

Key to the Genera of Male Adult Mayflies of Australia



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Key to the Genera of Male Adult Mayflies of Australia

- 1a Hind wings large, length greater than 1/3 forewing length (Fig. 1) .. 2
- 1b Hind wings small, length less than 1/3 forewing length or absent (Fig. 2) 5

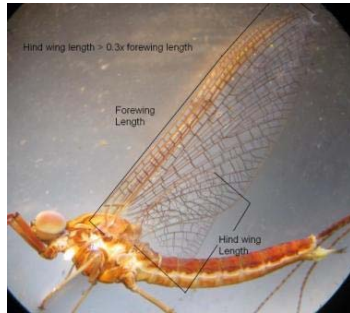


Fig 1. *Coloburiscoides* wings

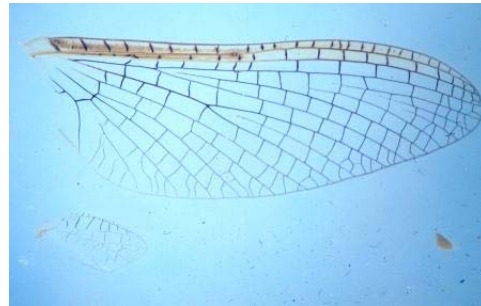


Fig 2 *Jappa* wings

- 2a (1) Tarsal claws of all legs similar, sharp (Fig. 3); three well developed tail filaments in males and females; forceps four segmentedNesameletidae..... *Ameletoides*
- 2b Tarsal claws of mid and hind legs dissimilar, one sharp and hooked, one blunt, pad-like (Fig 4) or pad like only (Fig 10); terminal filament reduced, vestigial or absent; forceps three or four segmented 3



Fig 3. Tarsal claws similar



Fig 4. Tarsal claws dissimilar

- 3a** (2) Forceps four segmented (Fig. 5); only two caudal filaments (Fig 7)
Ameletopsidae..... *Mirawara*
- 3b** Forceps three or four segmented (Fig. 6); three caudal filaments but
 terminal filament reduced/vestigial (Fig 8) 4



Fig 5. Forceps of *Mirawara*

Fig 6. Forceps of *Tasmanophlebia*

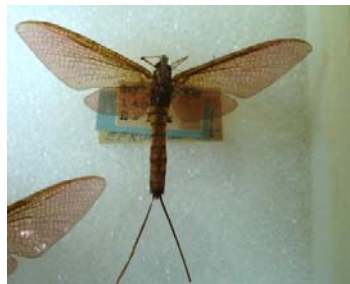


Fig 7. *Mirawara* caudal filaments

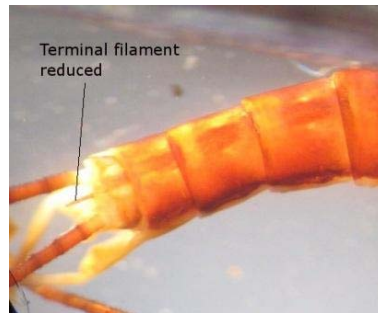


Fig 8. *Coloburiscoides* caudal filaments

- 4a** (3) Fore tarsus with dissimilar claws, one hooked, one blunt (Fig. 9)
Oniscigastridae..... *Tasmanophlebia*
- 4b** Fore tarsal of males with pad-like “claws”, no hooked claw (Fig 10)
Coloburiscidae..... *Coloburiscoides*



Fig 9. Tarsal claws of *Tasmanophlebia*



Fig 10. Tarsal claws of *Coloburiscoides*

5a (1) Forewings with few cross veins; CuP of forewing not strongly curved (Fig 11); hind wing present or absent, if present then with few veins and cross veins (Fig 13) 6

5b Forewings with complete venation and numerous cross veins; CuP of forewing strongly curved (Fig. 12); hind wing present usually with complete venation (Fig. 14) 15

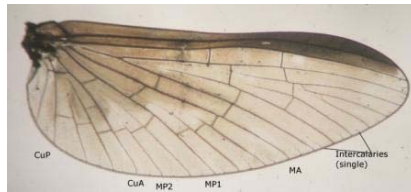


Fig 11. Forewing of *Centropilum*

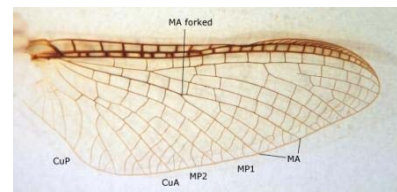


Fig 12. Forewing of *Atalophlebia*

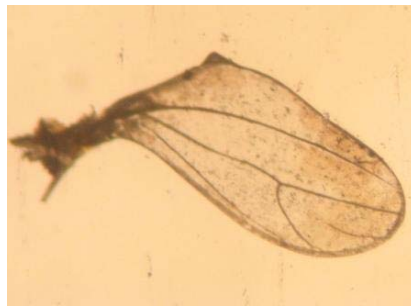


Fig 13. Hindwing of *Offadens*



Fig 14. Hindwing of *Coloburiscoides*

6a (5) Forewings with marginal intercalaries between main veins (Fig. 15); pterostigma with cross veins present; hind wings present or absent;Baetidae..... 10

6b Forewings lacking marginal intercalaries between main veins (Fig. 16); pterostigma lacking cross veins..... 7

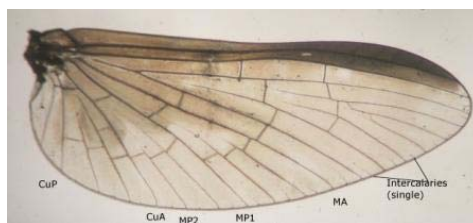


Fig 15 Forewing of *Centropilum*

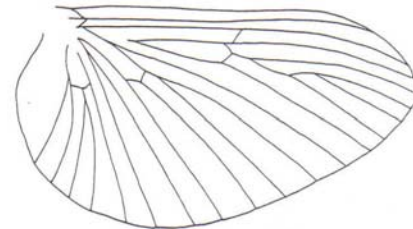


Fig 16. Wing of *Tasmanocoenis*

- 7a (6) Hind wing absent; forewing with MA forked (Fig. 17) Caenidae .. 8
- 7b Hind wing present; hind wing with MA not forked (Fig. 18)
Prosopistomatidae..... *Prosopistoma*

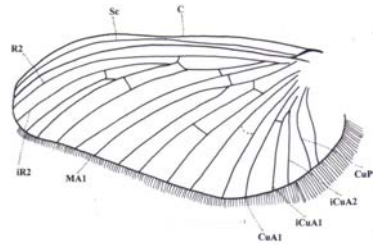
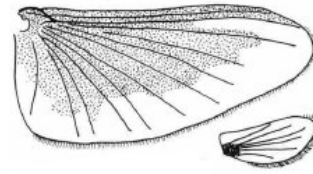


Fig 17. Forewing of *Irpacaenis* with forked MA.



Six longitudinal veins in hindwing

Fig 18. Wings of *Prosopistoma*
 Modified after Campbell and Hubbard (1998)

- 8a (7) Claspers weakly sclerotised, broad and straight, with terminal hook (Fig. 19); styliiger plate and associated sclerites weakly sclerotised; abdominal segments lacking lateral projections *Irpacaenis*
- 8b Claspers strongly sclerotised, narrow, curved to straight, lacking terminal hook (Fig. 20); abdominal segments with or without lateral projections; 9

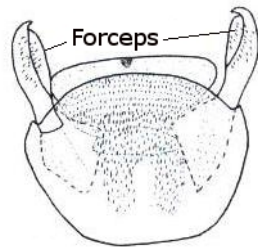


Fig 19. Genitalia of *Irpacaenis*



Fig 20. Genitalia of *Tasmanocoenis*

- 9a (8) Abdominal segments lacking lateral projections (Fig. 21)
*Tasmanocoenis*
- 9b Abdominal segments with lateral projections (Fig. 22)
*Wundacaenis*

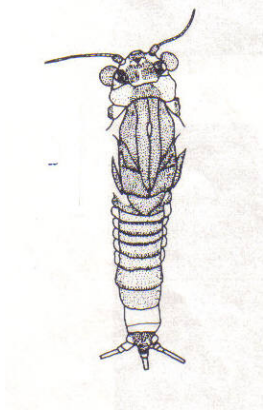


Fig 21. Dorsal view of imago of *Tasmanocoenis*. Modified after Suter (1986).



Fig 22. Dorsal view of imago of *Wundacaenis*. Modified after Suter (1999)

- 10a (6) Hind wing present..... 11
- 10b Hind wing absent..... 12

- 11a (10) Forewings with single intercalaries between main veins (Fig. 23)
*Centroptilum/Offadens*

- 11b Forewings with paired intercalaries between main veins (Fig. 24)
*Offadens/Centroptilum*

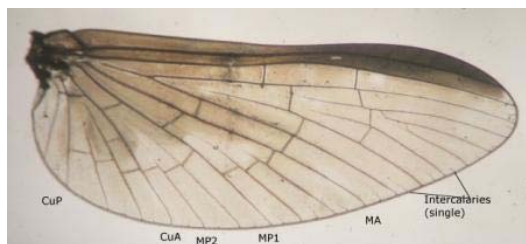


Fig 23. *Centroptilum* forewing with single Intercalaries

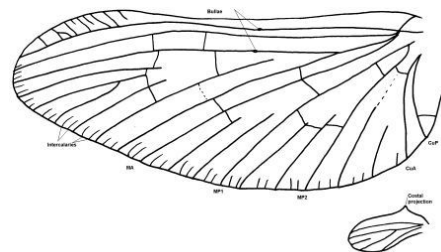


Fig 24. Forewing of *Offadens* with paired intercalaries. Modified after Suter (1986)

- 12a** (10) Forewings with paired intercalaries between main veins (Fig. 24) .. 13
12b Forewings with single intercalaries between main veins (Fig. 25)
*Cloeon*

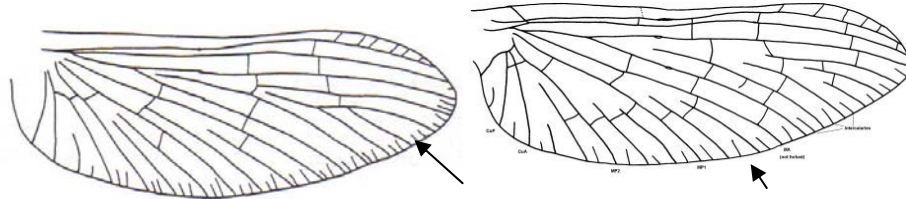
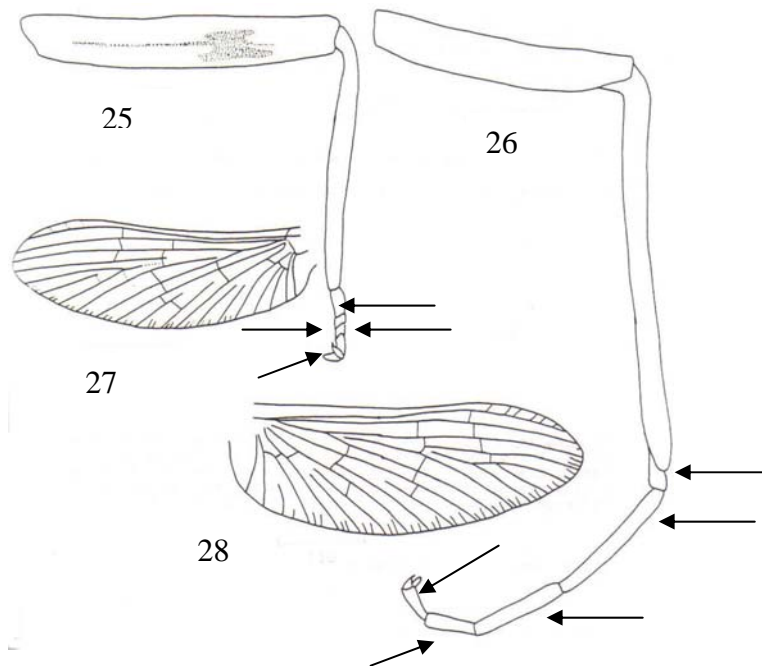


Fig 24. *Pseudocloeon* forewing with paired intercalaries. Modified after Suter (1992)

Fig 25. *Cloeon* forewing with single intercalaries. Modified after Suter (2000).

- 13a** (12) Forelegs with four tarsal segments (Fig. 25); femora of forelegs longer than tibiae; forewing as in Fig. 27 *Platybaetis*
13b Forelegs with five tarsal segments (Fig. 26); femora of foreleg shorter than tibiae; forewing as in Fig. 28 15



Figures 25-28. *Platybaetis* foreleg (25) and forewing (27); *Pseudocloeon* foreleg (26) and forewing (28) with tarsal segments arrowed. Modified after Suter (1992).

- 14a** (13) Turbinate eyes cylindrical and uniform in width, projecting well above head (Fig. 29) *Bungona*
- 14b** Turbinate eyes narrow at base and broad apically (Fig. 30)
..... *Pseudocloeon*

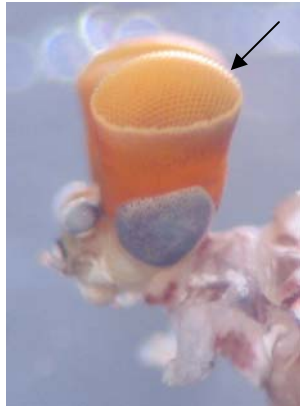


Fig 29. Head and eyes of *Bungona*

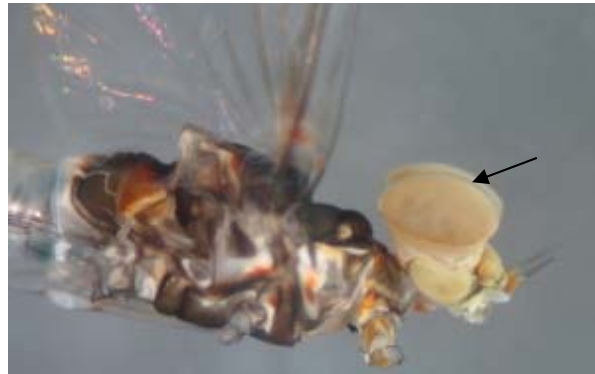


Fig 30 Head and eyes of *Pseudocloeon*.

- 15a** (5) Intercalaries of forewing free and single (Fig. 31) Austremerellidae ..
..... *Austremerella*
- 15b** Intercalaries of forewing not free, attached to main veins (Fig. 32)
.....Leptophlebiidae..... 16

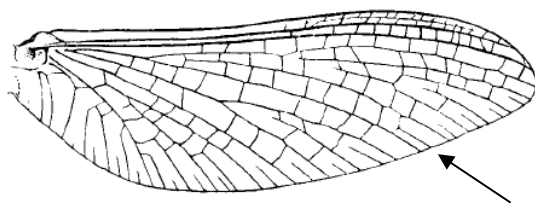


Fig 31 Forewing of *Austremerella*
Intercalaries free. Modified after Riek (1963)

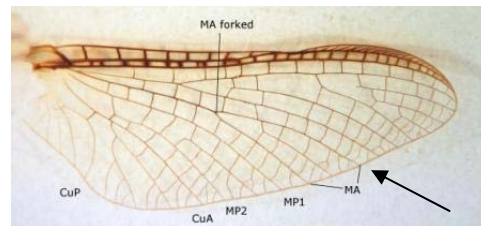


Fig 32. Forewing of *Atalophlebia*
intercalaries not free, attached to main veins

- 16a** (15) Fore tarsal claws similar, slender and hooked (Fig. 33) 17
- 16b** Fore tarsal claws dissimilar, one slender and hooked, one blunt, pad-like (Fig. 34) 27



Fig 33. Tarsal claws similar



Fig 34. Tarsal claws dissimilar

- 17a** (16) Forewing with spots (Fig 35)*Marmenuera*
- 17b** Forewing hyaline lacking spots (Fig 36)18

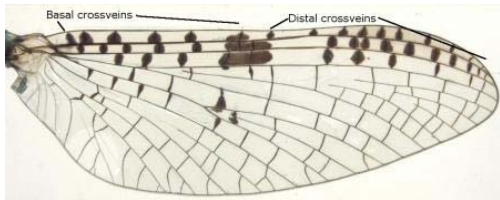


Fig 35. Forewing of *Marmenuera*.

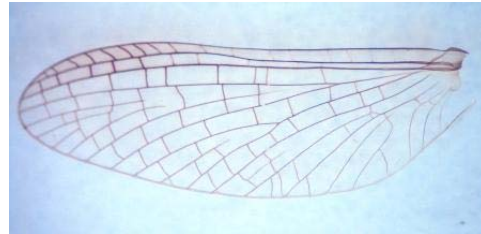


Fig 36. Forewing of *Nousia*.

- 18a** (17) Hind wing small (0.1-0.15x forewing length) (Fig. 37), with large costal projection, MP of hind wing lacking intercalary (Fig. 39); penes fused in basal half, with apical sclerotised curved spines
.....*Nyungara*
- 18b** Hind wing larger (>0.15x forewing length) (Fig. 38), lacking costal projection, MP of hind wing with or without intercalary (Fig. 40); penes separate or fused, with or without sclerotised structures
..... 19

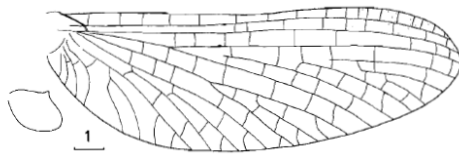


Fig 37. Fore and hind wing of *Nyungara* modified after Dean (1987)

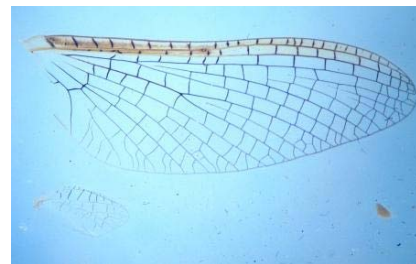


Fig 38. Fore and hind wing of *Jappa*

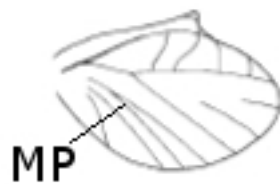


Fig 39 Hind wing of *Nyungara* MP without intercalary - modified after Dean (1987)

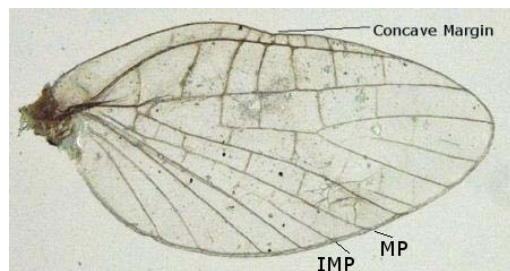


Fig 40. Hind wing of *Loamaggalangta*

19a (18) Forewing appear to lack costal crossveins basal to bullae (they may be present but very faint), ICu1 and ICu2 parallel at wing margins (Fig. 41); costal margin of hindwing convex, with 2-4 costal crossveins, and 3-4 subcostal crossveins; penes fused in basal third (Fig. 43)
 *Thraulophlebia* and *Koornonga*

19b Forewing with obvious costal cross veins basal to bullae, ICu1 and ICu2 divergent to almost parallel at wing margin (Fig. 42); costal margin of hind wing concave or convex, with >four costal and subcostal crossveins; penes separate or fused over more than half length (Fig. 44 and 45) 20

No basal cross veins

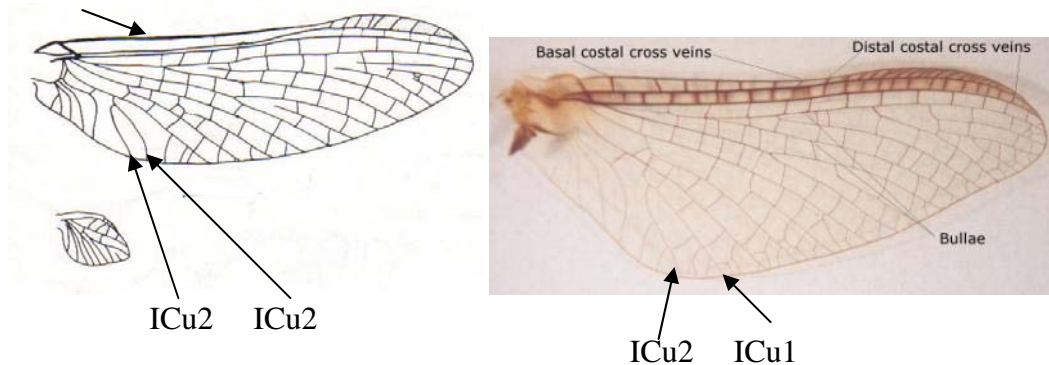


Fig 41. Fore and hind wing of *Koornonga*. Fig 42. Forewing of *Atalophlebia*. Modified after Suter (1986).



Fig 43. Genitalia of *Koornonga*
 Penes fused basal third.
 Modified after Suter (1986).

Fig 44. Genitalia of *Atalophlebia*
 Penes fused over whole length

Fig 45. Genitalia of *Jappa*.
 Separate penes.

- 20a** (19) Costal margin of hind wing concave near mid length (Fig. 46)
 21
- 20b** Costal margin of hind wing convex with raised costal projection in
 basal half (Fig. 47) 24

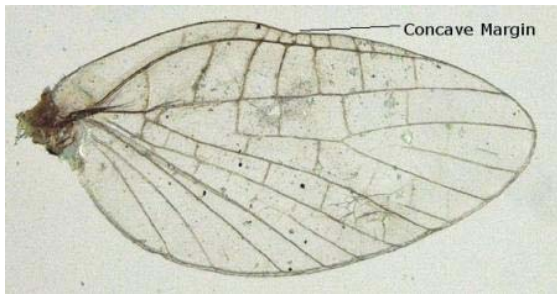


Fig 46. *Loamaggalangta* hindwing.

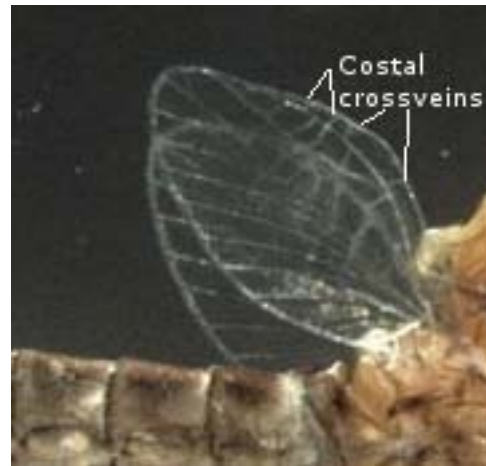


Fig 47. *Manggabora* hindwing.

- 21a** (20) Pterostigma of forewing translucent not pigmented, ICu1 and ICu2
 parallel or converging at wing margin, ICu1 attached to CuA-CuP
 cross vein (Fig. 48); penes slender, fused along whole length with
 minute spines over apical surface

Loamaggalangta

- 21b** Pterostigma of forewing translucent or pigmented, ICu1 and ICu2
 divergent at wing margin, ICu1 attached by crossvein to CuA (Fig. 49);
 penes robust, fused or separate 22

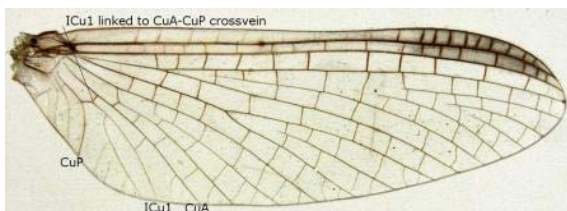


Fig 48. *Loamaggalangta* forewing

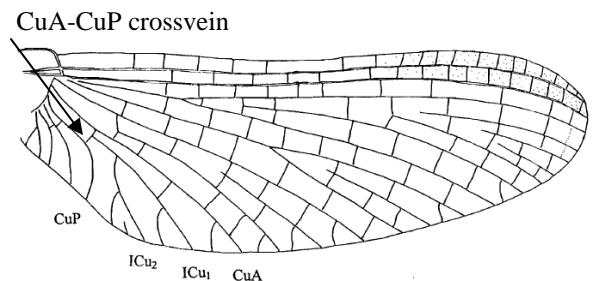


Fig 49. Forewing of *Kaninga* modified after Dean (2000)

- 22a (21)** Pterostigma of forewing tinged with brown, ICu1 not linked to CuP by cross vein (Fig. 50); penes separate over whole length, with sclerotised processes *Garinjuga*
- 22b** Pterostigma of forewing translucent, tinged with white, ICu1 linked to CuA and CuP by crossveins (Fig. 51); penes fused over at least half length, lacking sclerotised processes 23

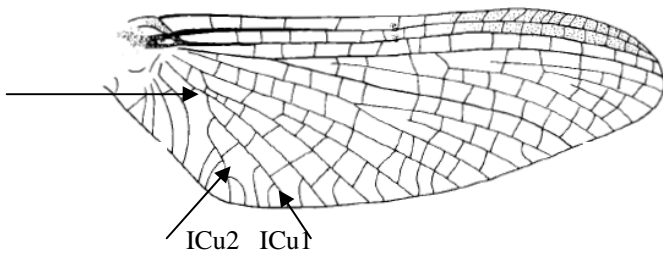


Fig 50. Forewing of *Garinjuga* with divergent ICu1 and ICu2, ICu1 not attached to CuA-CuP crossvein indicated.

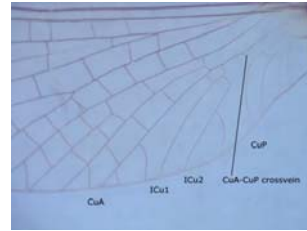


Fig 51. ICu1 and ICu2 parallel, ICu1 attached to CuA-CuP crossvein

- 23a (22)** Pterostigma of forewing with >20 complex (anastomosed) crossveins (Fig. 52); penes with angular apical lobes and minute spines over apical half*Bibulmena*
- 23b** Pterostigma of forewing with <15 simple crossveins (Fig. 53); penes with fleshy lobes, lacking minute spines and not angular at apex *Kanina*

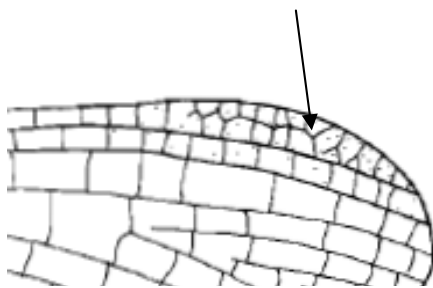


Fig 52. Anastomosed crossveins in pterostigma of *Bibulmena* indicated (modified after Dean 1987).

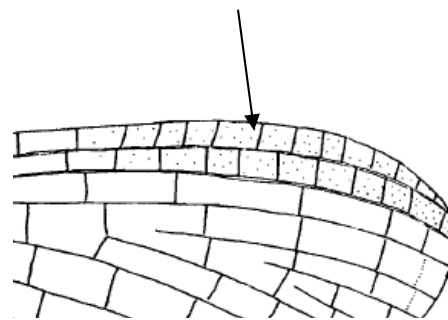


Fig. 53. Simple crossveins in pterostigma of *Kanina* (modified after Dean 2000).

- 24a** (20) Penes with obvious apical sclerotised spines (Fig. 54); tarsal claws with only one opposing flange *Atalomicria*
- 24b** Penes lacking obvious apical spines (Fig. 55); tarsal claws each with opposing flange 25



Fig 54. *Atalomicria* genitalia lateral view. with spines



Fig 55. Penes of *Atalophlebia* ventral view. lacking spines

- 25a** (24) Pterostigma of forewing with complex (anastomosed) or simple crossveins, costal and subcostal crossveins pigmented, usually >17 costal crossveins distal of bullae (Fig. 56) *Atalophlebia*
- 25b** Pterostigma of forewing with simple crossveins, costal and subcostal crossveins not pigmented, usually <15 costal crossveins distal of bullae (Fig. 57) 26

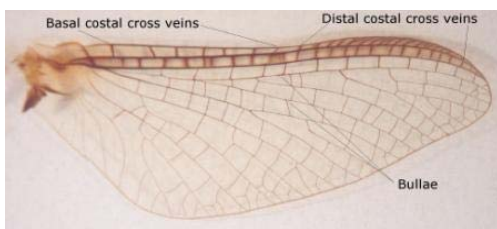


Fig 56. Forewing of *Atalophlebia*

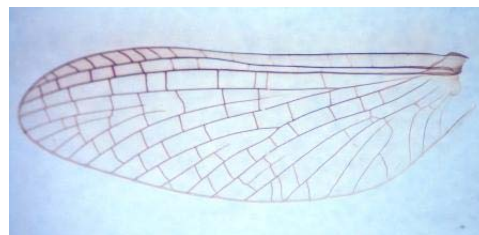


Fig 57. Forewing of *Nousia*.

26a (25) Hind wing with > six costal and subcostal crossveins, MP forked with intercalary (Fig. 58); forewing with ICu1 linked to CuA, ICu1 and ICu2 divergent at wing margin (Fig. 58); penes fused over whole length (Fig. 59)..... *Kalbaybaria*

26b Hind wing with < four costal and subcostal crossveins, MP forked without intercalary (Fig. 60); forewing with ICu1 linked to CuA by crossvein, ICu1 and ICu2 parallel at wing margin (Fig 61); penes fused 0.6x length, but may appear fused over whole length

..... *Nousia*

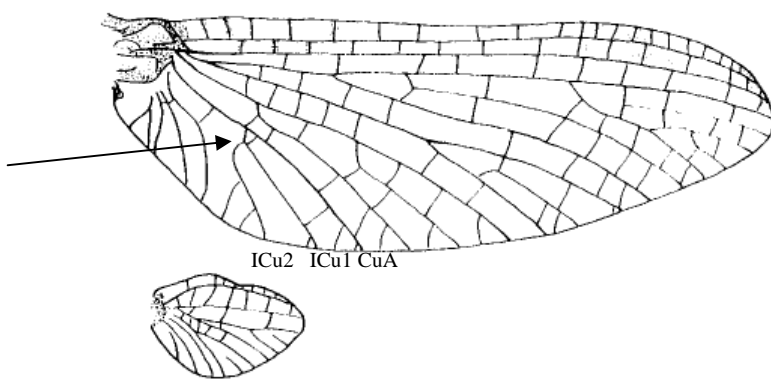


Fig 58. Fore and hind wing of *Kalbaybaria* with forked MP indicated and ICu1 linked to CuA indicated modified after Campbell (1993).

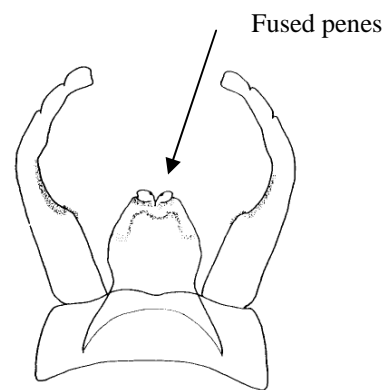


Fig 59. Genitalia of *Kalbaybaria* with fused penes modified after Campbell (1993).

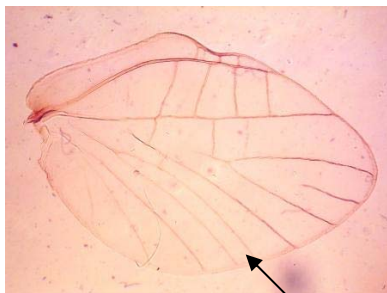


Fig 60. Hindwing of *Nousia*

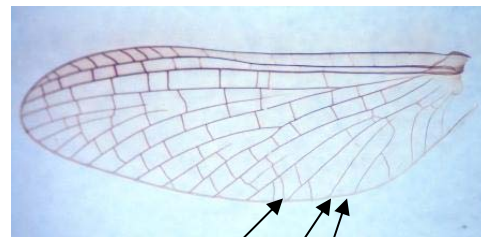


Fig 61. Forewing of *Nousia*.

- 27a (16)** Hind wing with large costal projection, venation reduced with only one costal and subcostal crossvein (Fig. 62) *Thraulus*
- 27b** Hind wing lacking large costal projection and with > four costal and > five subcostal crossveins (Fig. 63) 28

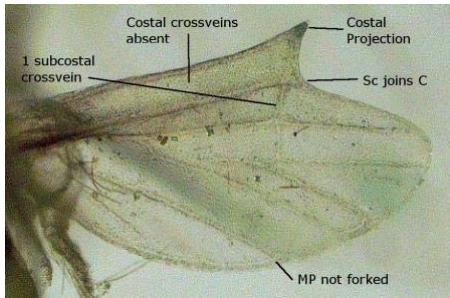


Fig 62. Hindwing of *Thraulus*.



Fig 63. Hindwing of *Jappa*.

- 28a (27)** Penes fused over part of length, greater than half length (Fig. 64) 29
- 28b** Penes separate over greater than half length (Fig. 65) 31



Fig 64. Genitalia of *Manggabora* ventral view.



Fig 65. Genitalia of *Jappa* ventral view.

29a (28) Costal space of forewing basal to bullae lacking crossveins, if present very weakly developed and difficult to see, distally with <10 crossveins (Fig. 66); MP of hind wing lacking an intercalary (Fig. 68).....30

29b Costal space of forewing basal to bullae with six to eight crossveins, distally with > 10 crossveins (Fig. 67); MP of hind wing with an intercalary (Fig. 69); penes lacking a ventral projection*Austrophlebioides*

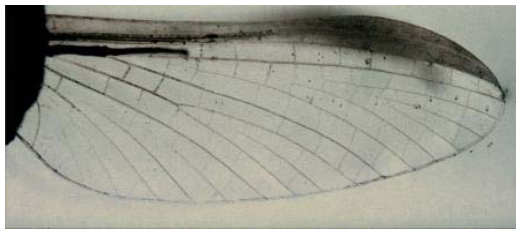


Fig 66. Forewing of *Manggabora* lacking basal costal crossveins.

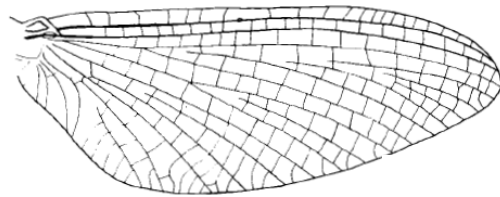


Fig 67. Forewing of *Austrophlebioides* with basal costal crossveins (modified after Campbell and Suter (1986).

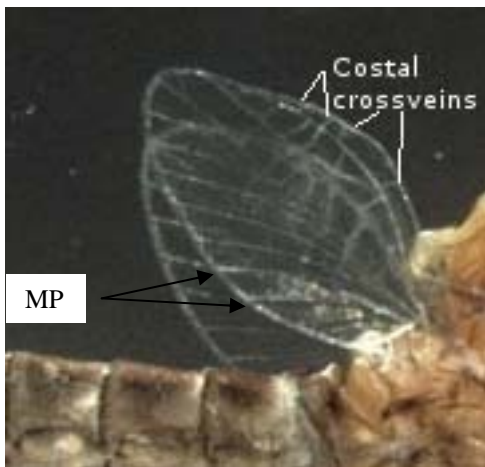


Fig 68. Hindwings of *Manggabora* with MP lacking intercalary indicated.

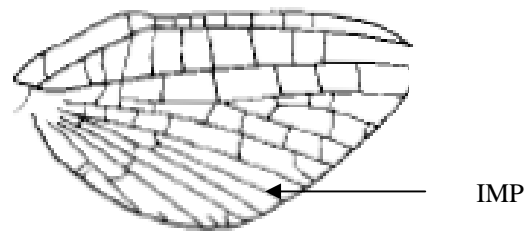


Fig 69. Hindwing of *Austrophlebioides* with an intercalary in MP. Modified after Campbell and Suter (1988).

- 30a** (29) Penes with sharp apical spines and lacking ventral projection; styliger plate deeply cleft *Riekophlebia*
- 30b** Penes with ventral projection (Fig. 70); styliger plate not deeply cleft *Manggabora*



Fig 70. Lateral view of penes of *Manggabora*.

- 31a** (28) Penes with spines at base or apex (Fig. 71) *Tillyardophlebia*
- 31b** Penes lacking spines (Fig. 72) 32

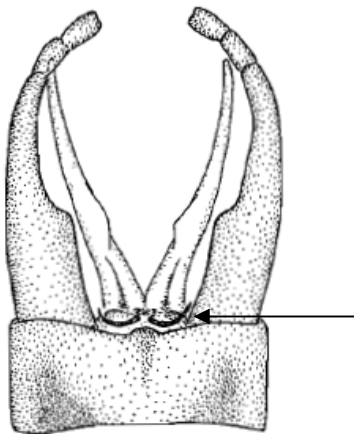


Fig 71. Ventral view of genitalia of *Tillyardophlebia* with spines indicated modified after Dean (1997).

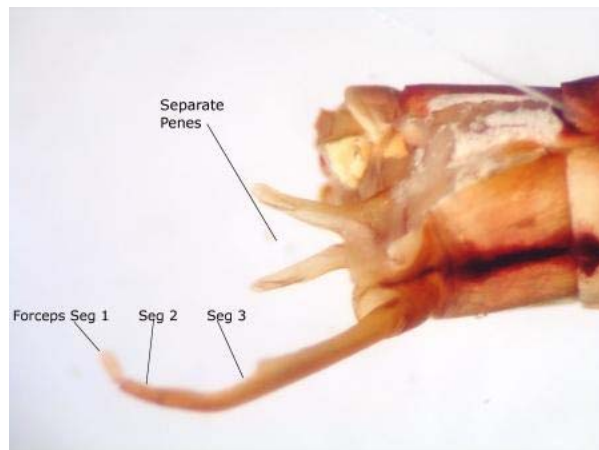


Fig 72. Ventral view of genitalia of *Jappa*.

- 32a (31)** Costal space of forewing basal to bullae lacking crossveins, if present very weakly developed and difficult to see (Fig. 73); apex of penes hooked *Neboissophlebia*
- 32b** Costal space of forewing basal to bullae with six to eight crossveins (Fig. 74); penes simple or with a small ventral knob only 33

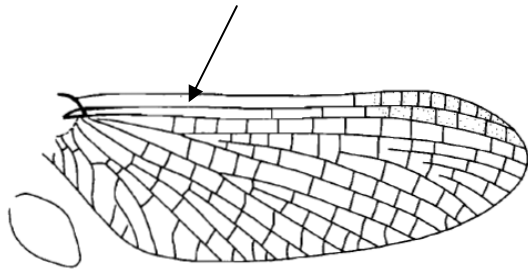


Fig 73. Forewing of *Neboissophlebia* modified after Dean (1988) showing absence of basal costal crossveins.

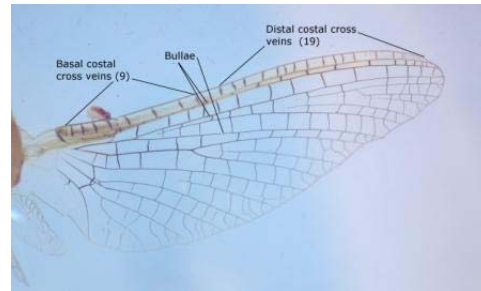


Fig 74. Forewing of *Jappa*.

- 33a (32)** MP of hind wing forked with intercalary present (Fig. 75); penes with ventral medial knob *Kirrara*
- 33b** MP of hind wing if forked lacking an intercalary (Fig. 76); penes simple lacking ventral projections 34

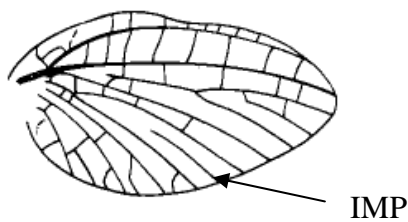


Fig 75. Hind wing of *Kirrara* with Intercalary indicated Modified after Campbell and Peters (1986).

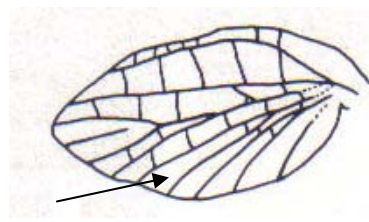


Fig 76. Hindwing of *Ulmerophlebia* lack of intercalary (IMP) indicated Modified after Suter (1986).

- 34a** (33) Sc of hind wing joins costal margin at 0.75 wing length (Fig. 77);
penes short and separate (Fig. 78) *Ulmerophlebia*
- 34b** Sc of hind wing joins costal margin at >0.8 wing length (Fig. 79);
penes long and separate (Fig. 80) *Jappa*

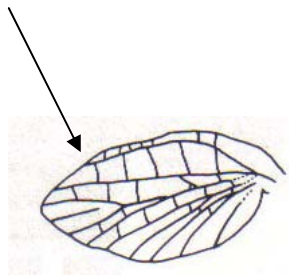


Fig 77. Hind wing of *Ulmerophlebia* with Sc joining costal margin shown. (Modified after Suter 1986).

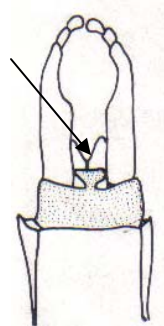


Fig 78. Genitalia of *Ulmerophlebia*. (Modified after Suter 1986)

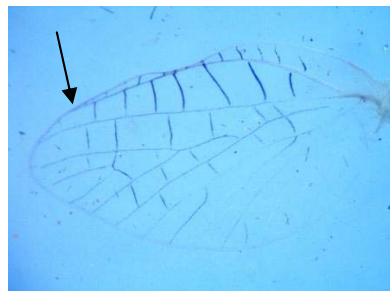


Fig 79. Hind wing of *Jappa* with Sc joining costal margin shown



Fig 82. Genitalia of *Jappa*

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