

# An Enigma for decoding the enigmatic Berothidae

Identification keys of the Berothidae (Neuroptera: Neuropterida) on generic level, exemplarily demonstrated for the Australian region

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The globally widespread Berothidae with about 110 known species in 24 genera mainly occur in subtropical and tropical regions. Our project comprises identification keys and distribution maps for all genera. We operate with key regions that approximately represent the biogeographical regions. Exemplarily we present an identification key and a distribution map of the Australian region which considers 24 species in 8 genera.

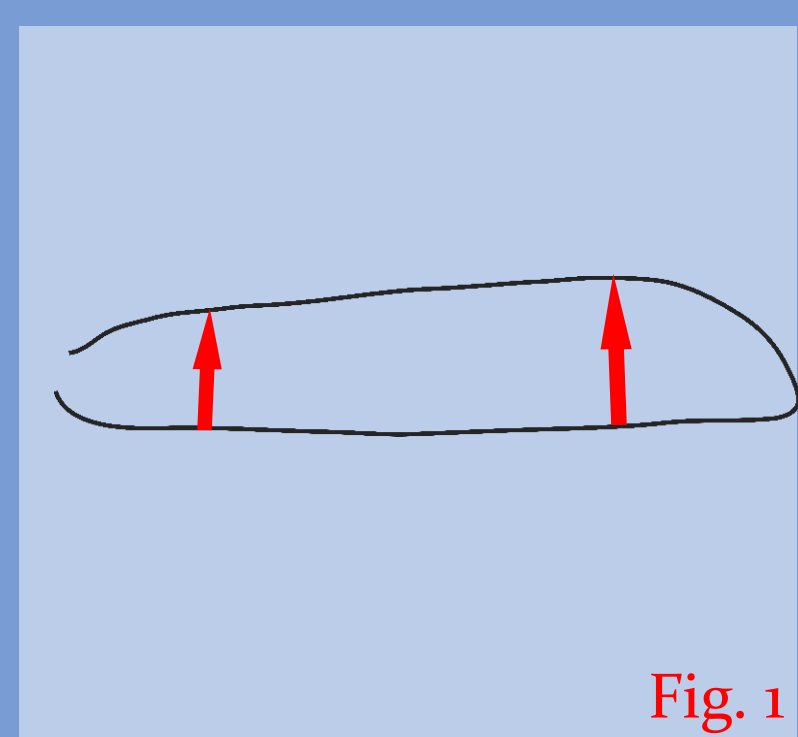


Fig. 1

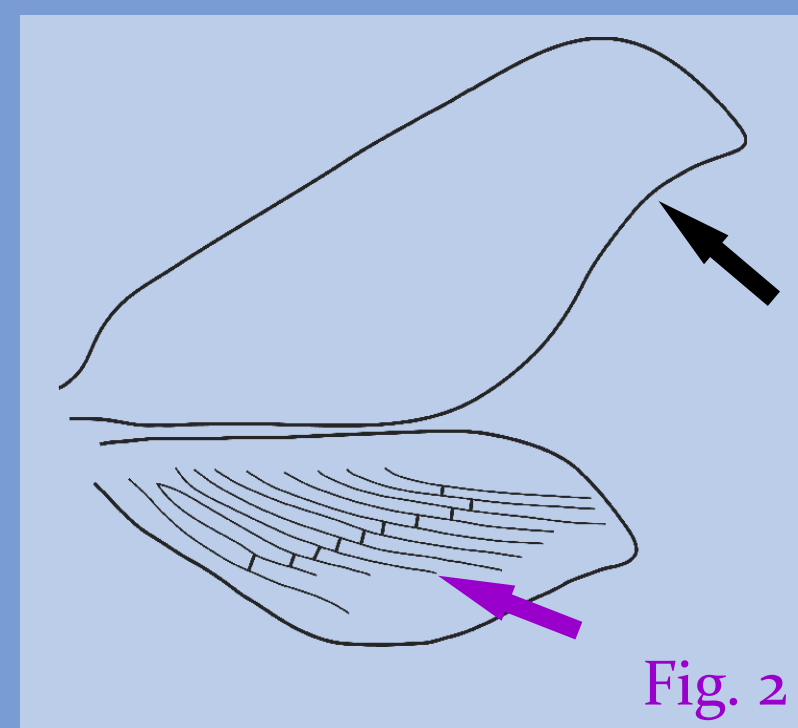


Fig. 2

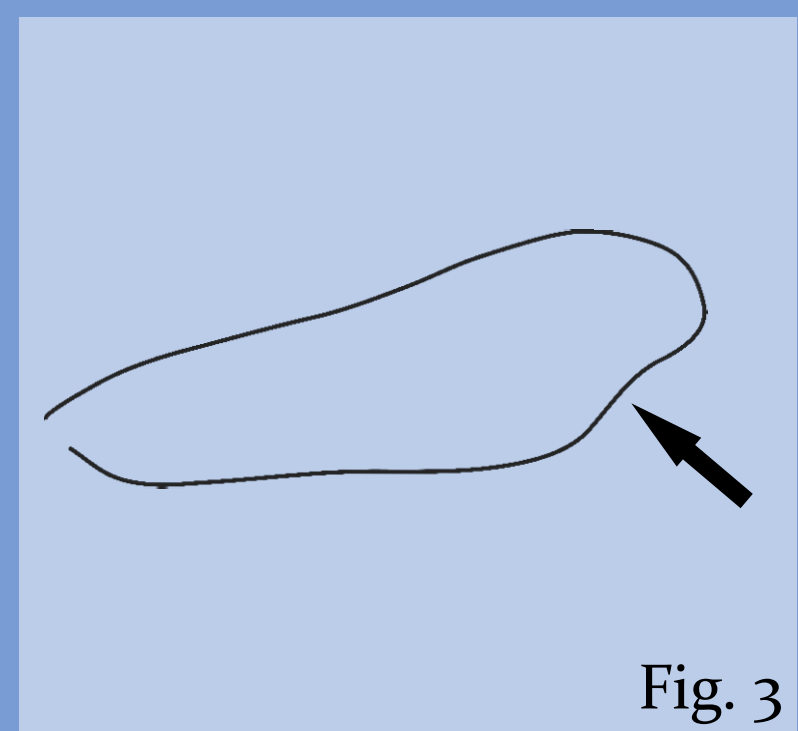


Fig. 3

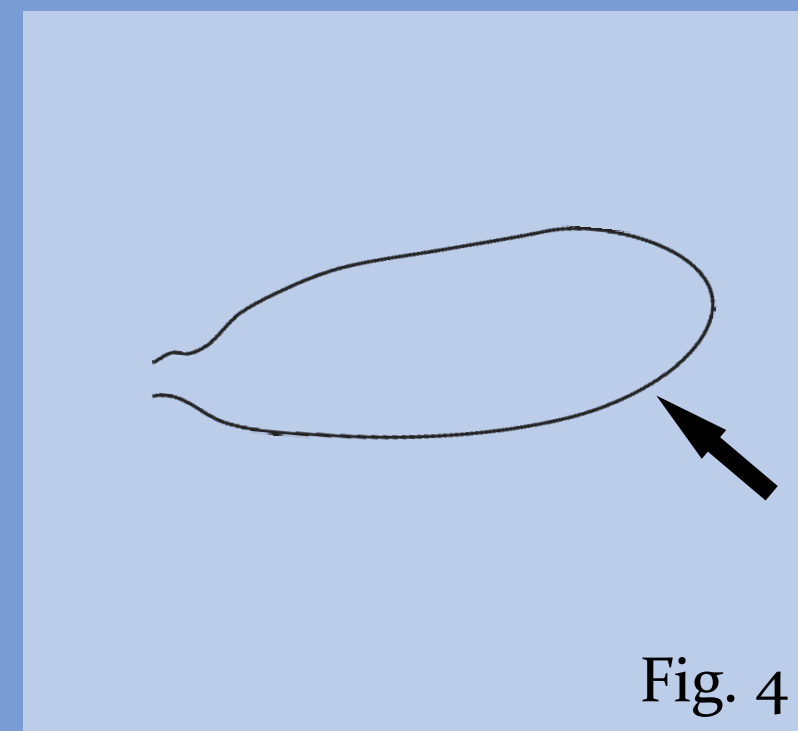


Fig. 4

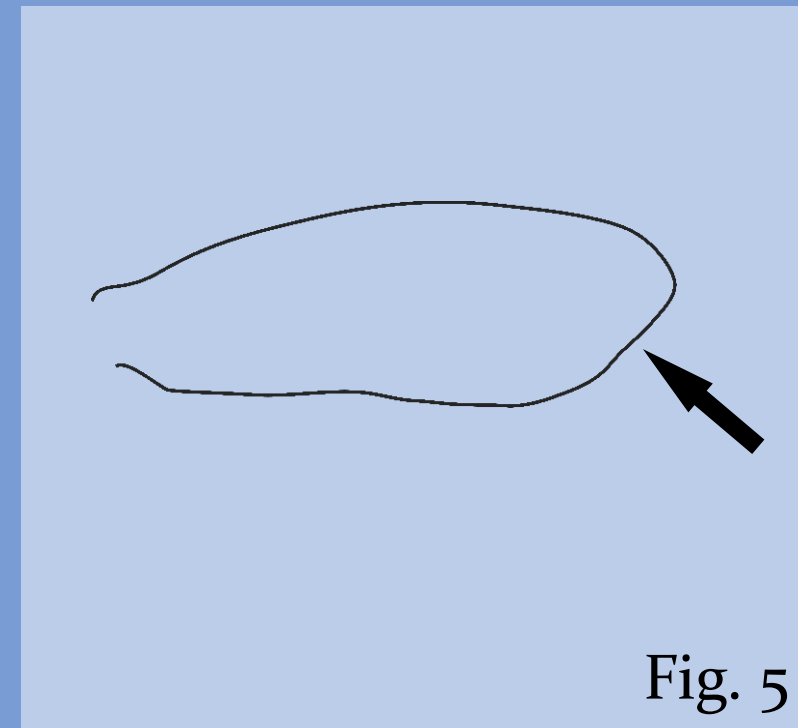


Fig. 5

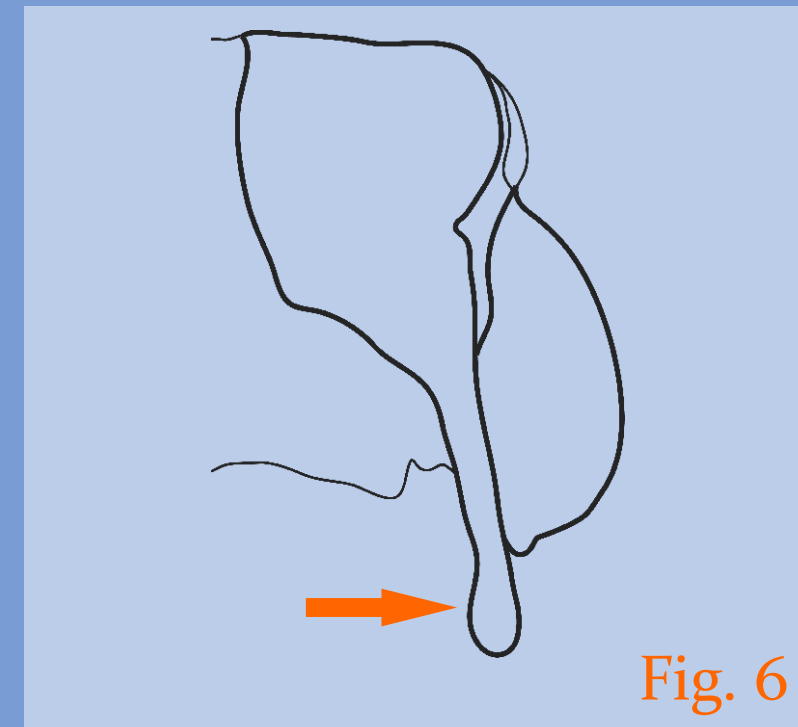


Fig. 6

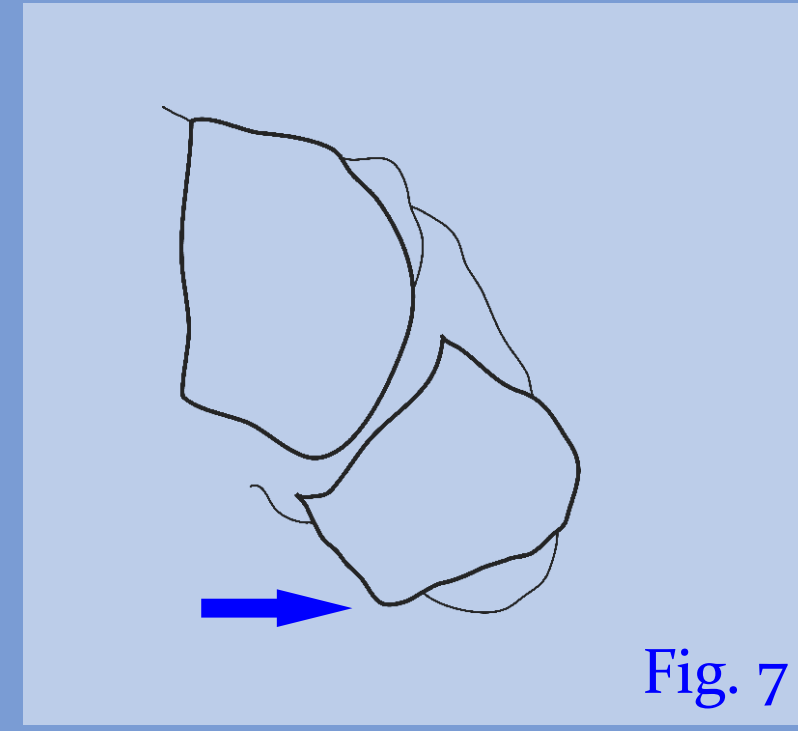


Fig. 7

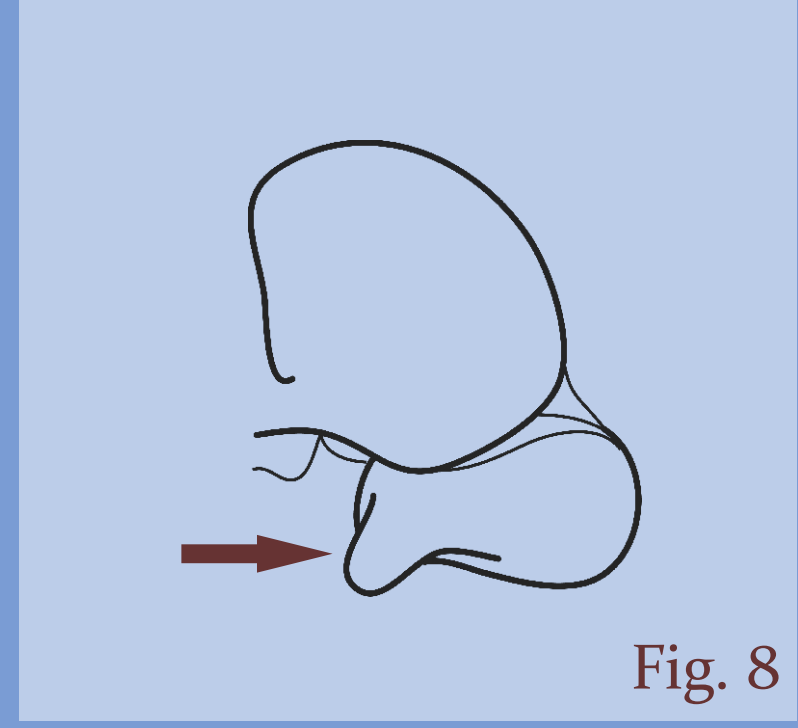


Fig. 8

- 1) Occurring only in New Zealand.....*Protobiella*
- Occurring in Australia.....2
- 2) Forewing proximally hardly smaller than distally (Fig. 1).....*Stenobiella*
- Forewing proximally clearly smaller than distally.....3
- 3) Forewing falcate (Fig. 2) or sinuate (Fig. 3).....4
- Forewing rounded (Fig. 4) or subsinuate (Fig. 5).....male 9, female 5
- 4) Hindwing with row of gradates (Fig. 2).....*Isoscelipteron*
- Hindwing without gradates.....*Trichoma*
- 5) Tergite 9 + ectoproct with pseudohypocaudae (Fig. 6).....*Austroberothella*
- Tergite 9 + ectoproct without pseudohypocaudae.....6
- 6) Gonocoxites 9 without hypocaudae (Fig. 7).....*Trichoberotha*
- Gonocoxites 9 with hypocaudae (Figs 8, 9).....7
- 7) Hypocaudae short, wart like (Fig. 8).....*Trichoma*
- Hypocaudae long, hose like (Fig. 9).....8
- 8) Pronotum with “brush” (Fig. 10).....*Spermophorella disseminata* group
- Pronotum inconspicuous without “brush” of scale like bristles.....9
- 9) Bursa copulatrix basally rolled up like a ball (Fig. 11).....*Quasispermophorella*
- Basal part of bursa copulatrix simple (Fig. 12).....*Spermophorella goobita*
- 10) Sternite 9 of male with spectacular spines (Fig. 13).....*Austroberothella*
- Sternite 9 of male without spectacular spines.....11
- 11) Gonocoxites 10 without loops.....*Trichoberotha*
- Gonocoxites 10 with loops (Figs 14, 15).....12
- 12) Gonocoxites 10 with 8, up to 10 loops (Fig. 14).....*Quasispermophorella*
- Gonocoxites 10 with only a few loops (Fig. 15).....*Spermophorella*

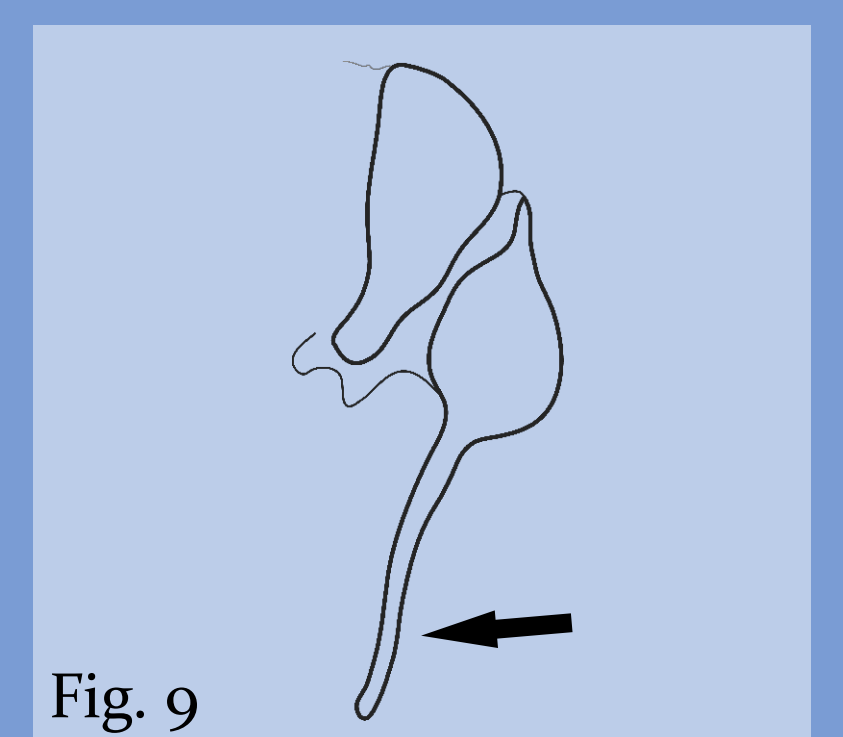


Fig. 9

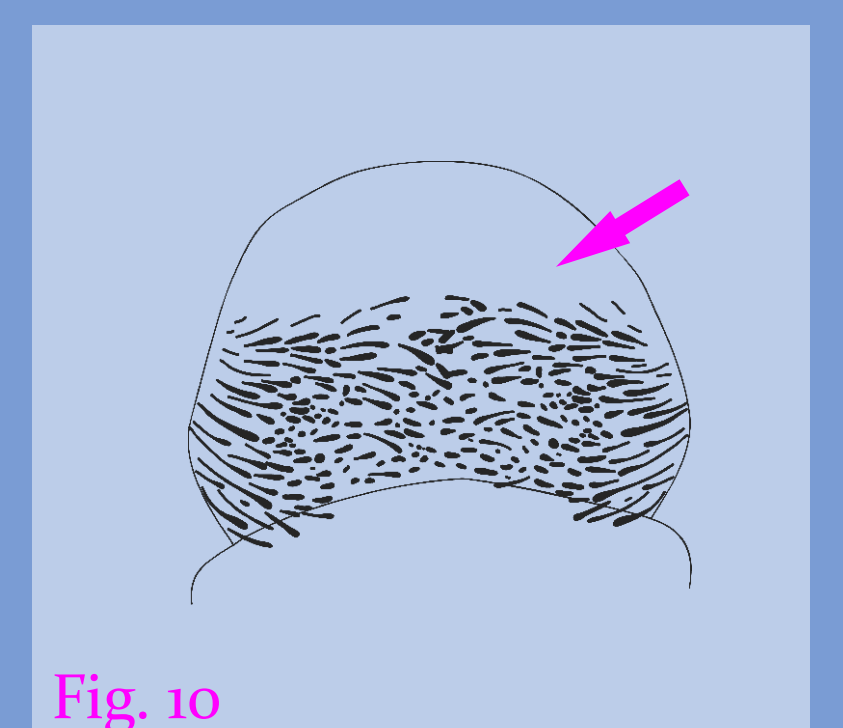


Fig. 10

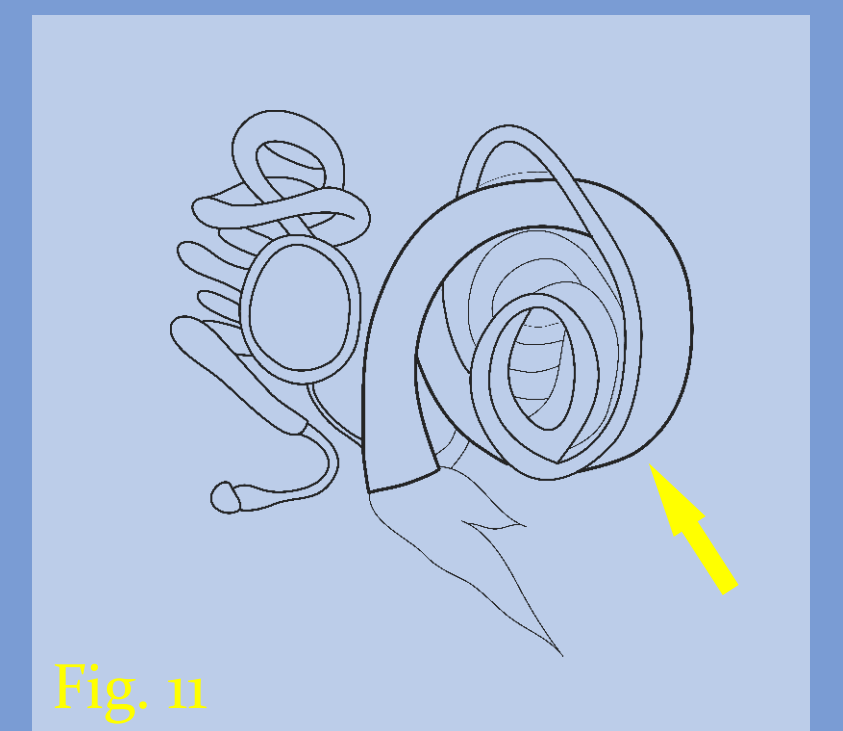


Fig. 11

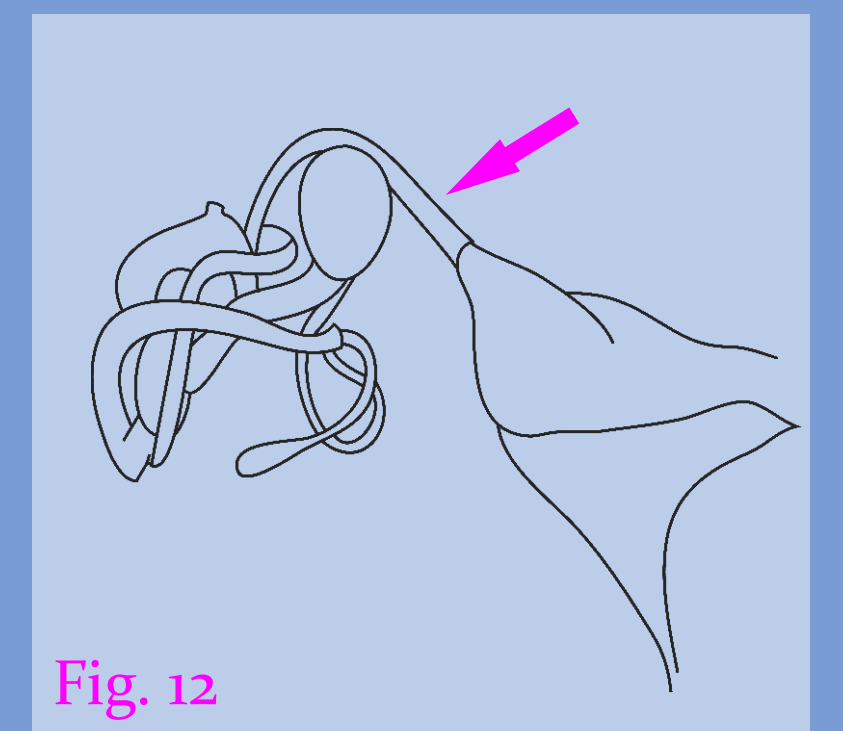


Fig. 12

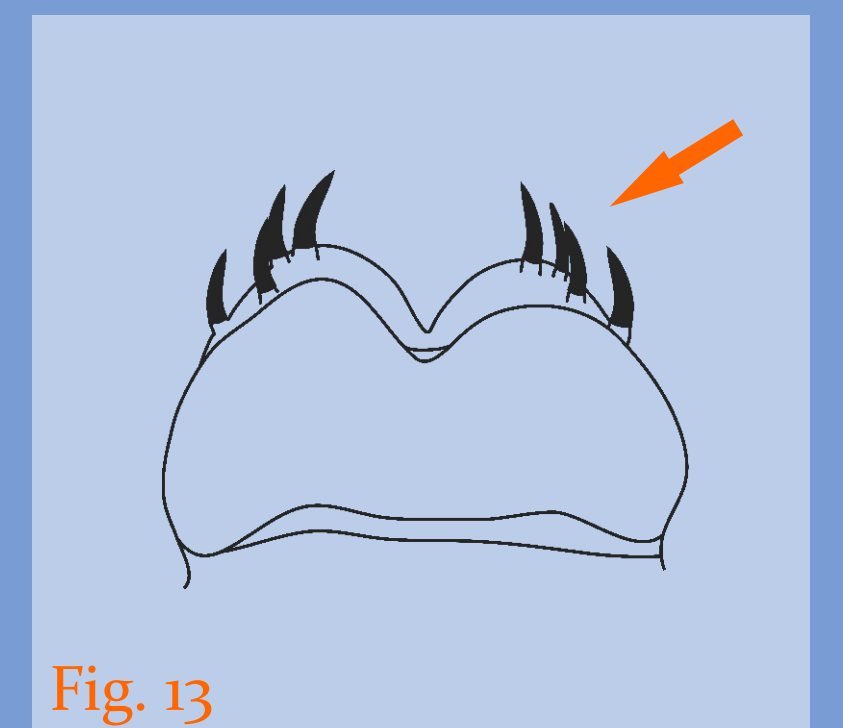


Fig. 13

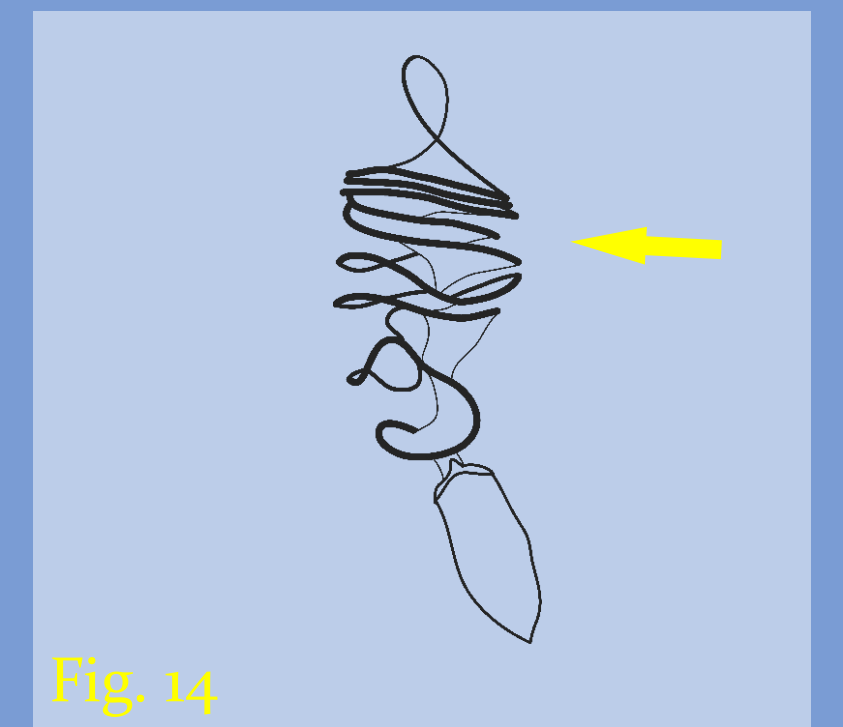


Fig. 14

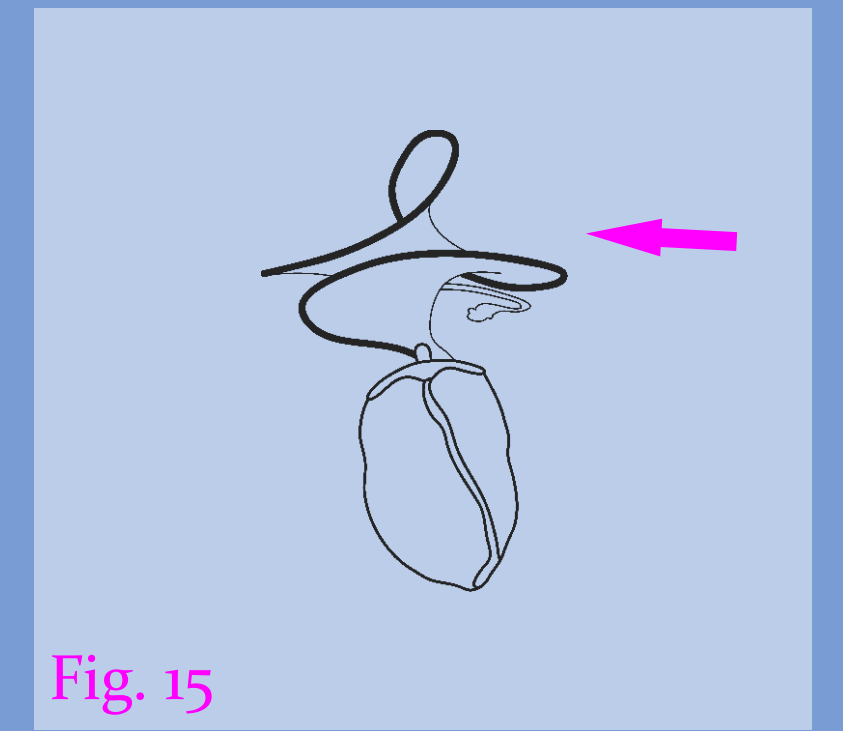
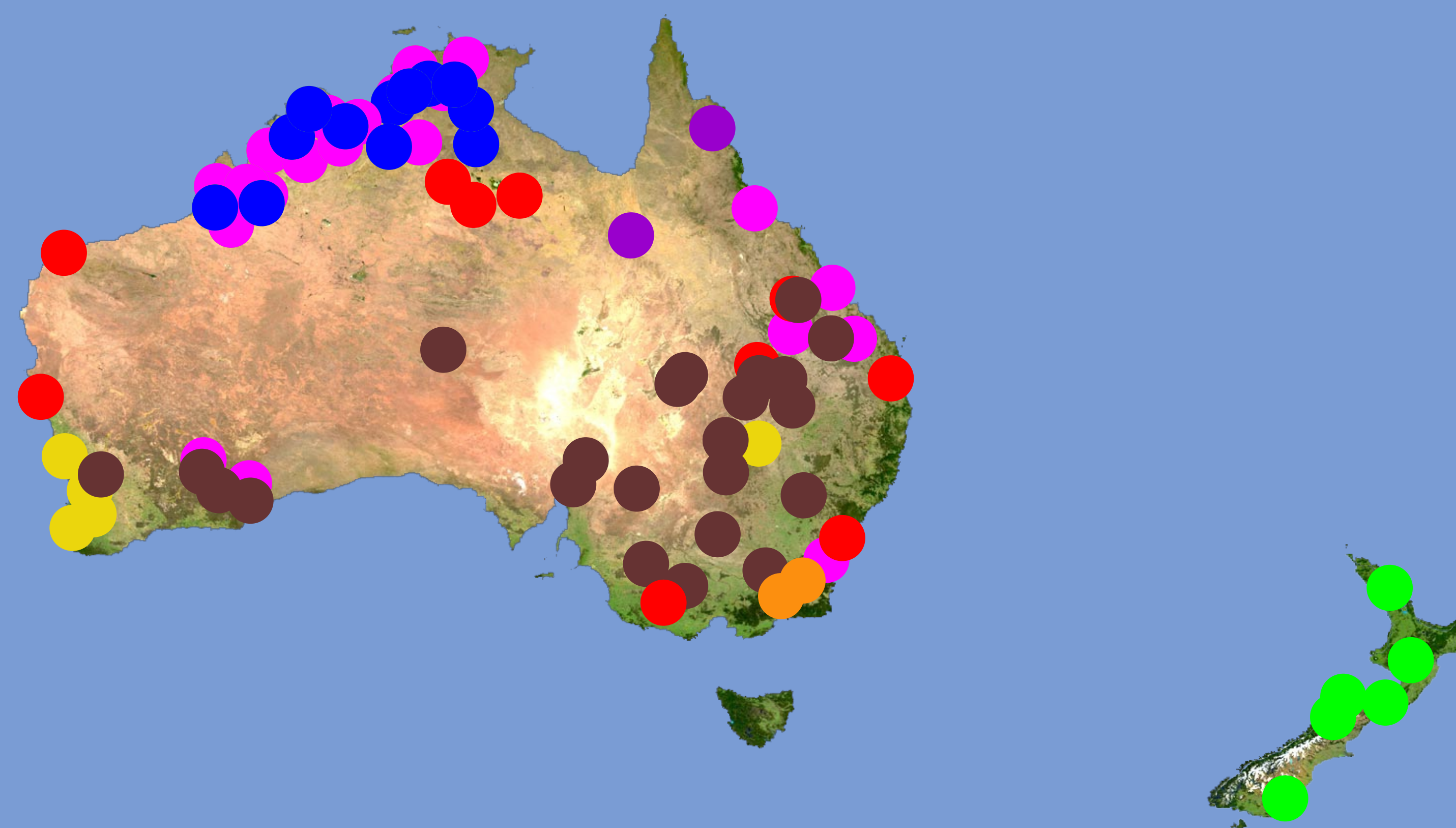


Fig. 15



- *Trichoma* (1 species)
- *Austroberothella* (1 species)
- *Quasispermophorella* (2 species)
- *Stenobiella* (10 species)
- *Spermophorella* (6 species)
- *Isoscelipteron* (1 species)
- *Trichoberotha* (2 species)
- *Protobiella* (1 species)