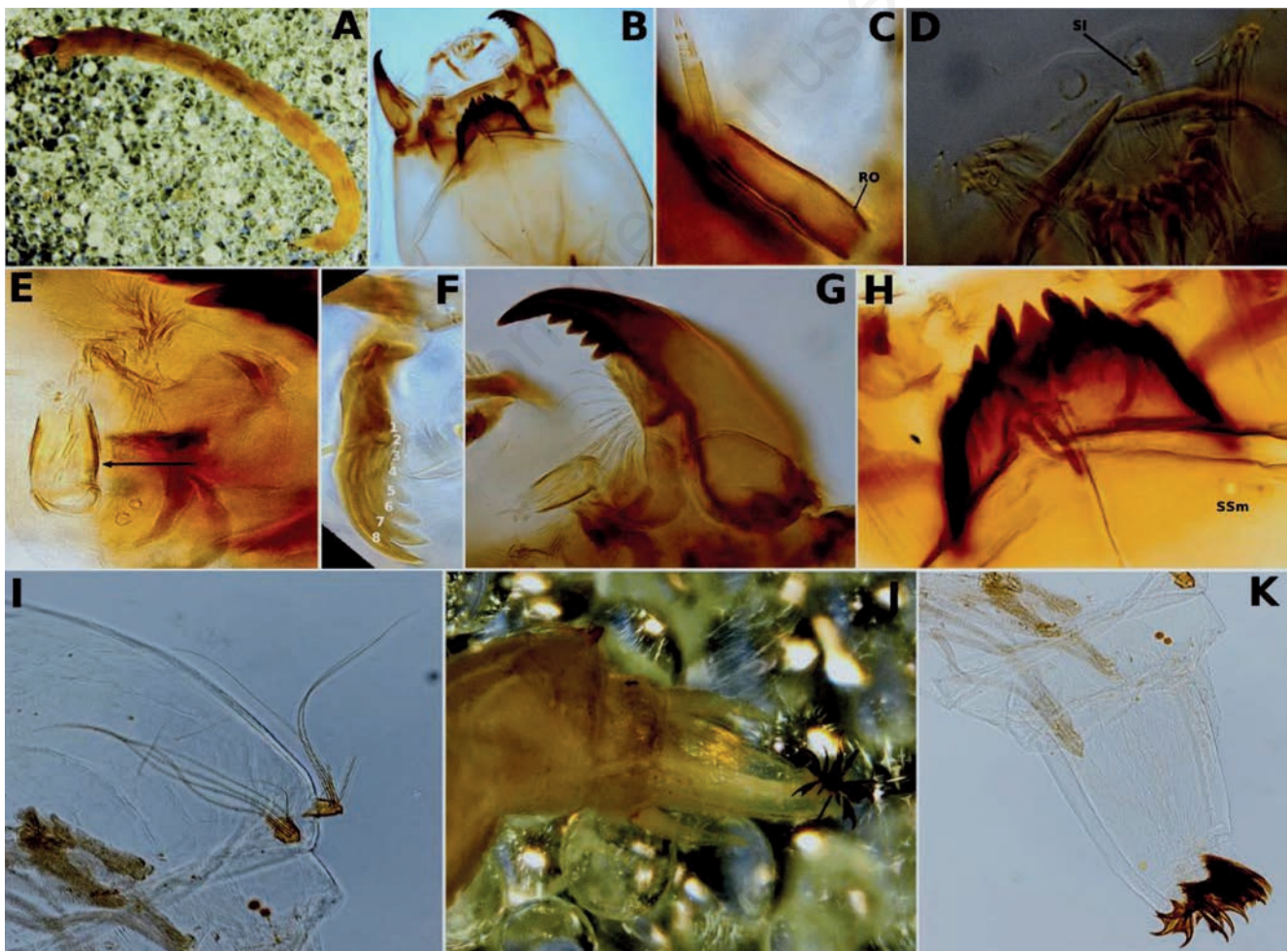


Figure 19. *Pseudodiamesa (Pseudodiamesa) branicki* (Nowicki), larva (A-K). A) Larva; B) Head; C) Antenna; D) Labrum, SI; E) Maxilla, arrow indicates the palp; F) Premandible; G) Mandible; H) Mentum; I) Procercus; J) Posterior portion of the larva; K) Mounted posterior portion of the larva.

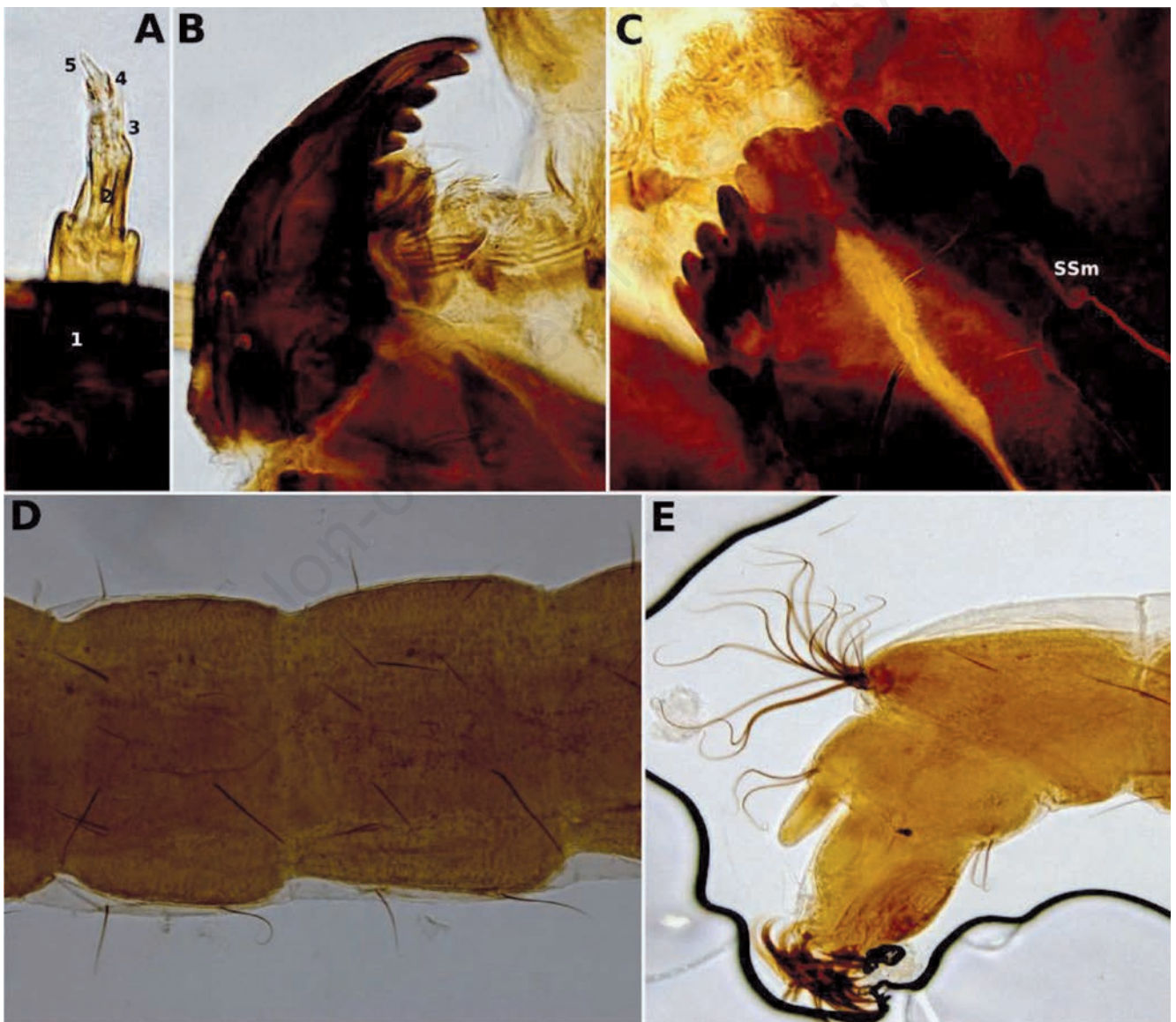


Figure 20. *Pseudokiefferiella* sp. 1 Doughman, larva (A-E). A) Antenna; B) Mandible; C) Mentum; D) Body segments; E) Posterior portion of the larva.

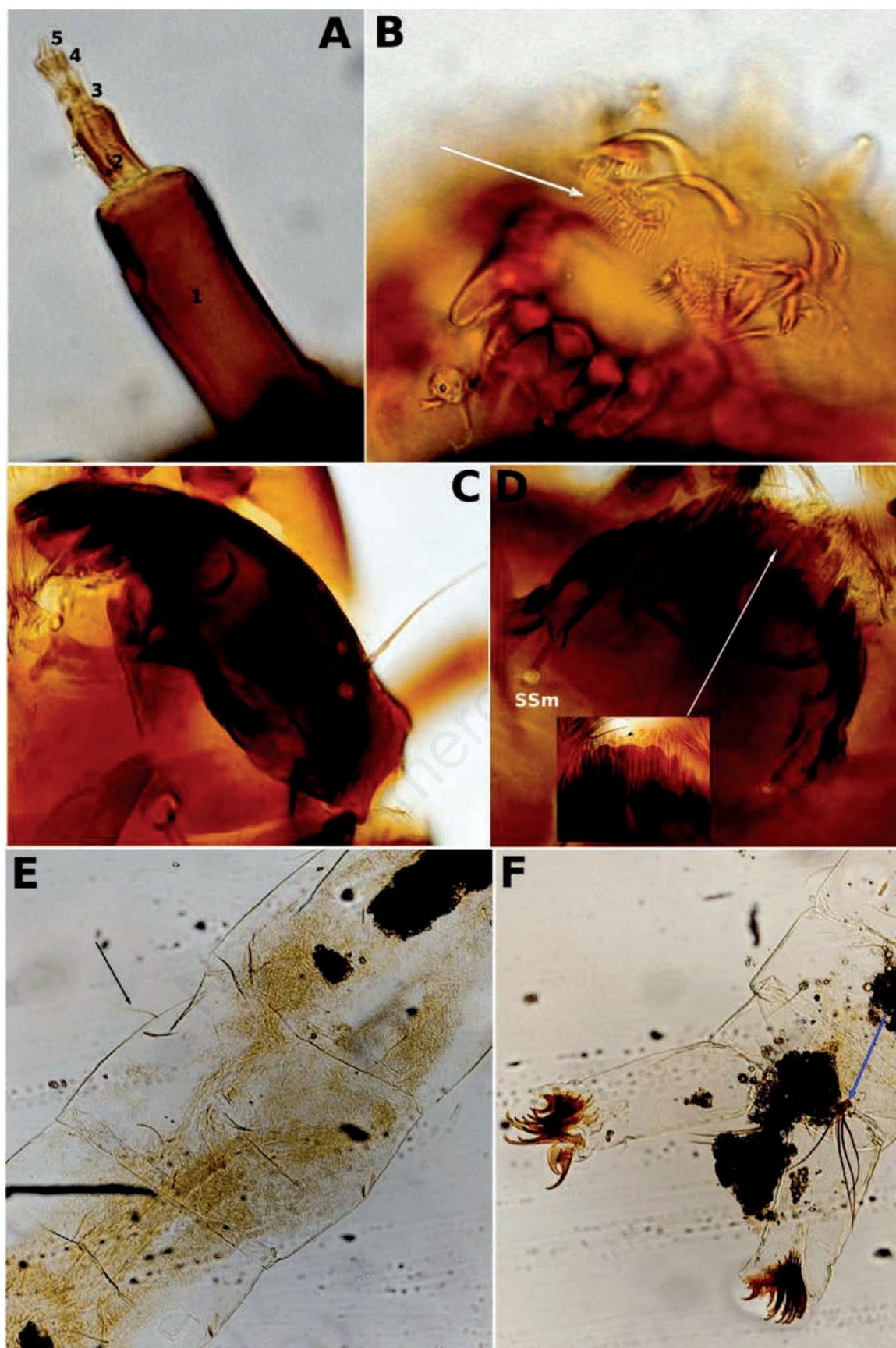


Figure 21. *Pseudokeifferiella* sp., larva (A-F). A) Antenna; B) Pecten epipharyngis, white arrow points to labral lamella; C) Mandible; D) Mentum; E) Body segments, arrow indicates the body setae; F) Posterior portion of the body, blue arrow points to procerus.

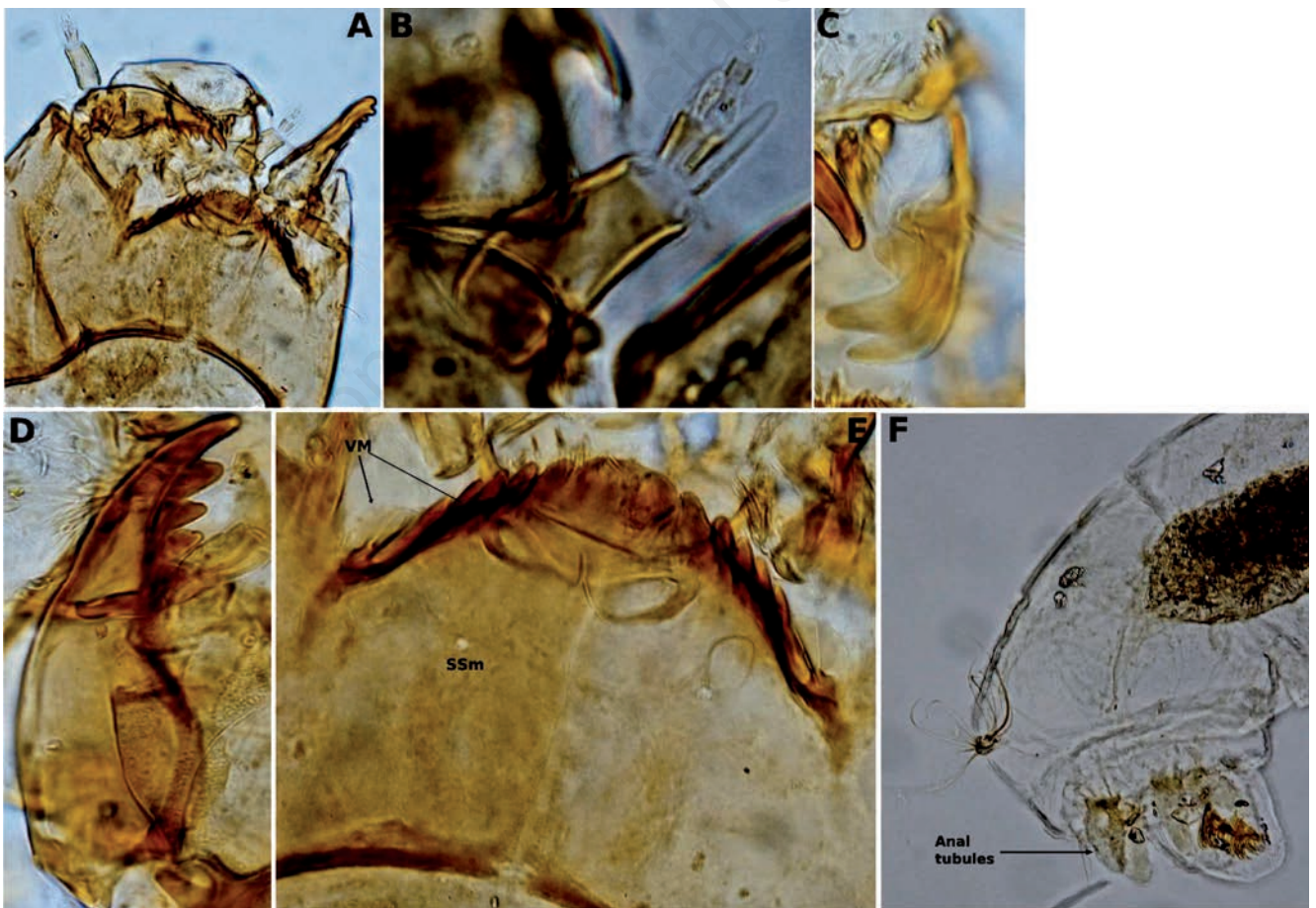


Figure 22. *Chaetocladius* (*Chaetocladius*) *dentiforceps* group, larva (A-F). A) Head; B) Antenna; C) Premandible; D) Mandible; E) Mentum; F) Posterior portion of the larva.

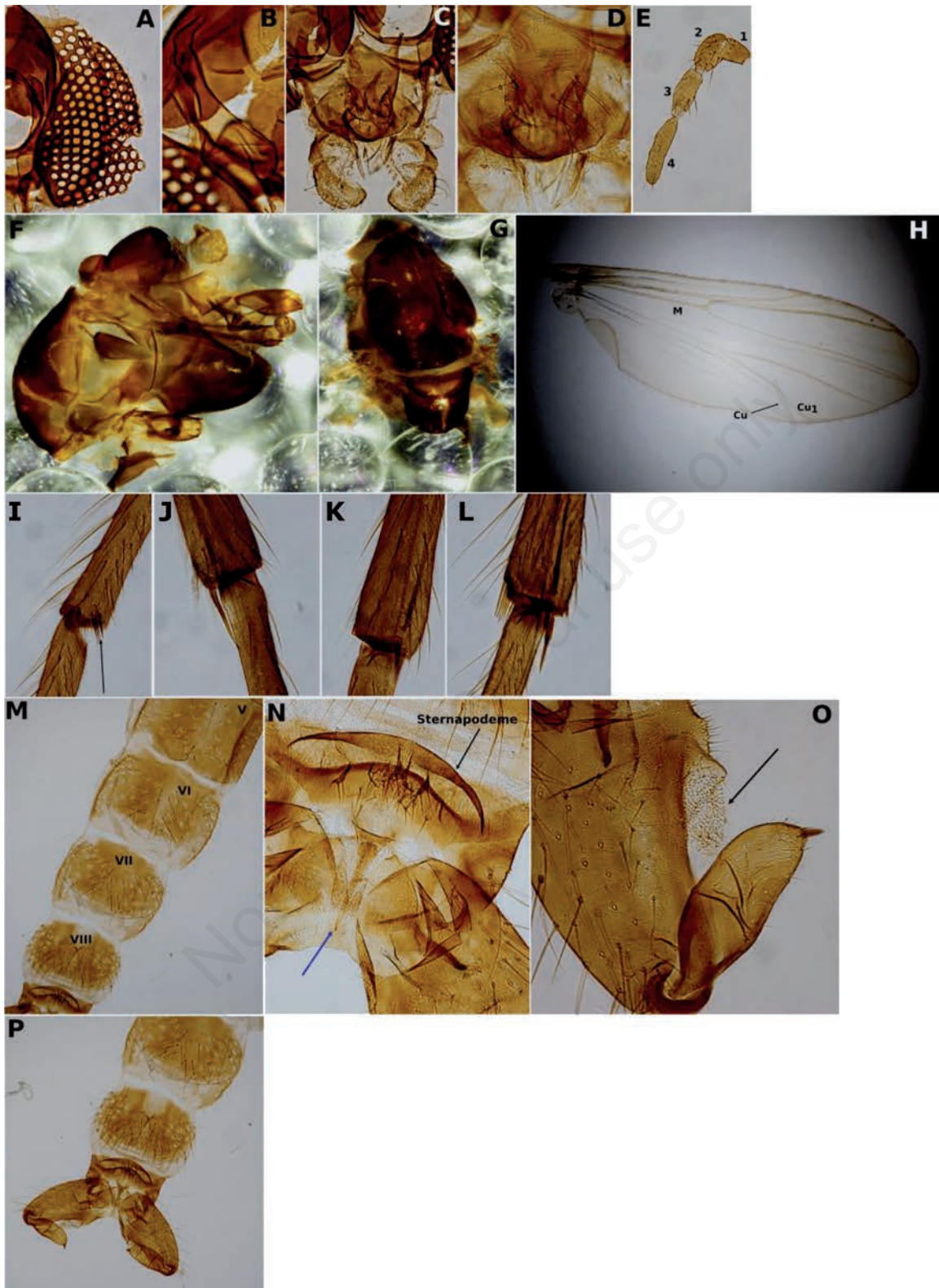


Figure 23. *Chaetocladius* (*Chaetocladius*) *piger* (Goetghebuer), male (A-P). A) Eye; B) Tentorium; C) Clypeus, cibarial pump; D) Bristles of Clypeus; E) Palpomeres; F) Lateral view of thorax; G) Dorsal view of thorax, dorsocentrals and scutellum; H) Wing; I) Pseudospurs on hind t₁; J) Fore tibia spur; K) Mid tibia spurs; L) Hind tibia spurs and comb; M) Abdominal segments V-VIII; N) Anal point (blue arrow); sternapodeme; O) Gonocoxite and gonostyle, arrow indicates the inferior volsella; P) Posterior portion of the male, genitalia.

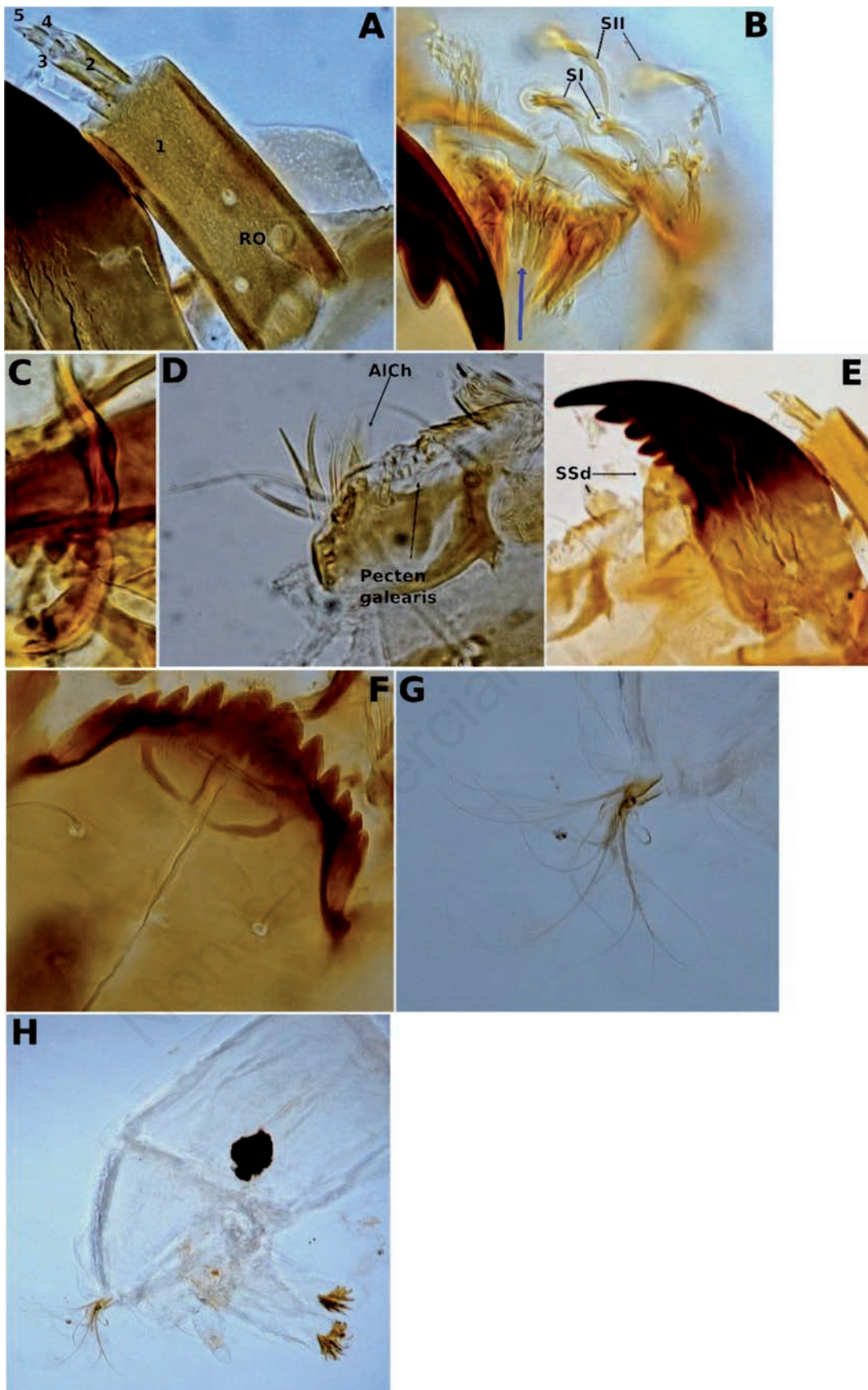


Figure 24. *Chaetocladius* (*Chaetocladius*) *piger* (Goetghebuer), larva (A-H). A) Antenna; B) Labrum, SI-SII, blue arrow indicates the Pecten epipharyngis; C) Premandible; D) Maxilla; E) Mandible; F) Mentum; G) Procercus; H) Posterior portion of the larva.

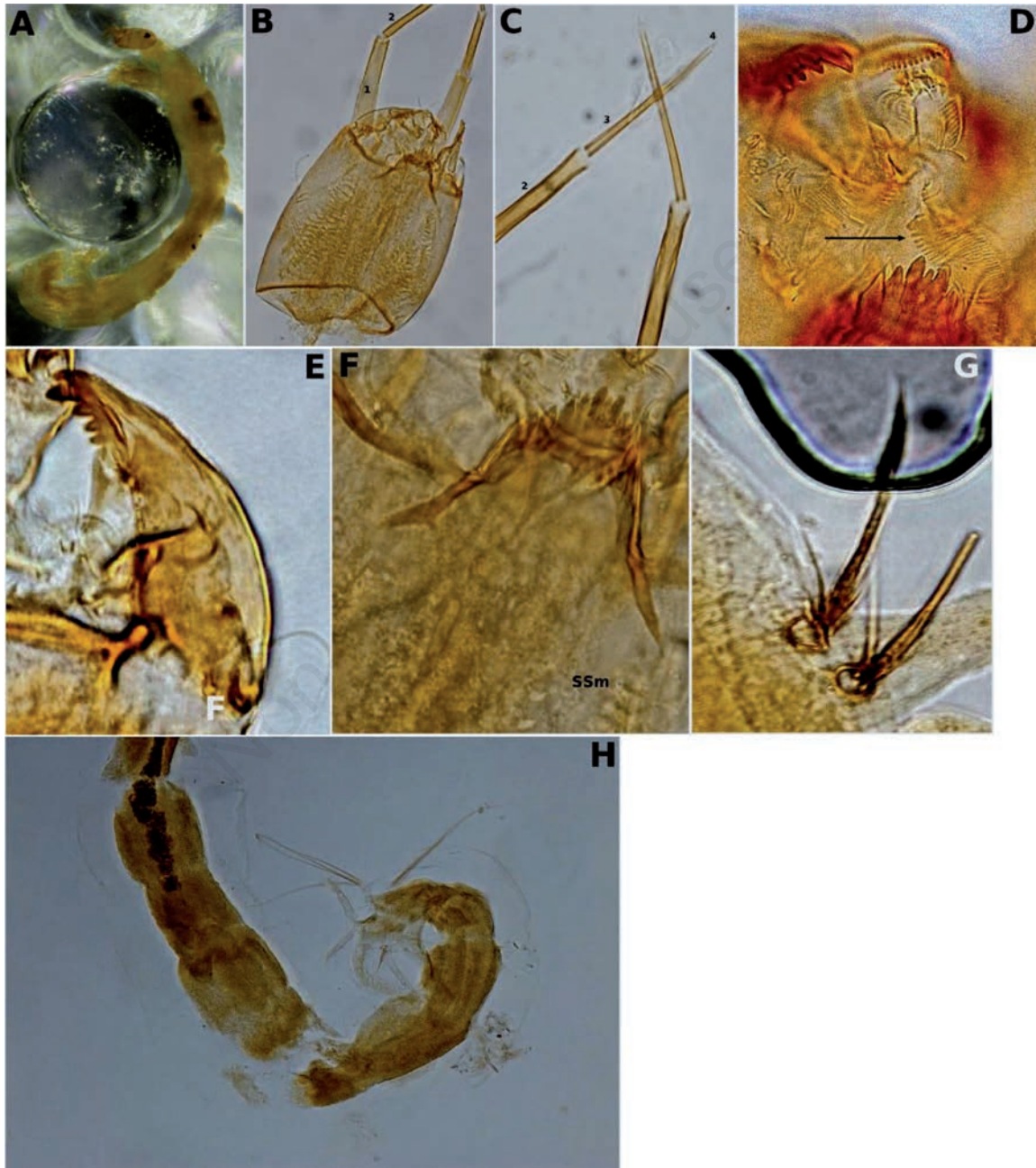


Figure 25. *Corynoneura* sp. 1, larva (A-H). A) Larva; B) Head Capsule, Antenna 1st and part of the 2nd segment; C) Antenna last segments; D) Labrum, arrow indicates the Premandible; E) Mandible; F) Mentum; G) Sub-basal setae; H) Posterior portion of the larva.

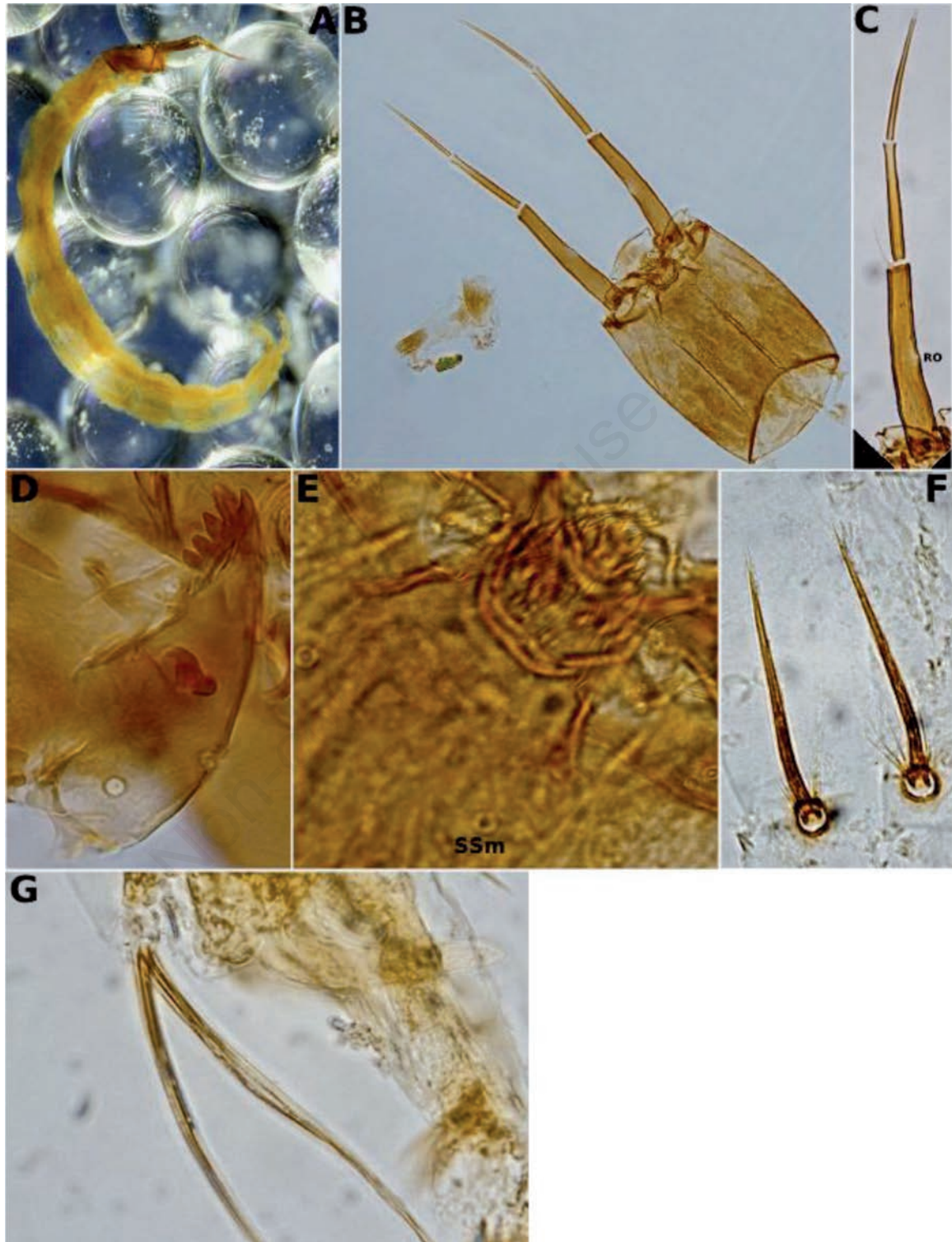


Figure 26. *Corynoneura* sp. 2, larva (A-G). A) Larva; B) Head; C) Antenna; D) Mandible; E) Mentum; F) Sub-basal setae; G) Procercus, sub-anal setae.

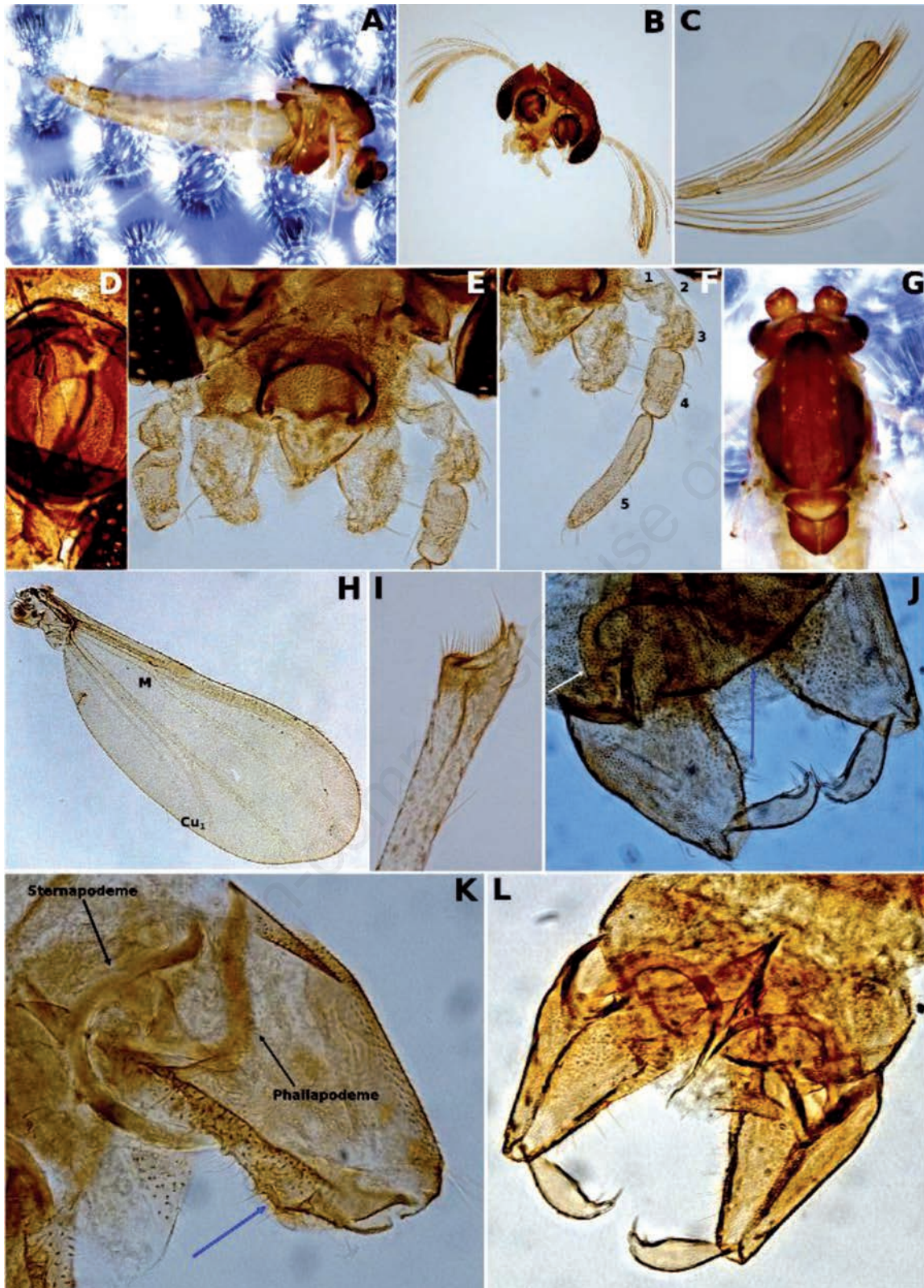


Figure 27. *Corynoneura lobata* Edwards, male (A-L). A) Male lateral view; B) Head, antenna; C) Distal flagellomeres of antenna; D) Tentorium; E) Clypeus; F) Palpomere; G) Dorsal view of the head and thorax, anteprenotal lobes, dorsocentrals and scutellum; H) Wing; I) Hind tibia, spines and comb; J) Thorax segment IX posterior portion (white arrow), gonocoxite and gonostyles and part of sternapodeme (blue arrow); K) Sternapodeme, phallapodeme and inferior volsella (blue arrow); L) Posterior portion of the male.

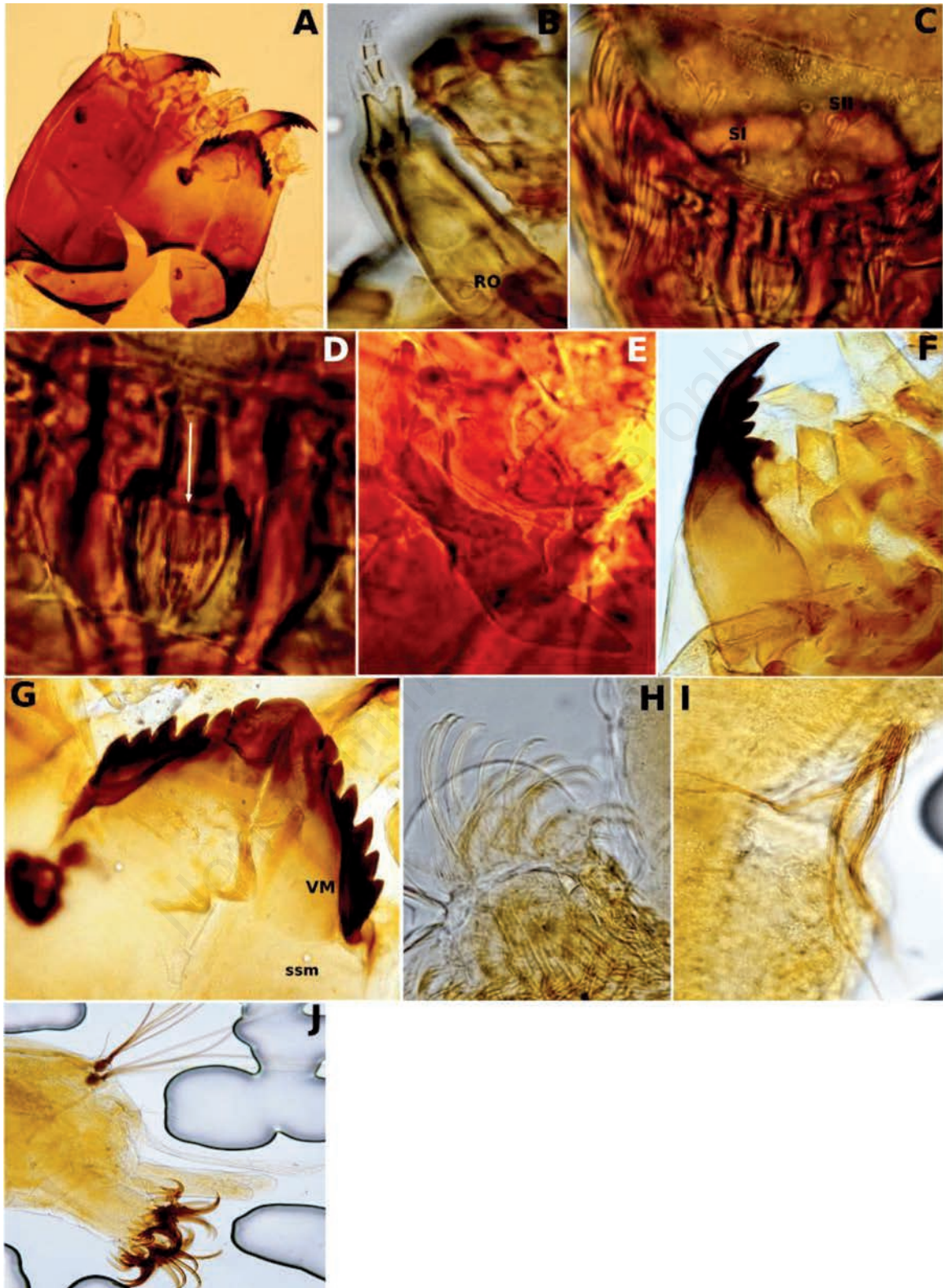


Figure 28. *Cricotopus (Cricotopus) bicinctus* (Meigen), larva (A-J). A) Head; B) Antenna; C) Labrum; D) Pecten epipharyngis; E) Premandible; F) Mandible; G) Mentum; H) Claws of anterior parapod; I) Abdominal setae; J) Posterior portion of the larvae.

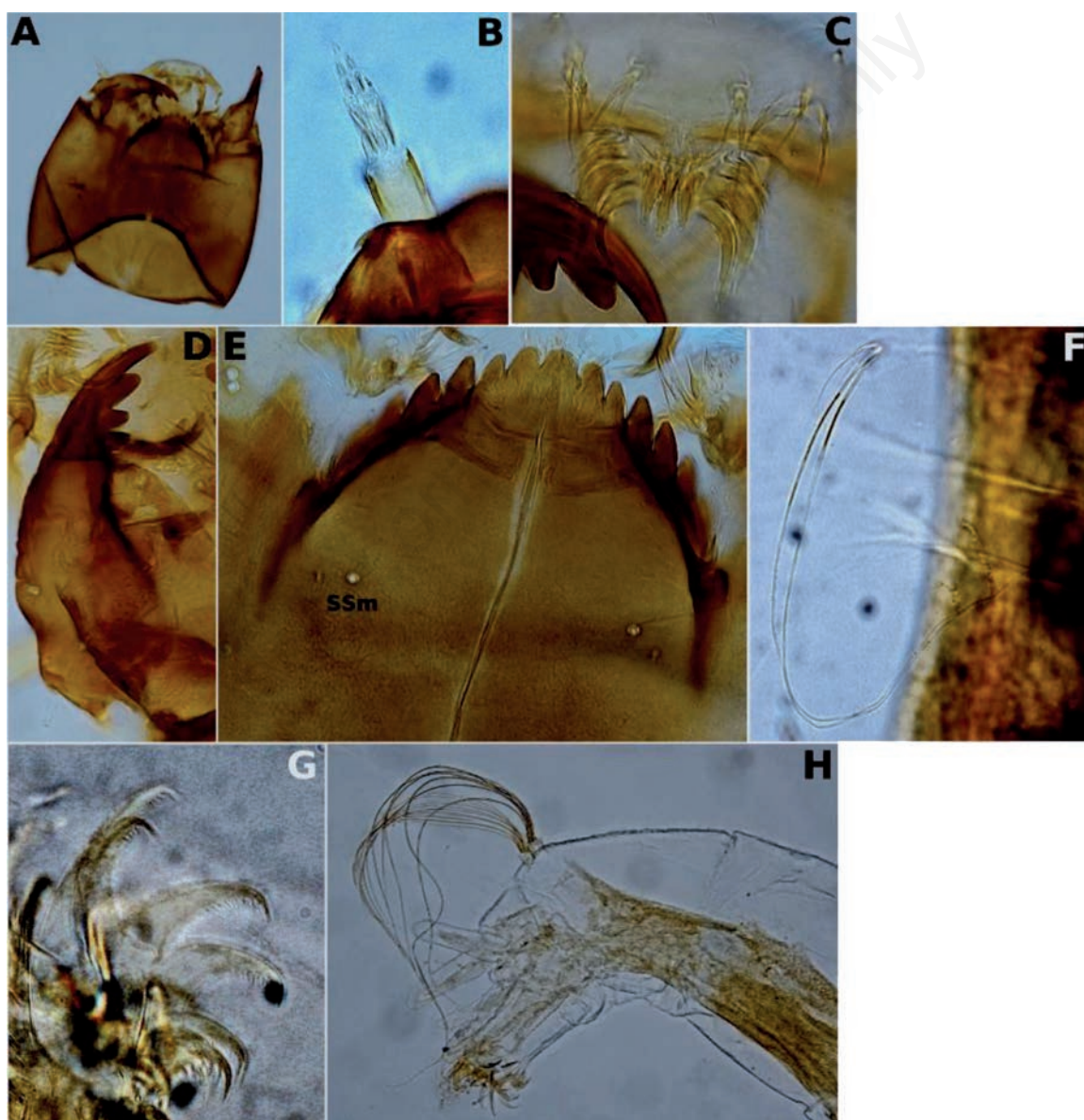


Figure 29. *Cricotopus (Cricotopus) tibialis* (Meigen), larva (A-H). A) Head; B) Antenna; C) Labrum, SI and Pecten epipharyngis; D) Mandible; E) Mentum; F) Abdominal setae; G) Claws of anterior parapod; H) Posterior portion of the larva.

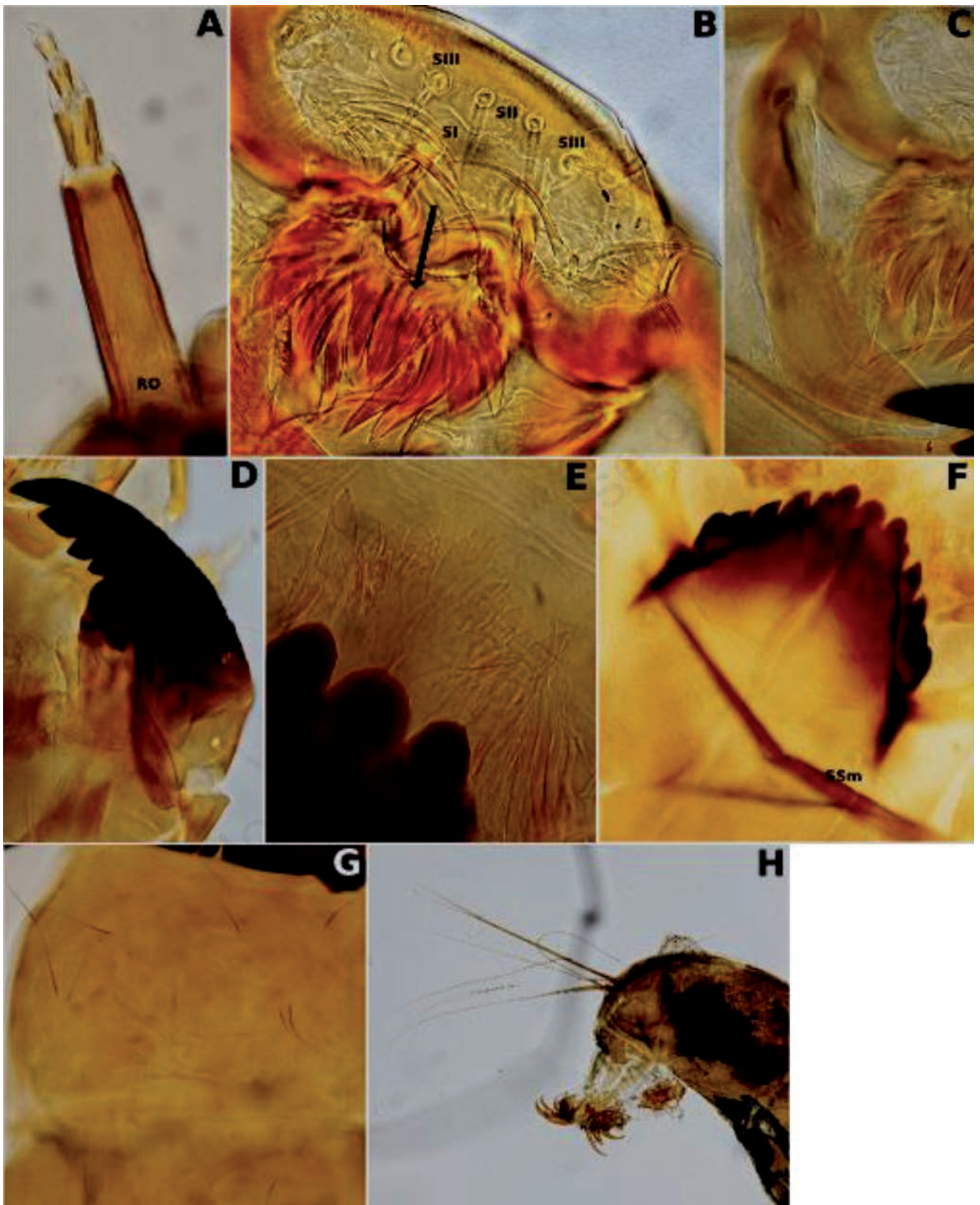


Figure 30. *Cricotopus (Cricotopus) tremulus* group, larva (A-H). A) Antenna; B) Labrum; C) Premandible; D) Mandible; E) Prementum; F) Mentum; G) Abdominal setae; H) Posterior portion of the larva.



Figure 31. *Cricotopus (Cricotopus) triannulatus* (Macquart), larva (A-J). A) Larva; B) Head; C) Antenna; D) Labrum; E) Premandible; F) Mandible; G) Mentum; H) Claws of anterior parapod; I) Posterior portion of the larva; J) Mounted posterior portion.

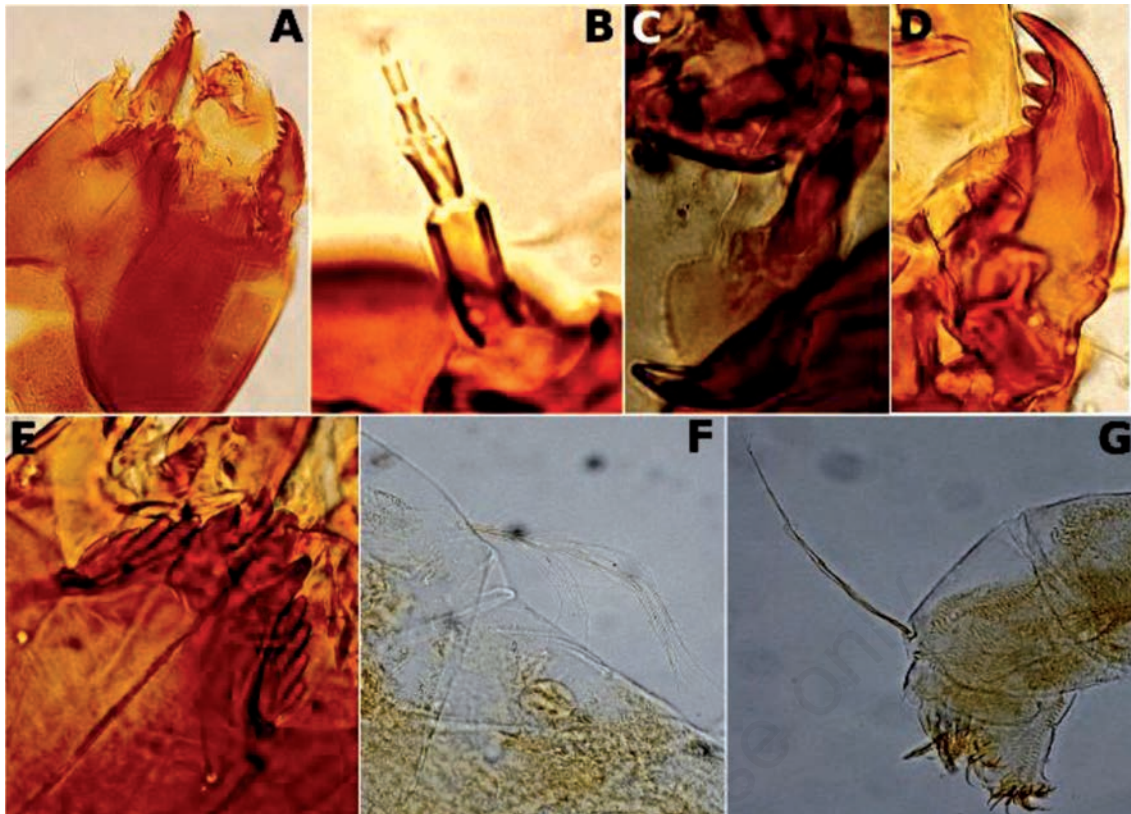


Figure 32. *Cricotopus (Cricotopus) intersectus* (Staeger), larva (A-G). A) Head capsule; B) Antenna; C) Premandible; D) Mandible; E) Mentum; F) Abdominal hair; G) Posterior portion of the larva.

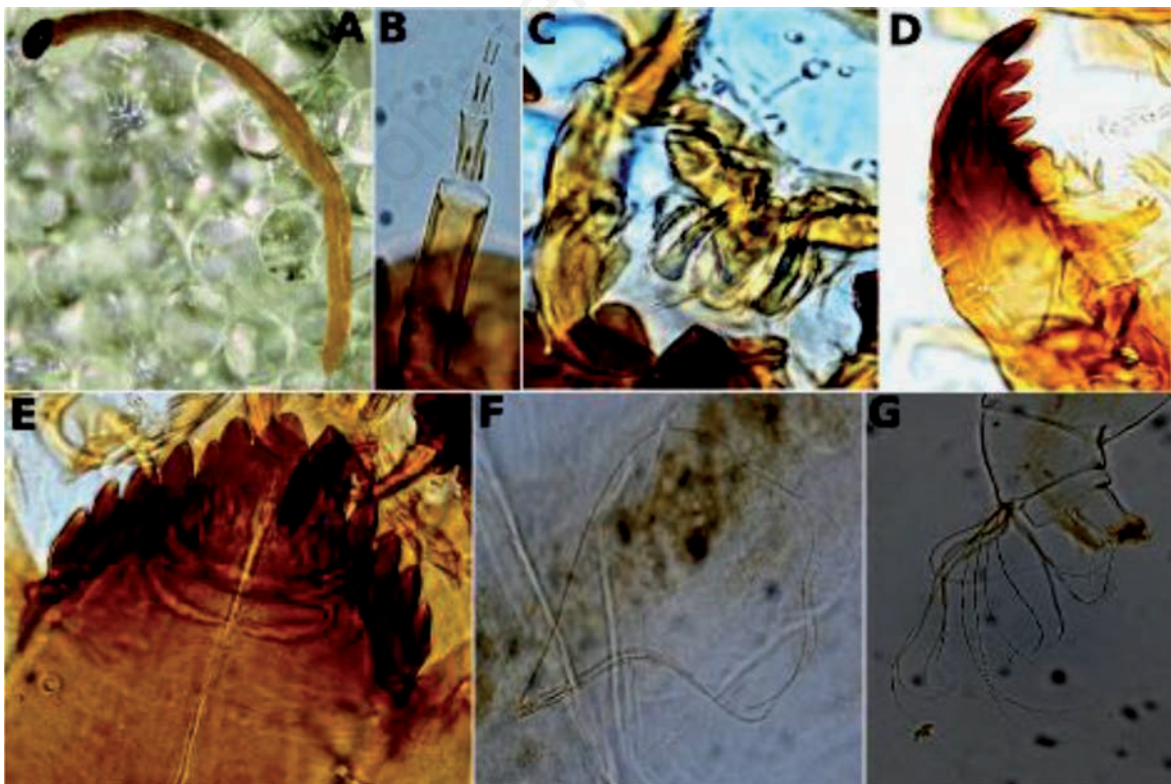


Figure 33. *Cricotopus (Cricotopus) laricomalis* Edward, larva (A-G). A) Larva; B) Antenna; C) Premandible and Pecten epipharyngis; D) Mandible; E) Mentum; F) Abdominal hair; G) Posterior portion of the larva.

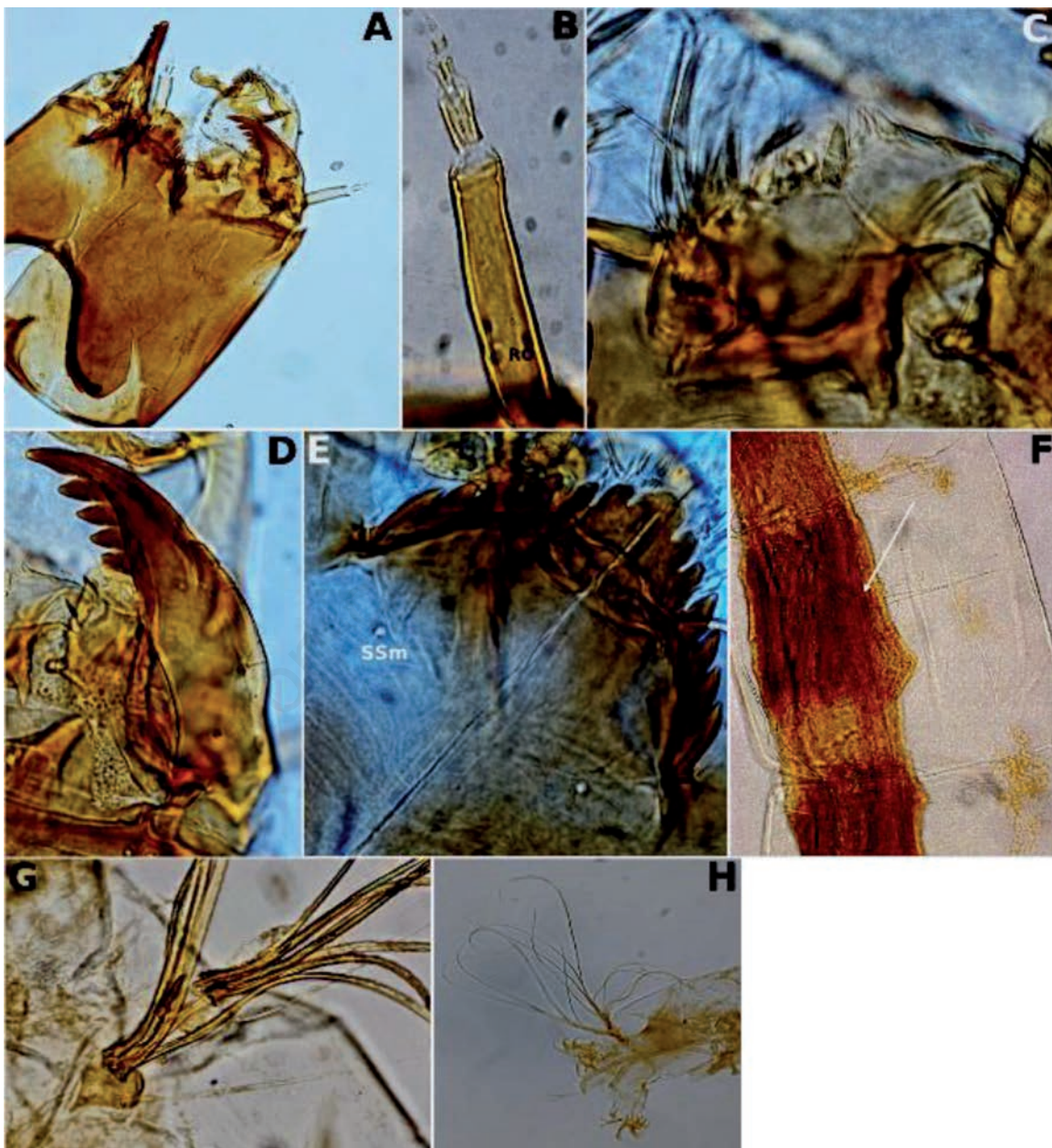


Figure 34. *Cricotopus (Isocladius) reversus* group, larva (A-H). A) Head; B) Antenna; C) Maxilla; D) Mandible; E) Mentum; F) Abdominal hair; G) Procercus; H) Posterior portion of the larva.

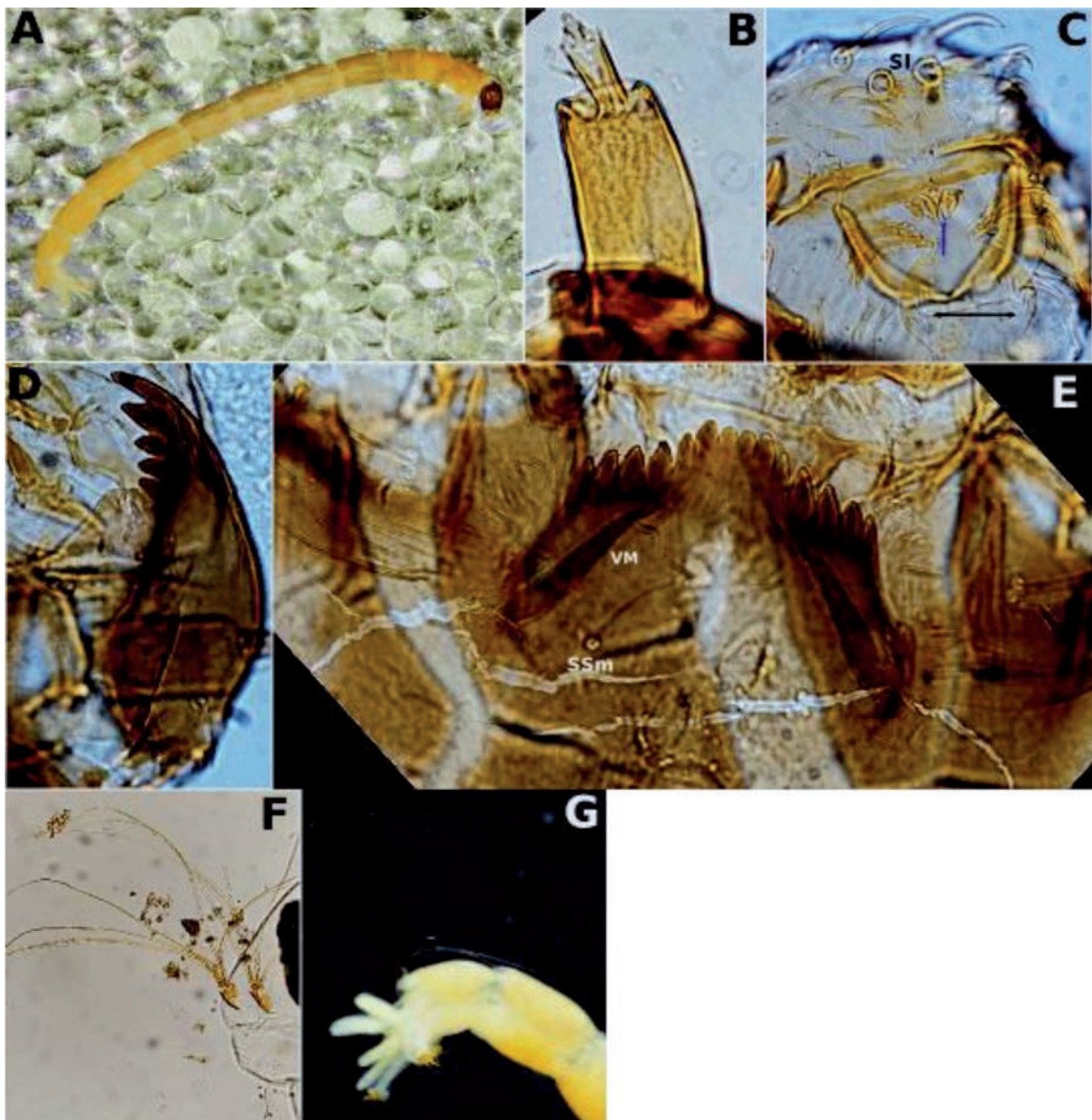


Figure 35. *Diplocladius cultriger* Kieffer, larva (A-G). A) Larva; B) Antenna; C) Labrum, Pecten epipharyngis (blue arrow), chaetula lateralis (black arrows); D) Mandible; E) Mentum; F) Procercus; G) Posterior portion of the body.

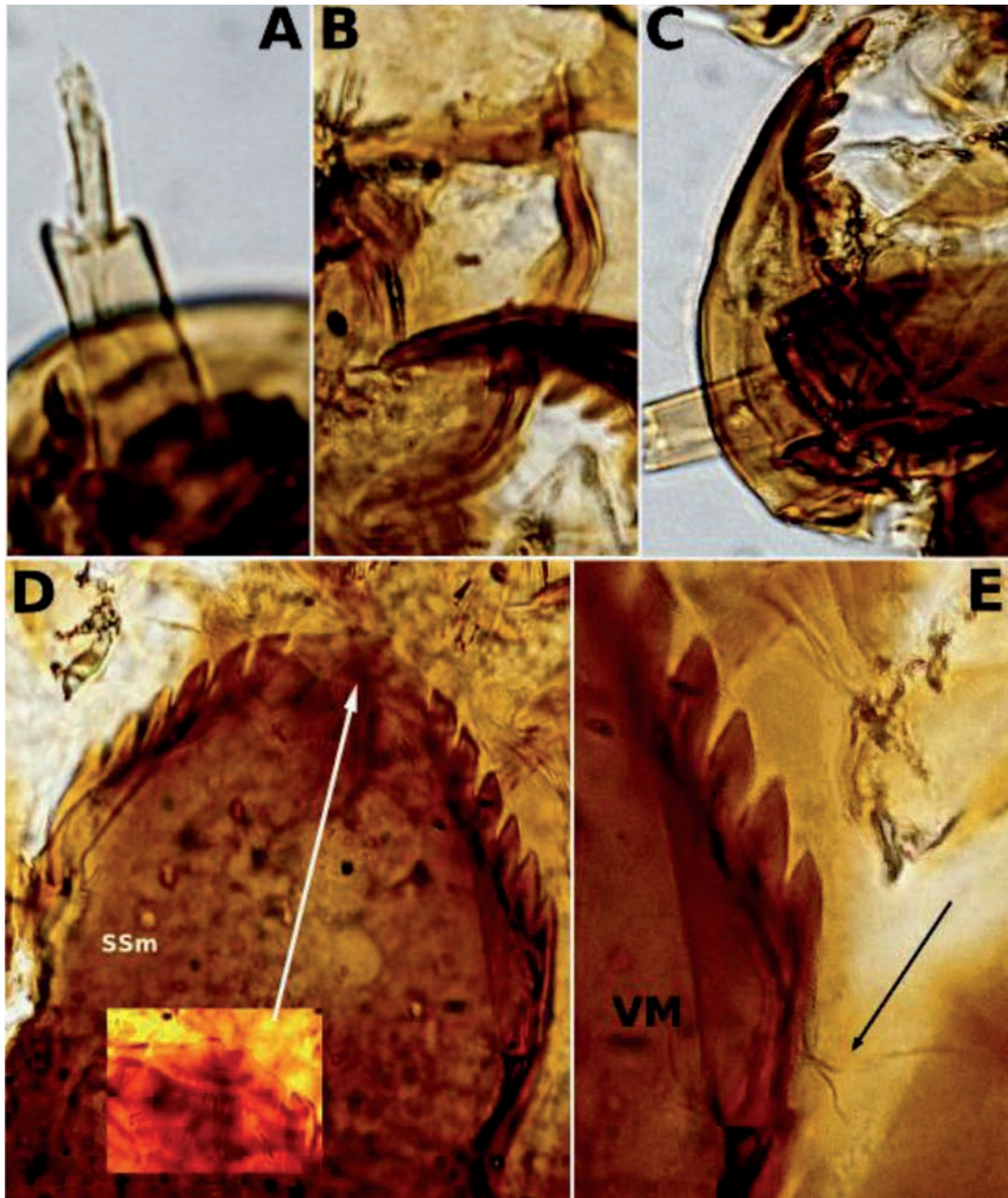


Figure 36. *Doncricotopus* cf. *bicaudatus* Sæther, larva (A-E). A) Antenna; B) Premandible; C) Mandible; D) Mentum; E) VmP and cardinal beard (arrow).

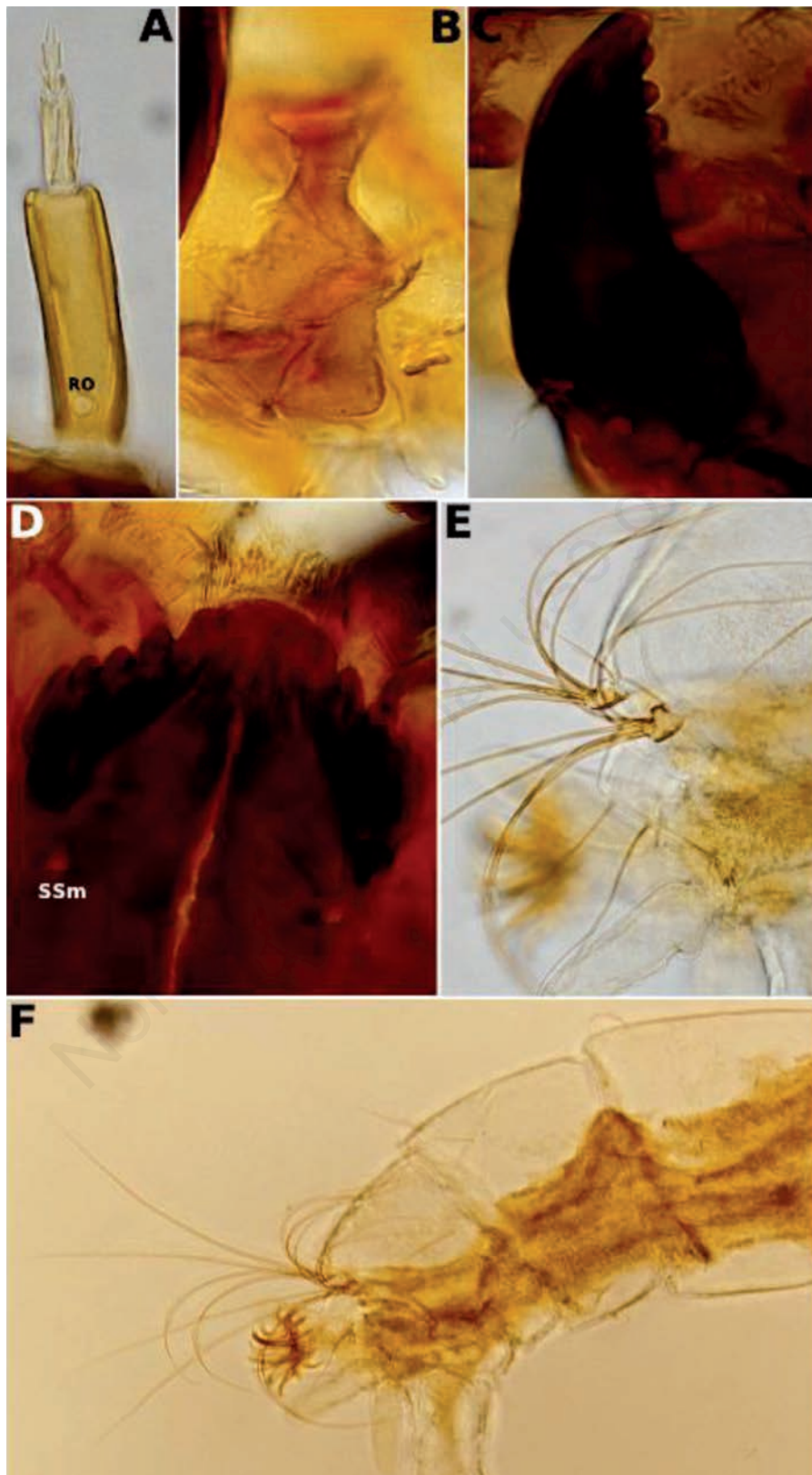


Figure 37. *Eukiefferiella brehmi* group, larva (A-F). A) Antenna; B) Premandible; C) Mandible; D) Mentum; E) Procercus; F) Posterior portion of the body.

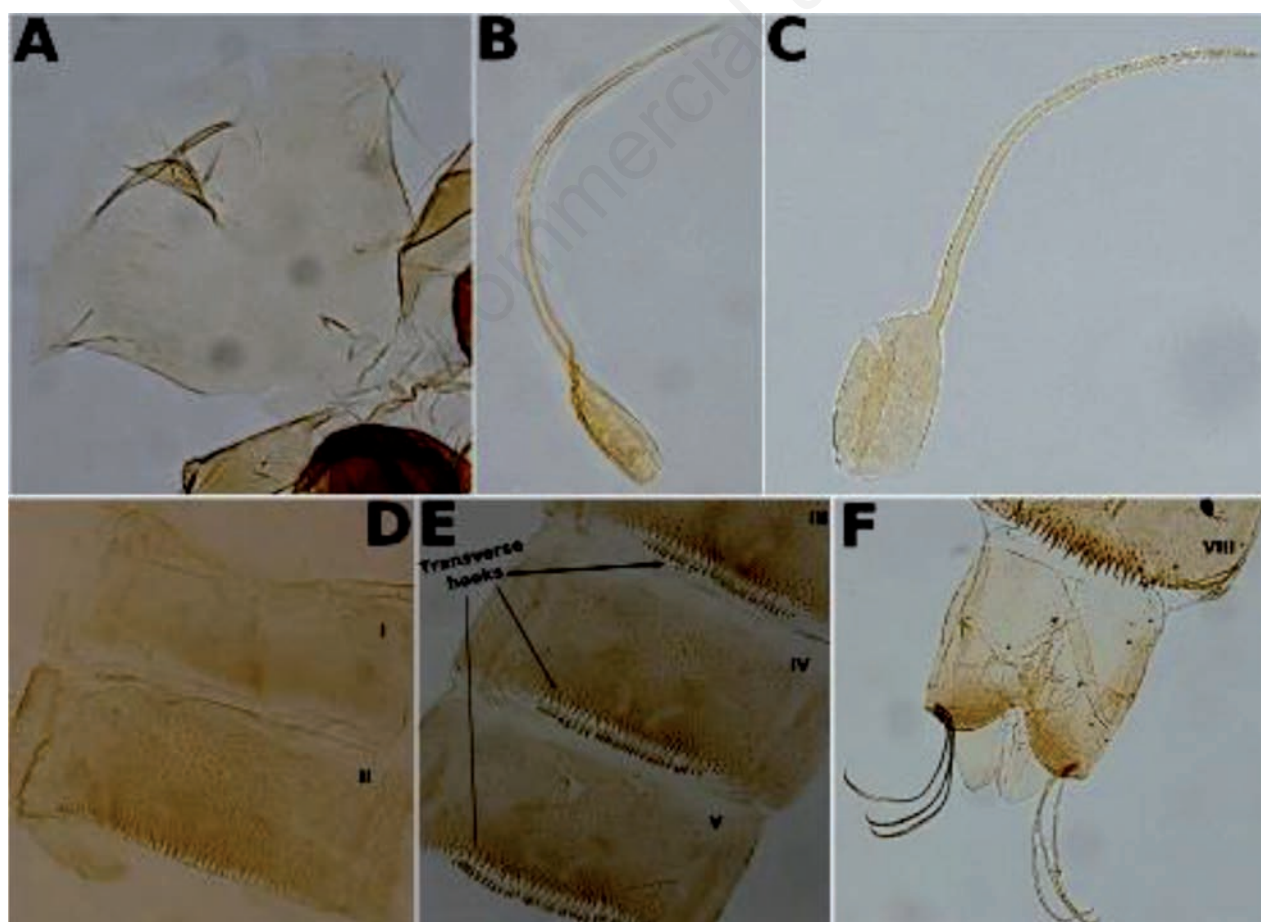


Figure 38. *Eukiefferiella brevicar* group sp. 3 Bode, pupa (A-F). A) Frontal apotome; B) Thoracic horn; C) Thoracic horn; D) Tergites I-II; E) Tergites III-V, transverse rows of hooks; F) Caudal lobes and genitalia sacs of male pupa.

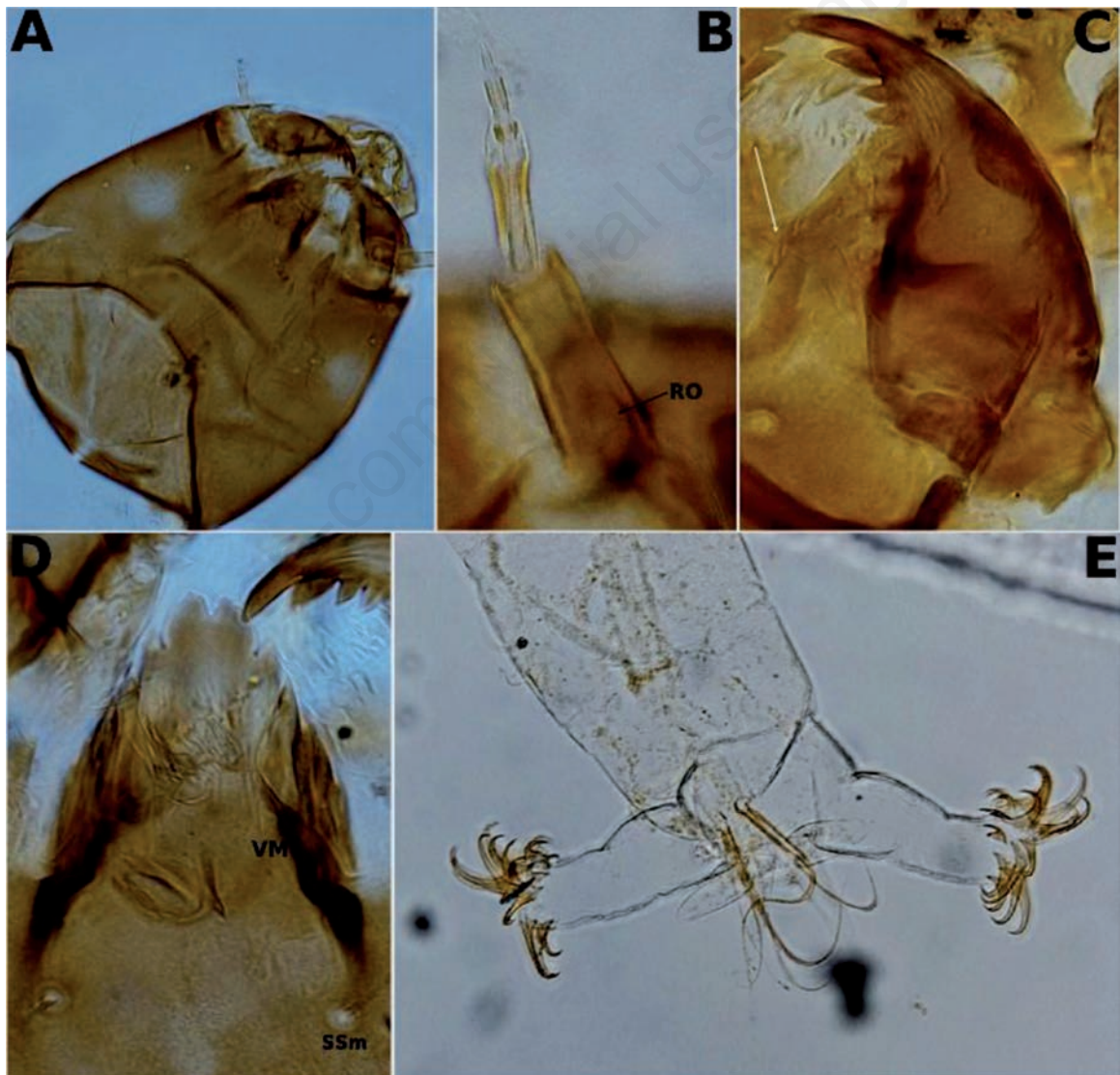


Figure 39. *Eukiefferiella brevicar* group sp. 3 Bode, larva (A-E). A) Head; B) Antenna; C) Mandible; D) Mentum; E) Posterior portion of the larvae.

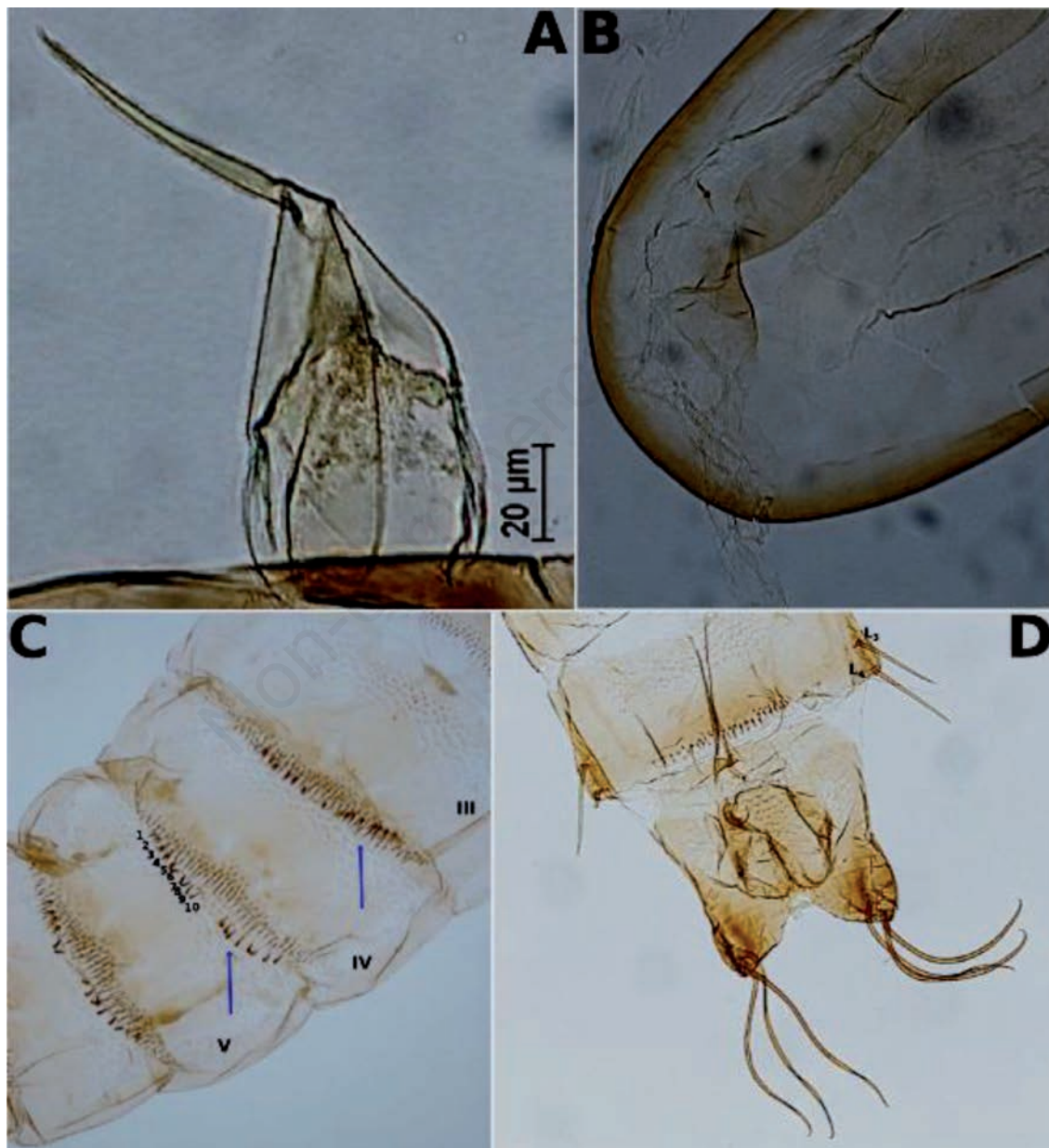


Figure 40. *Eukiefferiella claripennis* group sp. 3 Bode, pupa (A-D). A) Thoracic horn; B) Wing sheets posterior end; C) Tergites III-V transverse recurved hooks (arrows); D) Tergite VIII L₃₋₄ and female's caudal lobes and genitalia sacs.

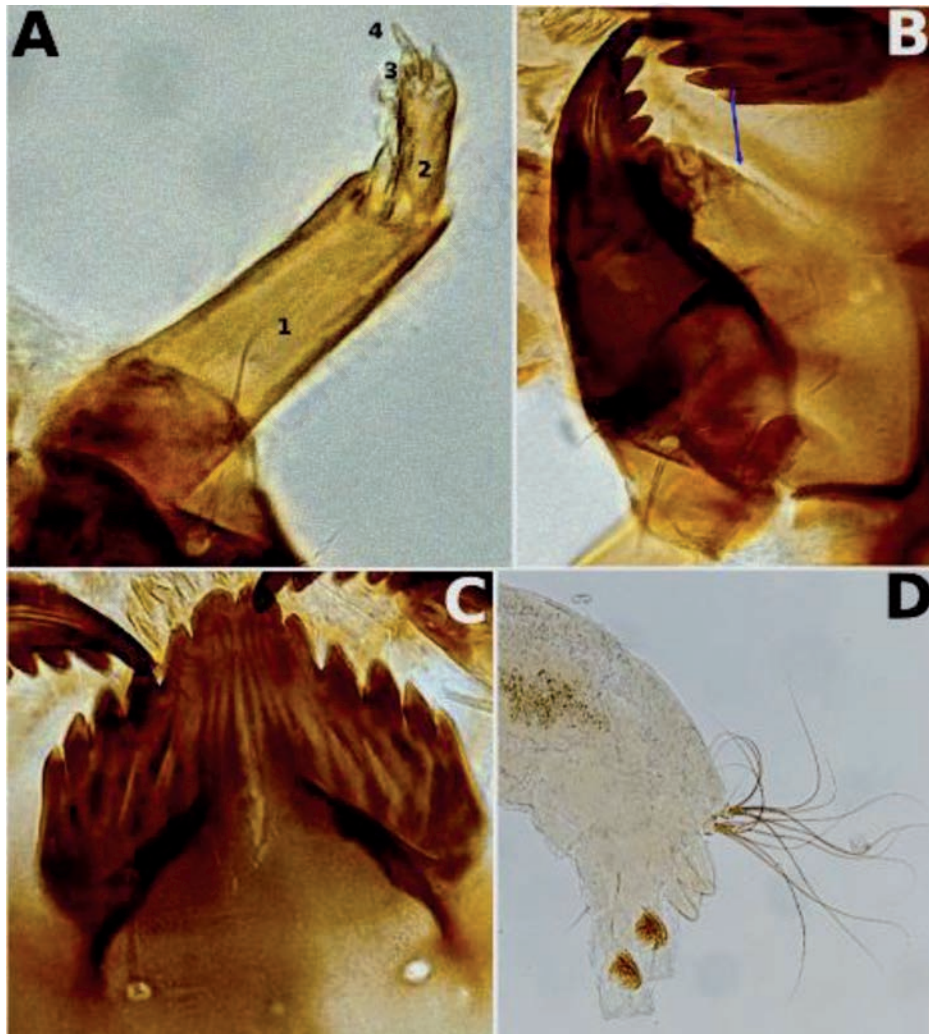


Figure 41. *Eukiefferiella claripennis* group sp. 3 Bode, larva (A-D). A) Antenna; B) Mandibles, arrow indicates the spines; C) Mentum; D) Posterior portion of the larvae.

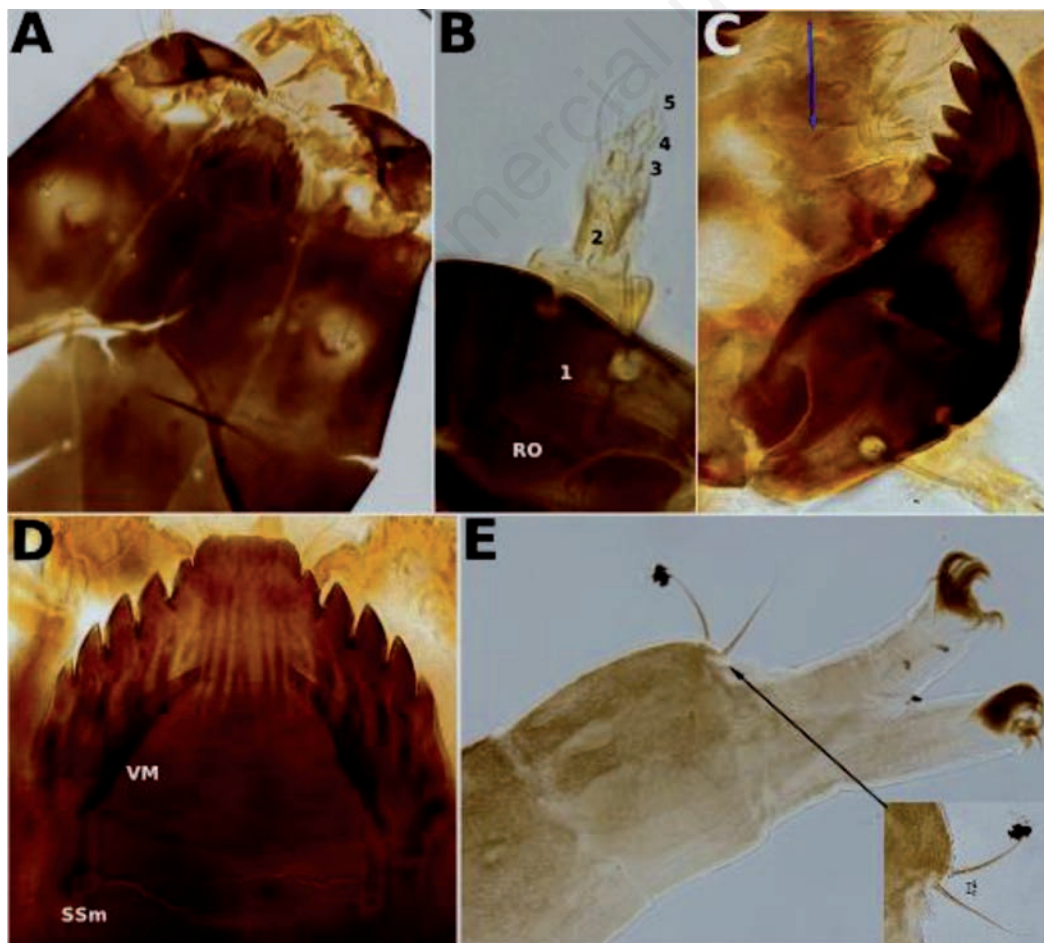


Figure 42. *Eukiefferiella cyanea* group, larva (A-E). A) Head; B) Antennae; C) Mandibles, arrow indicates the spines; D) Mentum; E) Posterior portion of the larvae and procercus.

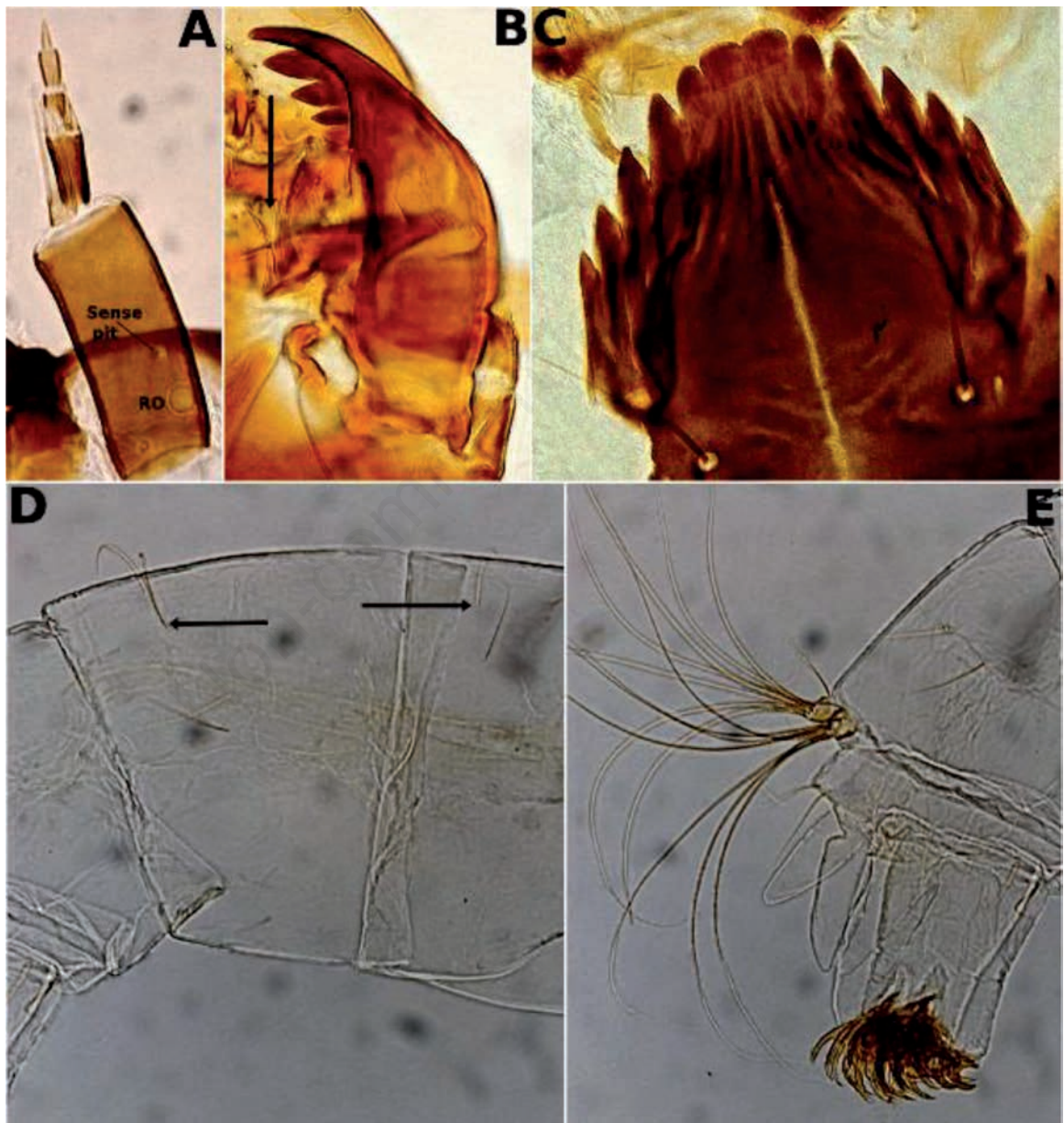


Figure 43. *Eukiefferiella rectangularis* group, larva (A-E). A) Antenna; B) Mandible, arrow indicates the spines; C) Mentum; D) Abdominal setae; E) Posterior portion of the larva.

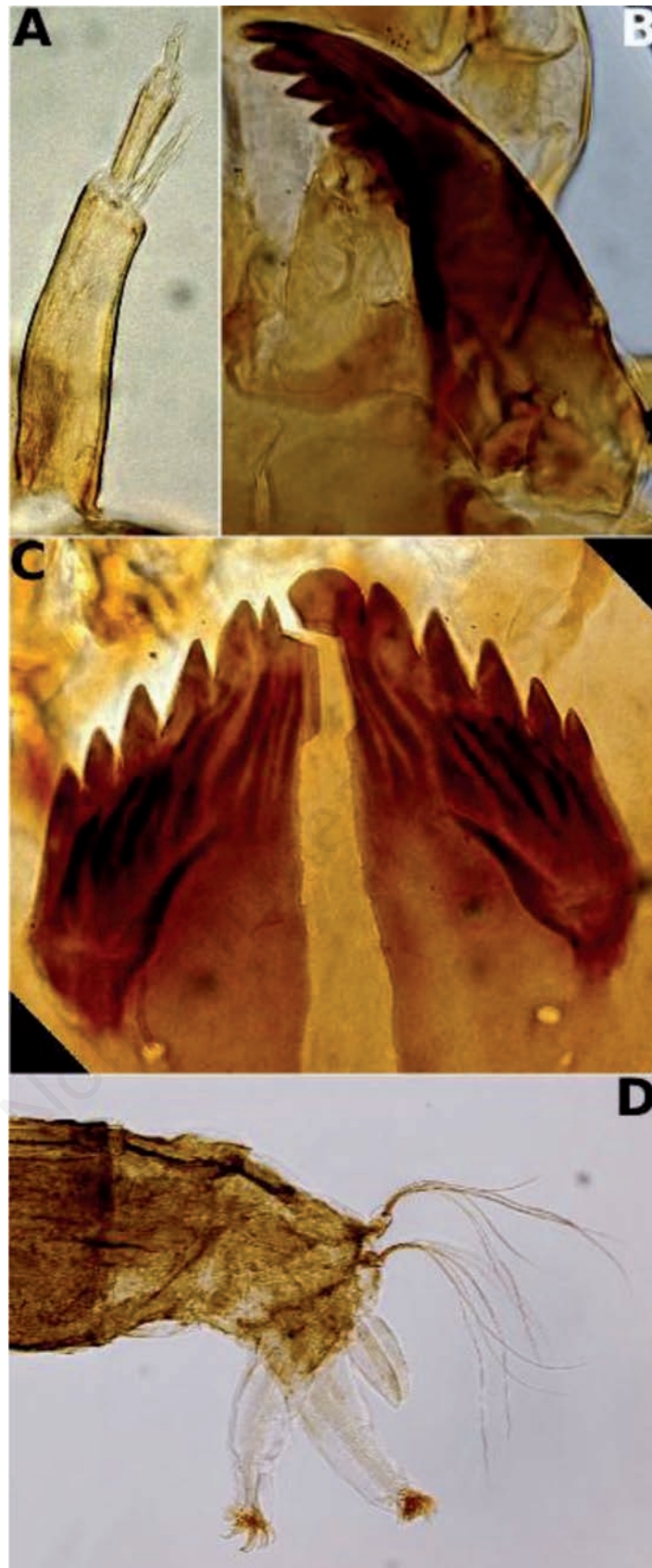


Figure 44. *Eukiefferiella tirolensis* Goetghebuer, larva (A-D). A) Antenna; B) Mandible; C) Mentum; D) Posterior portion of the larva.

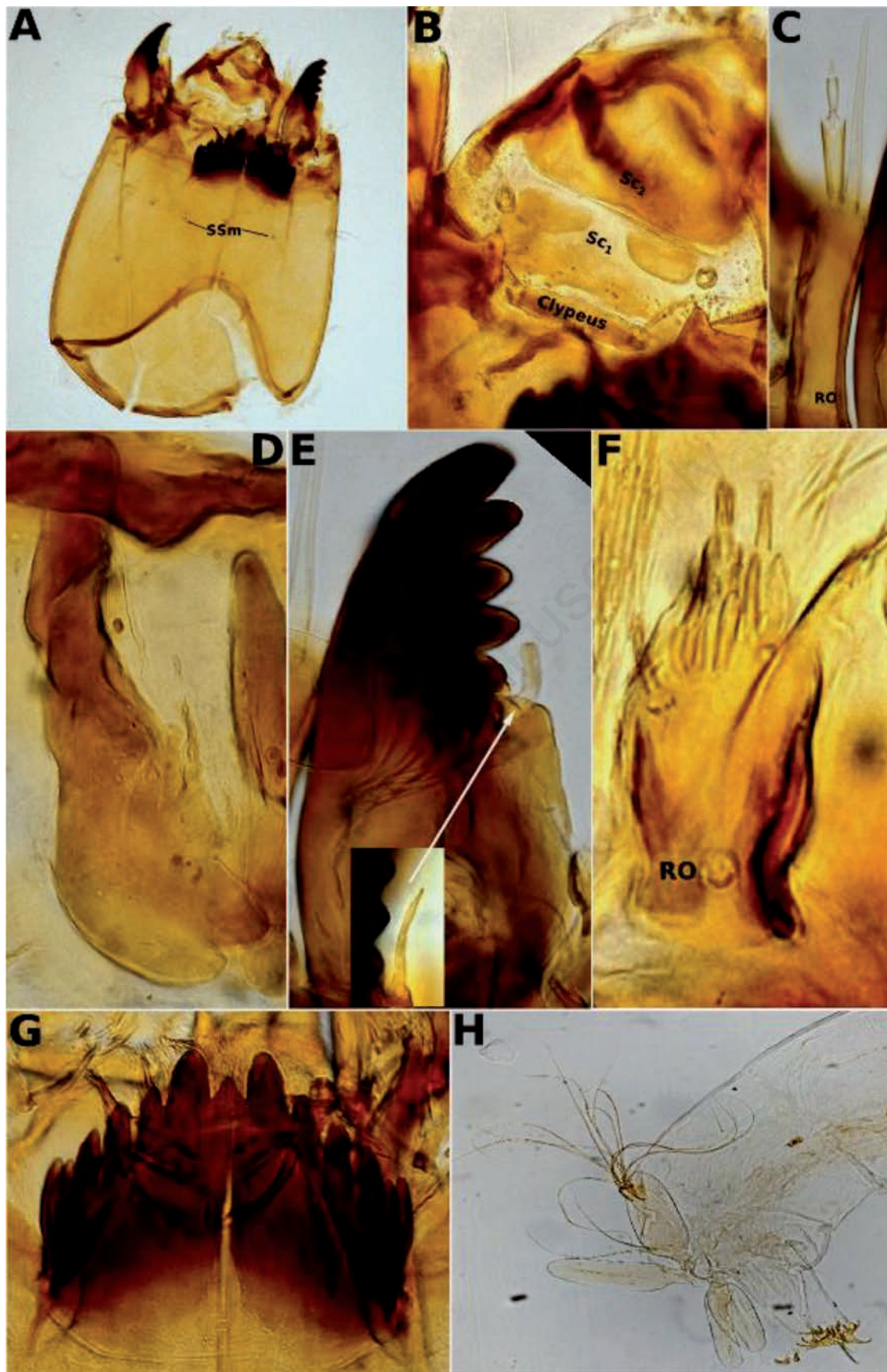


Figure 45. *Eurybapsis cilium* Oliver, larva (A-H). A) Head; B) Labral Sclerites; C) Antenna; D) Premandible; E) Mandibles; F) Maxillary palp; G) Mentum; H) Posterior portion of the larva.

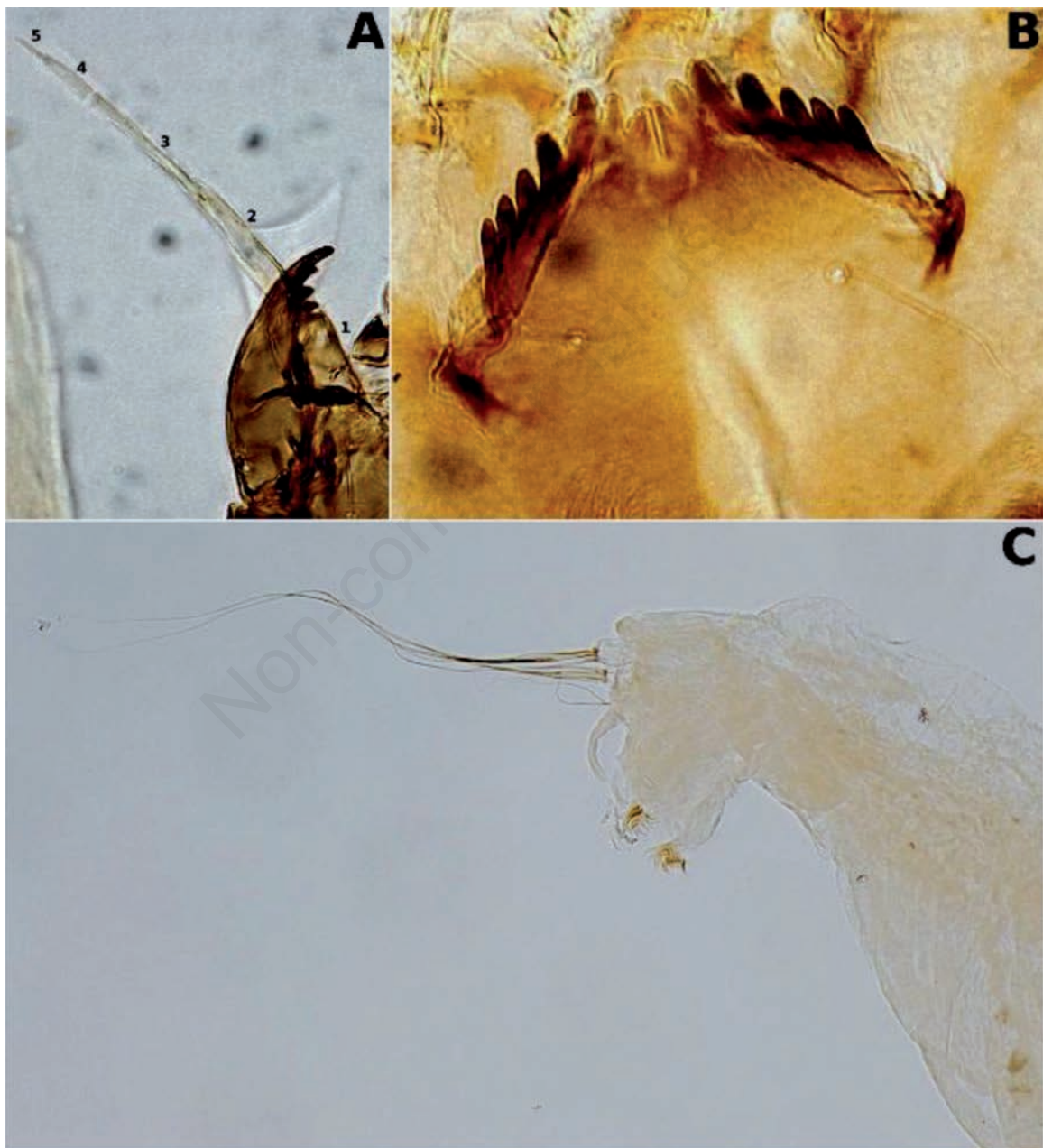


Figure 46. *Heterotanytarsus perennis* Sæther, larva (A-C). A) Antenna and mandible; B) Mentum; C) Posterior portion of the larva.

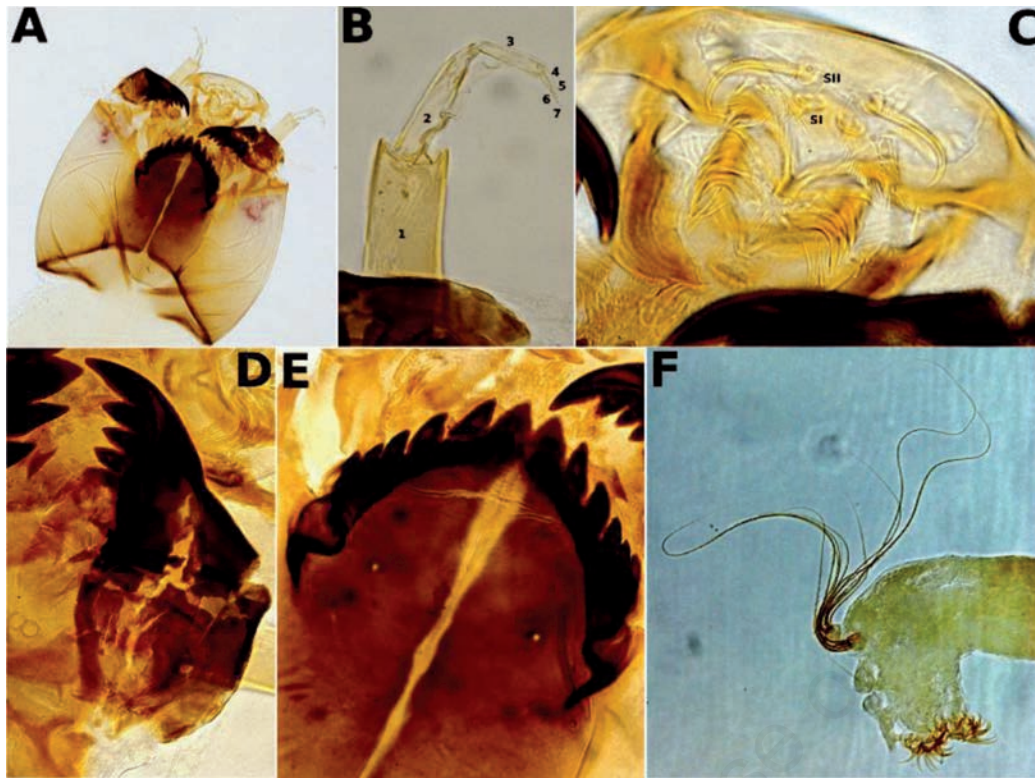


Figure 47. *Heterotrissocladius marcidus* group, larva (A-F). A) Head; B) Antenna; C) Labrum and premandible; D) Mandible; E) Mentum; F) Posterior portion of the larva.

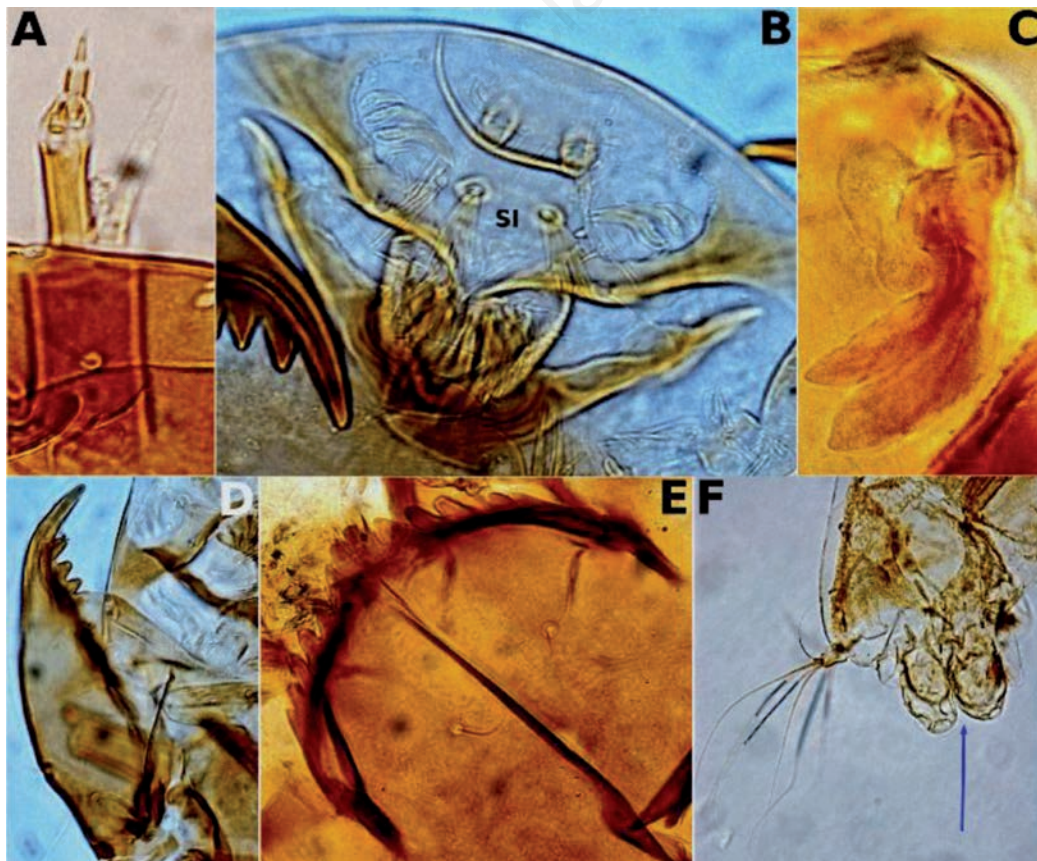


Figure 48. *Hydrobaenus conformis* group, larva (A-F). A) Antenna; B) Labrum; C) Premandible; D) Mandible; E) Mentum; F) Posterior portion of the larva, arrow indicates the anal tubules.

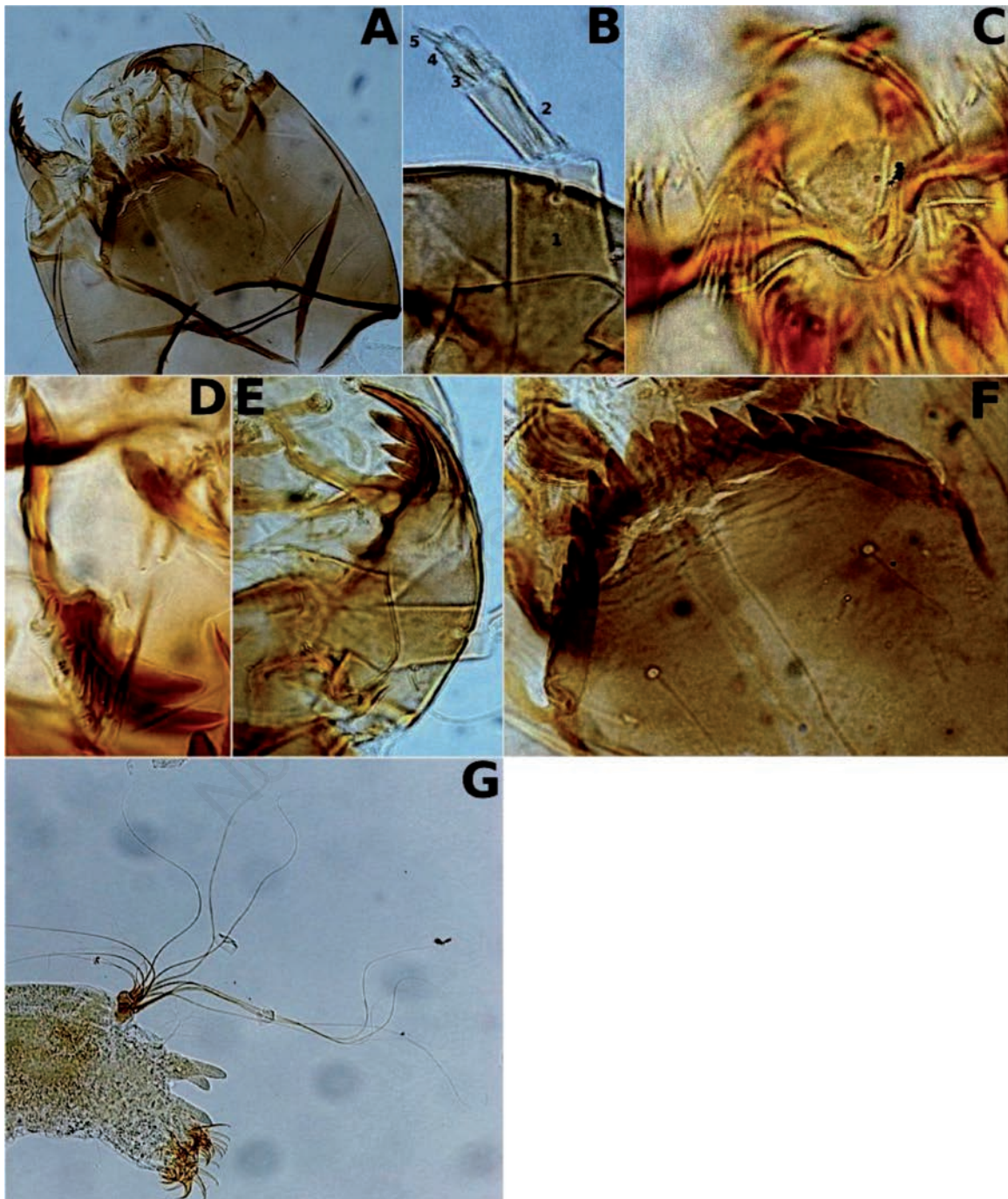


Figure 49. *Hydrobaenus fusistylus* (Goetghebuer), larva (A-G). A) Head; B) Antenna; C) SI; D) Premandible; E) Mandible; F) Mentum; G) Posterior portion of the larva.

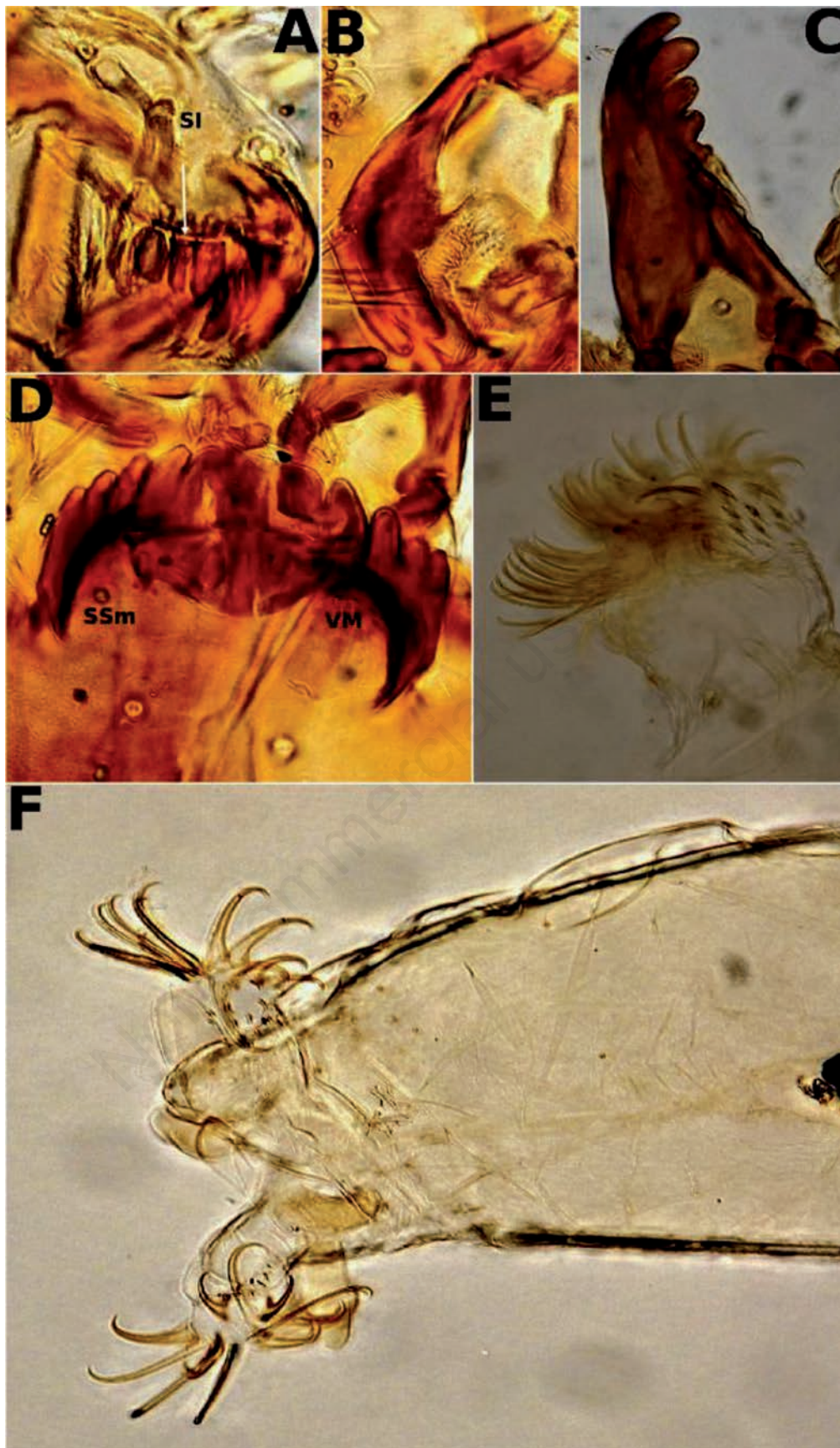


Figure 50. *Hydrosmittia* sp. 1, larva (A-F). A) Labrum, pecten epipharyngis (arrow); B) Premandible; C) Mandible; D) Mentum; E) Anterior parapod; F) Posterior end of the larva.

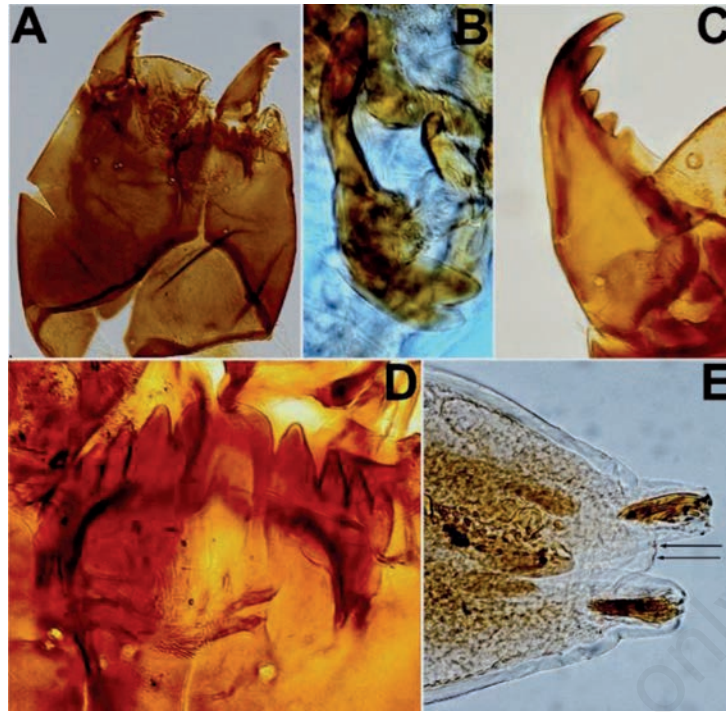


Figure 51. *Hydrosmittia* sp. 2, larva (A-E). A) Head; B) Premandible; C) Mandible; D) Mentum; E) Posterior portion of the larva, arrows indicate the anal setae.

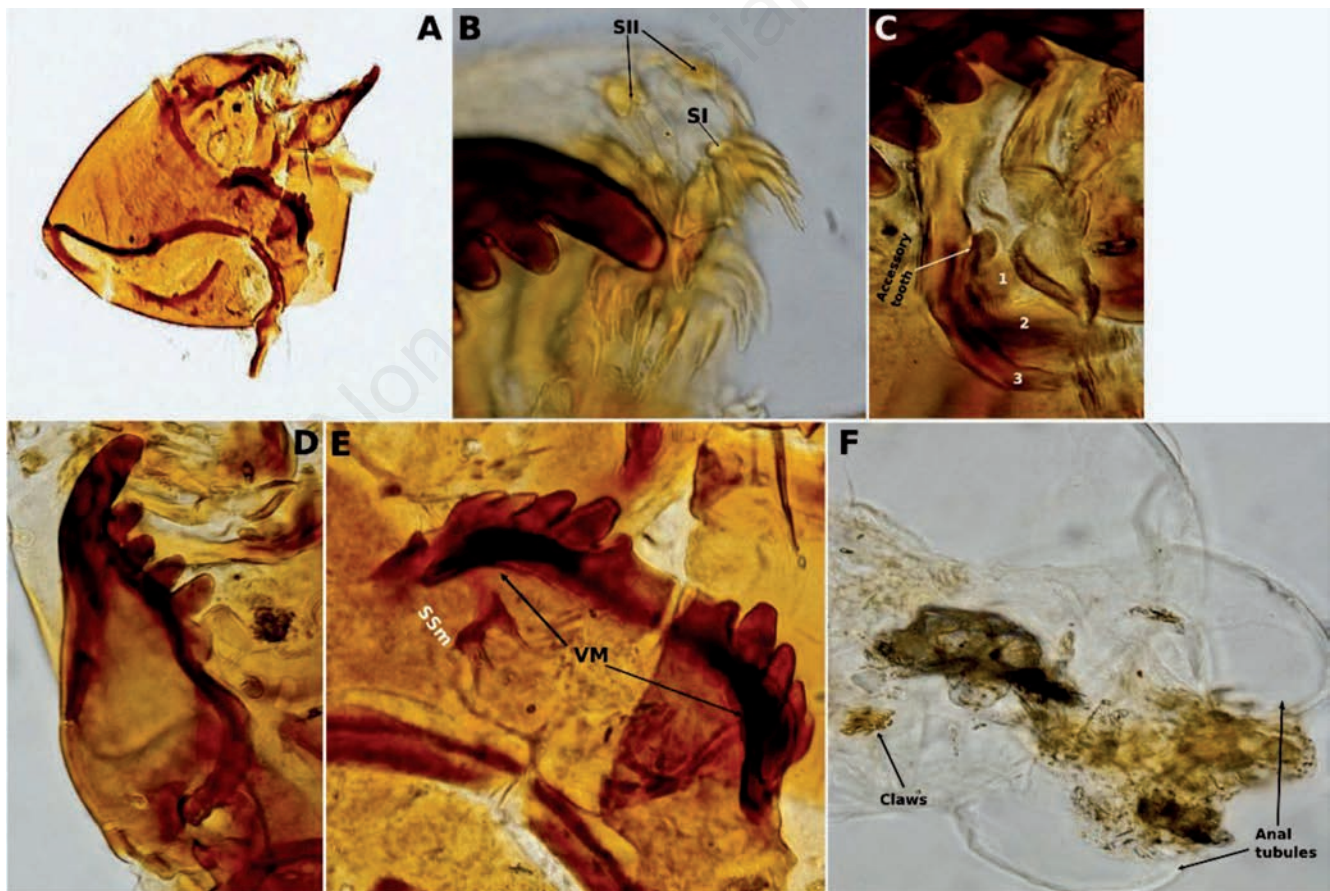


Figure 52. *Hydrosmittia* sp. 3, larva (A-F). A) Head; B) Labrum, SI-SII; C) Premandible; D) Mandible; E) Mentum; F) Posterior portion of the larva.

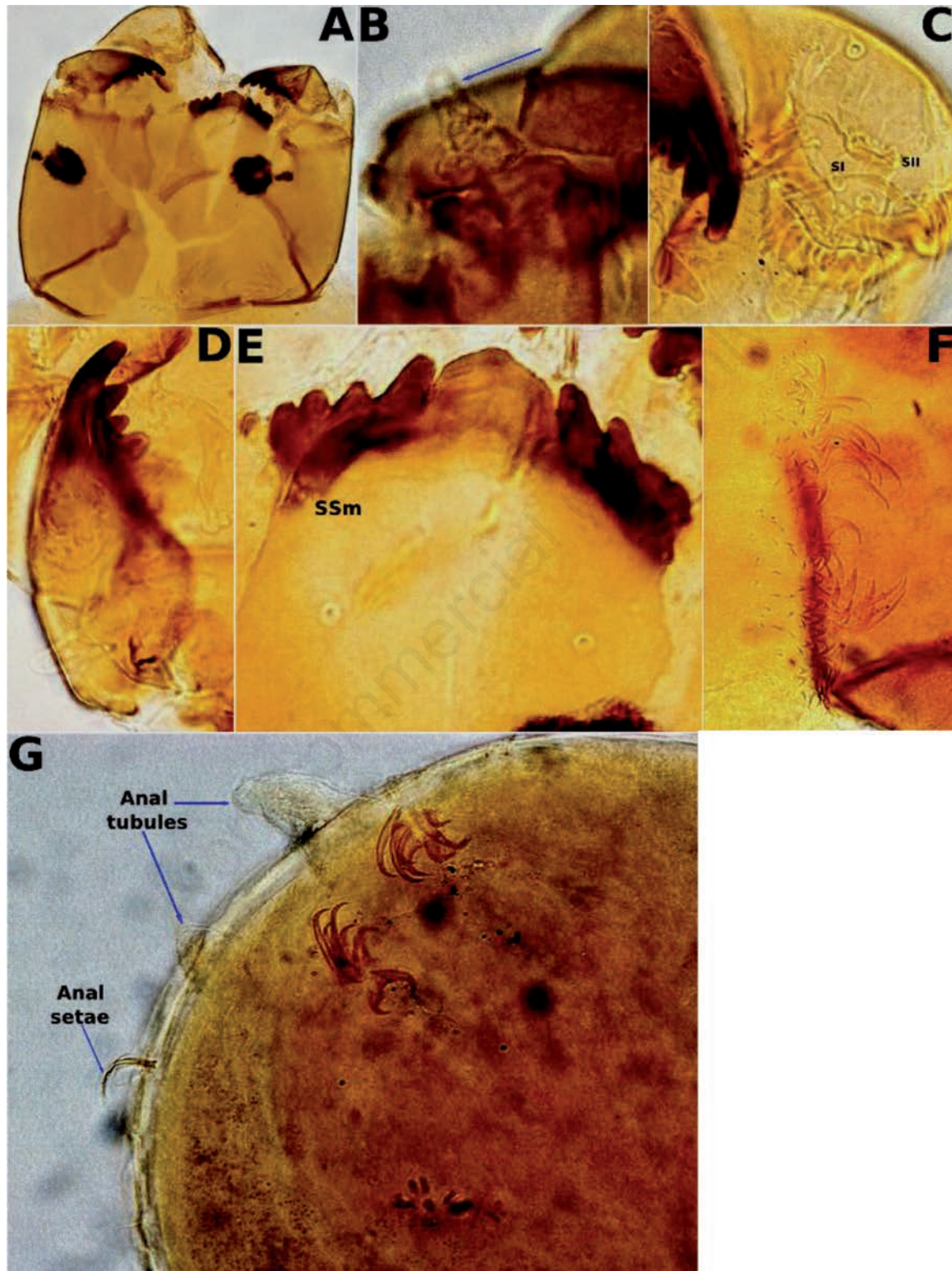


Figure 53. *Hydrosmittia* sp. 4, larva (A-G). A) Head; B) Antenna, arrow indicates the blade; C) Labrum; D) Mandible; E) Mentum; F) Claws of anterior parapods; G) Posterior portion of the larva.

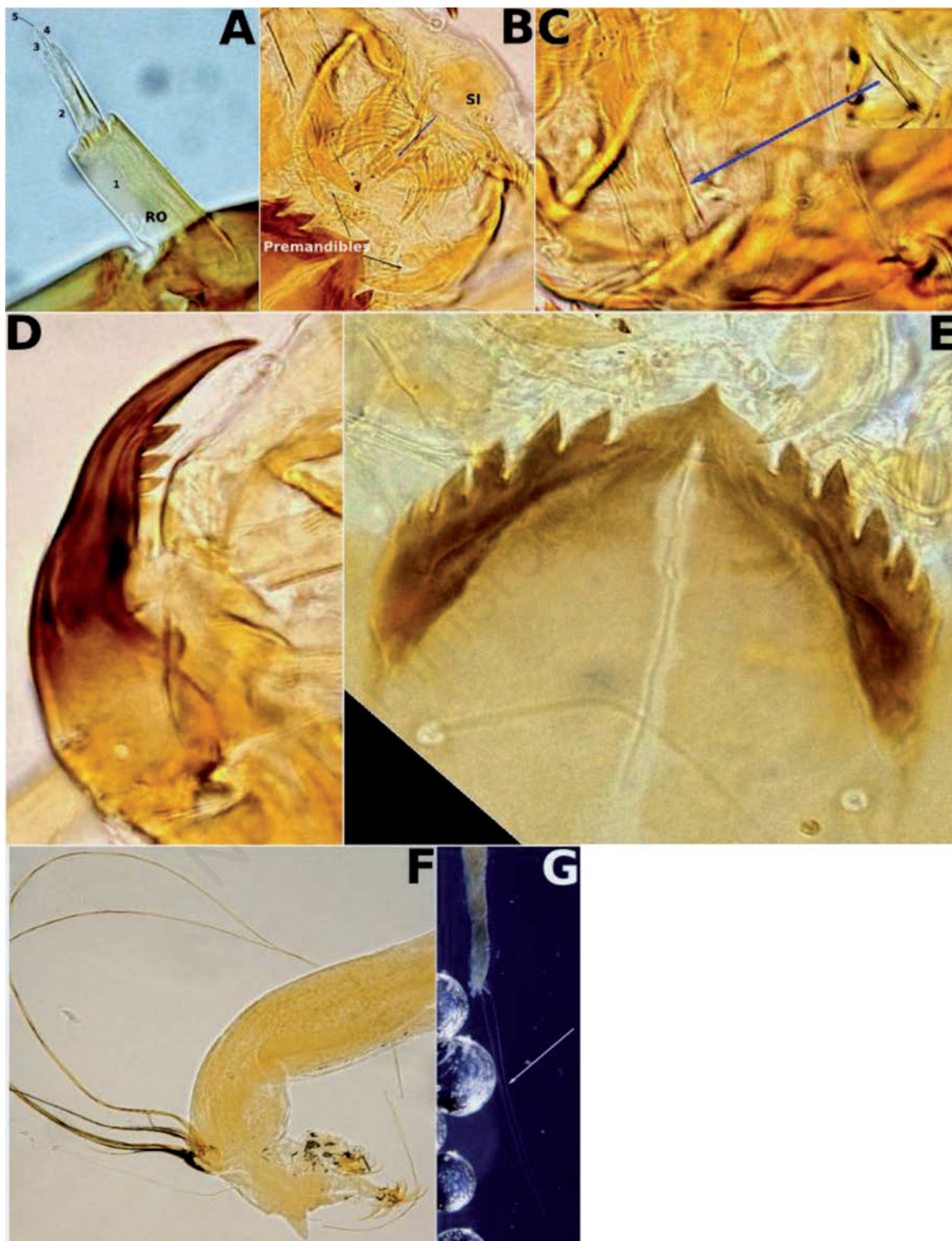


Figure 54. *Krenosmittia* sp. larva (A-G). A) Antenna; B) Labrum, pecten epipharyngis (arrow) and premandibles; C) Maxilla, MP (arrow); D) Mandible; E) Mentum; F) Posterior end of the larva; G) Anal setae (arrow).

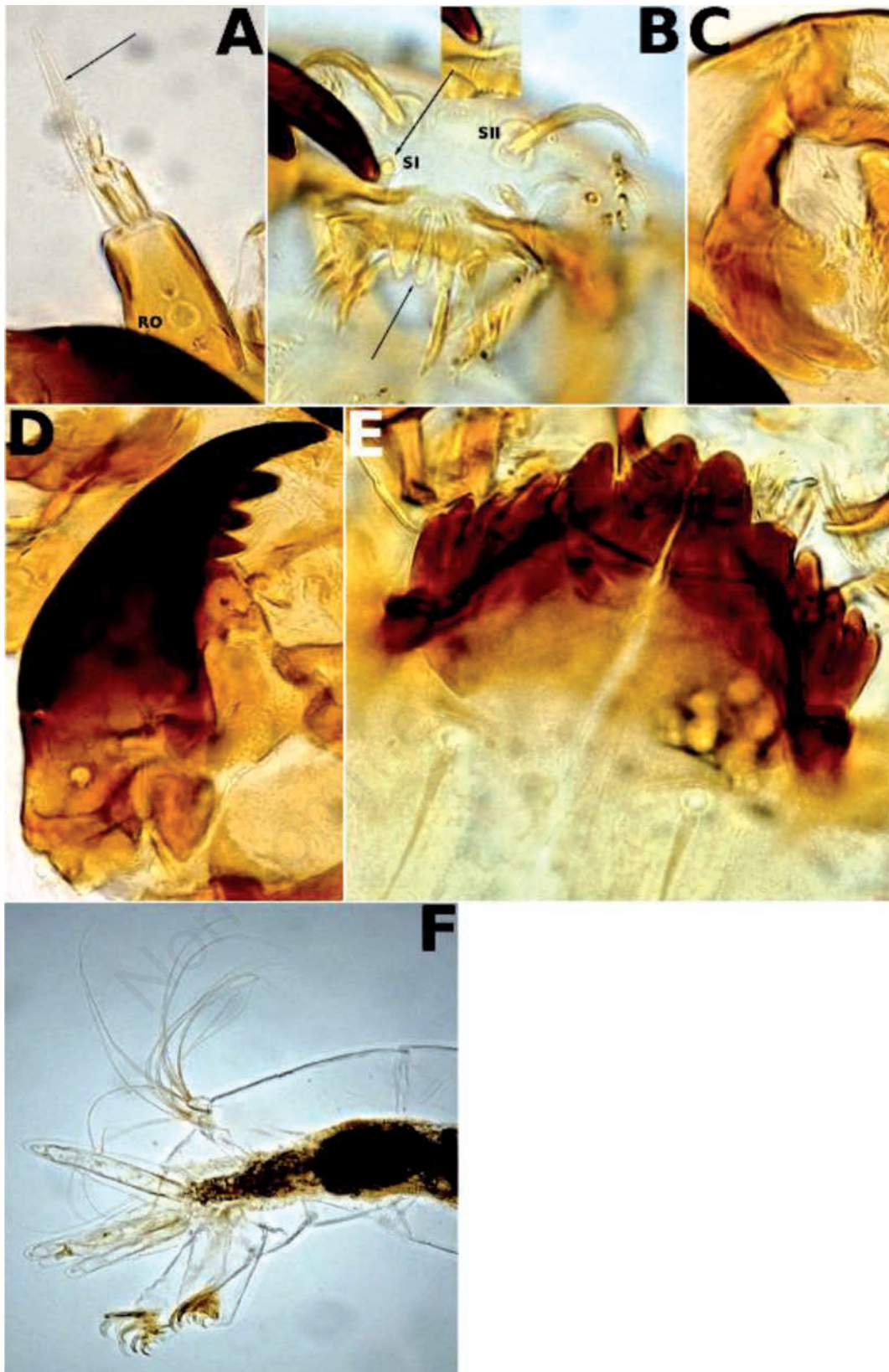


Figure 55. *Limnophyes* sp. 1, larva (A-F). A) Antenna; B) Labrum, arrow indicates the Pecten epipharyngis; C) Premandible; D) Mandible; E) Mentum; F) Posterior portion of the larva.