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A REVISION OF THE SPIDER GENUS *BAIAMI* LEHTINEN (ARANEAE, AMAUROBIOIDEA)

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SUMMARY

The genus *Baiami* Lehtinen is redefined and shown to be typically southern Australian in distribution. Of the nine species considered here, six are described for the first time. New Caledonian elements are excluded from *Baiami*. *Tartarus* Gray is recognized as a junior synonym of *Baiami*. Notes on phylogeny and distribution are given.

INTRODUCTION

The genus *Baiami* was erected by Lehtinen (1967) for the Western Australian species *Epimecinus volucripes* Simon, 1908 (nominated as the type species of *Baiami*), *E. tēgenarioides* Simon, 1908 and *Aphycoschaema storeniformes* Simon, 1908, and the New Caledonian species *Epimecinus magnus* Berland, 1924 (syn. *E. longipes* Berland — Lehtinen, 1967). Unfortunately, no male material from Western Australia was available so that the male characters of Lehtinen's *Baiami* were based entirely upon those of Berland's New Caledonian species *E. magnus* (Berland, 1924).

Subsequently, Gray (1973) erected the genus *Tartarus* for a male specimen of a highly specialized troglobitic species *T. mullamullangensis* from Mullamullang Cave on the Nullarbor Plain, southern Australia. Since then male specimens of the type species of *Baiami*, *B. volucripes*, have been collected and, together with the type material of *E. magnus* from New Caledonia, examined by the author. This has shown that the New Caledonian species does not belong to *Baiami*; and that *Baiami* and *Tartarus* are congeneric. Consequently, *Tartarus* is synonymized here with *Baiami* and the latter genus is redefined, excluding the New Caledonian material, and is shown to be typically southern Australian in distribution.

Aphycoschaema storeniformes Simon, 1908 is not known to the author. However, its type locality (Daydawn, Western Australia), a surface arid zone habitat, is atypical of the generic distribution as presented here.

Genus **Baiami** Lehtinen, 1967

Epimecinus Simon, 1908: 359-446.

Baiami Lehtinen, 1967: 330.

Tartarus Gray, 1973: 210. Forster, 1973: 128. New synonymy.

DIAGNOSIS: Retromargin of fang groove with two widely separated teeth; exceptionally with three to five teeth (*B. mullamullangensis*). Median apophysis of palpal organ absent. Conductor a broad, curved membrane with two distal sclerotised processes. Retrolateral tibial process of male palp a basal lamina surmounted by a curved spiniform process. Epigynum with a median fossa, without lateral teeth. Internal genitalia simply convoluted.

DESCRIPTION: Medium to large, cribellate, web building spiders from 3-13 mm in length. Carapace pale to dark grey-brown, darkest anteriorly and with a more or less

distinct basic colour pattern as follows: a patch of darker pigment in front of the fovea extending anteriorly along the margins of the caput; three lateral dark stripes radiating out from the fovea to the thoracic margins where they merge into a narrow marginal band. Dorsal surface of abdomen light to dark grey with a paler anterior mid-dorsal stripe usually flanked by similarly coloured patches plus several well-defined paired chevron markings posteriorly; ventral surface delimited by pale lateral lines. Legs banded. Colour pattern modified or absent in cave adapted species. Carapace with a well-defined caput. Fovea a long slit, broadening anteriorly. Eight eyes or none. Eye diameters: ALE>>PME>>PLE>AME. From above, the anterior eye row recurved, the posterior eye row straight or slightly procurved. Chelicerae vertical, with well developed boss. Two well separated, or three to five, retromarginal teeth; five to eight promarginal teeth, the basal three of which always consist of a medium sized inner tooth followed by a large tooth and a very small tooth. Sternum longer than wide with a slender prolongation between coxae IV. Maxillae parallel. Labium longer than wide, indented apically and basolaterally. Claw of female palp pectinate. Tibia of male palp with two apical processes, the ventral process a low, curved lamina, the retrolateral process broadly laminate basally with a curved spiniform extension apically. Embolus a long, slender, spiniform coil running around the margin of a broad, circular, membranous conductor. Retrolaterally, the conductor forks terminally to form two sclerotised processes, the anterior process typically a spiniform lamina, the posterior process typically spoon shaped. Median apophysis absent. Apical part of cymbium long or short, conical or attenuate. Legs long and slender, 1423 or 1243, with plumose and ciliate hairs. Trochanters slightly notched. Tarsi curved or straight. Trichobothria finely ciliate, in a single row on tarsus and metatarsus, two rows on tibia. Bothria collariform. Tarsal organ a small, round to oval opening, occasionally indented or with granular inclusions, placed on a low mound distal to trichobothria (fig. 46). **Typical leg spination.** — *Female*: LEG I, femur p0111, d222, tibia p111, r1111, d001, v222, metatarsus p1101, r1101, v221; LEG II, femur p1111, d2222, tibia p011, r111, d001, v222, metatarsus p112, r112, v221; LEG III, femur p1111, d2222, tibia p011, r111, d001, v222, metatarsus p112, d000, v221; LEG IV, femur p1101, d11122, tibia p011, r111, d001, v222, metatarsus p1112, r1012, v221. *Male*: LEG I, femur p1111, d2222, tibia p0111, r1111, v222, metatarsus p1102, r1101, v221; LEG II, femur p1111, d2222, tibia p011, r111, d001, v222; metatarsus p112, r112, v221; LEG III, femur p1111, d2222, tibia p011, r111, d01, v222, metatarsus p112, r112, v221; LEG IV, femur p1101, d11122, tibia p011, r111, d01, v222, metatarsus p1112, r1012, d000, v221. Three claws, all toothed. Claw tufts or tenent hairs absent. Calamistrum subcentral. Abdominal hair ciliate. Epigynum variably sclerotised, raised, with a very shallow or deeply invaginated median fossa which is commonly obscured by posteriorly directed hairs. Lateral teeth absent. Internal genitalia with spermathecal ducts either short or simply convoluted. Anterior spinnerets broad at base, short, conical and contiguous. Posterior spinnerets longer and more slender with a conical terminal joint. Cribellum wide, bipartite, the spinning fields separated by a broad sclerotised septum expanding into a posterior sclerotised border. Cribellum spigots strobilate. Tracheal spiracle just in front of cribellum. Tracheal system simple with four unbranched tubes confined to abdomen.

TYPE SPECIES: *Baiami volucris* (Simon 1908).

KEY TO SPECIES OF *BAIAMI*

FEMALES

1. Epigynum with a deeply excavated median fossa; sclerotisation weak or well developed only behind fossa. Internal ducts coiled (*gleneigi* species group). 2

- Epigynum lacking a deeply excavated median fossa; epigynum strongly sclerotized. Internal ducts not coiled (*tegenarioides* species group) 6
- 2. Internal ducts singly coiled 3
- Internal ducts doubly coiled *B. volucripes*
- 3. Posterior border of epigynal fossa strongly sclerotised. Internal ducts loosely coiled and converging from epigynal fossa 4
- Posterior border of epigynal fossa weakly sclerotised. Internal ducts tightly coiled and diverging from epigynal fossa 5
- 4. Sclerotised posterior border of fossa narrow, about one fifth as long as wide *B. loftyensis*
- Sclerotised posterior border of fossa broad, more than one third as long as wide *B. torbayensis*
- 5. Epigynal fossa large, anteriorly placed *B. glenelgi*
- Epigynal fossa small, centrally placed *B. montana*
- 6. Strongly pigmented. 6 promarginal teeth. Spermathecae not lobed. Legs of moderate length. Metatarsus III with dorsal spines *B. brockmani*
- Pigmentation often reduced. 5 promarginal teeth. Spermathecae deeply lobed. Legs long. Metatarsus III lacking dorsal spines *B. tegenarioides*

MALES

- 1. Apical part of palpal tibia straight. Origin of embolus apical-lateral. Basal processes on cymbium lacking (*glenelgi* species group) 2
- Apical part of palpal tibia flexed ventrally. Origin of embolus basal. Retrolateral process often present on basal part of cymbium (*tegenarioides* species group). 7
- 2. Embolus consisting of a single coil 3
- Embolus consisting of a double coil *B. volucripes*
- 3. Apical part of cymbium longer than basal part. Palpal tibia long 4
- Apical part of cymbium shorter than basal part. Palpal tibia very short ... *B. stirlingi*
- 4. Anterior conductor process 7-9 times longer than wide, directed apically or laterally 5
- Anterior conductor process attenuate, about 14 times longer than wide, directed basally *B. glenelgi*
- 5. Anterior margin of conductor straight, anterior process directed laterally *B. loftyensis*
- Anterior margin of conductor gently curved, anterior process sloping apically 6
- 6. Embolic duct visible on tegulum *B. montana*
- Embolic duct not visible on tegulum *B. torbayensis*
- 7. Basal process on cymbium lacking. Spiniform extension on retrolateral tibial

- process slender and finely pointed. Pigmentation normal*B. brockmani*
- Basal process present on cymbium. Spiniform extension on retrolateral tibial process thick and bluntly pointed. Pigmentation often reduced or lacking.... 8
8. Eyes normal, pigmentation often reduced*B. tegerarioides*
- Eyes absent, pigmentation lacking.....*B. mullamullangensis*

REMARKS: Spination data given in species descriptions indicate differences from generic pattern only. Body size data is given as a range for the smallest and largest mature specimens in each species sample. All types are lodged in the Australian Museum, Sydney unless otherwise noted.

Baiami glenelgi n. sp.

Figs. 11, 18, 34, 39

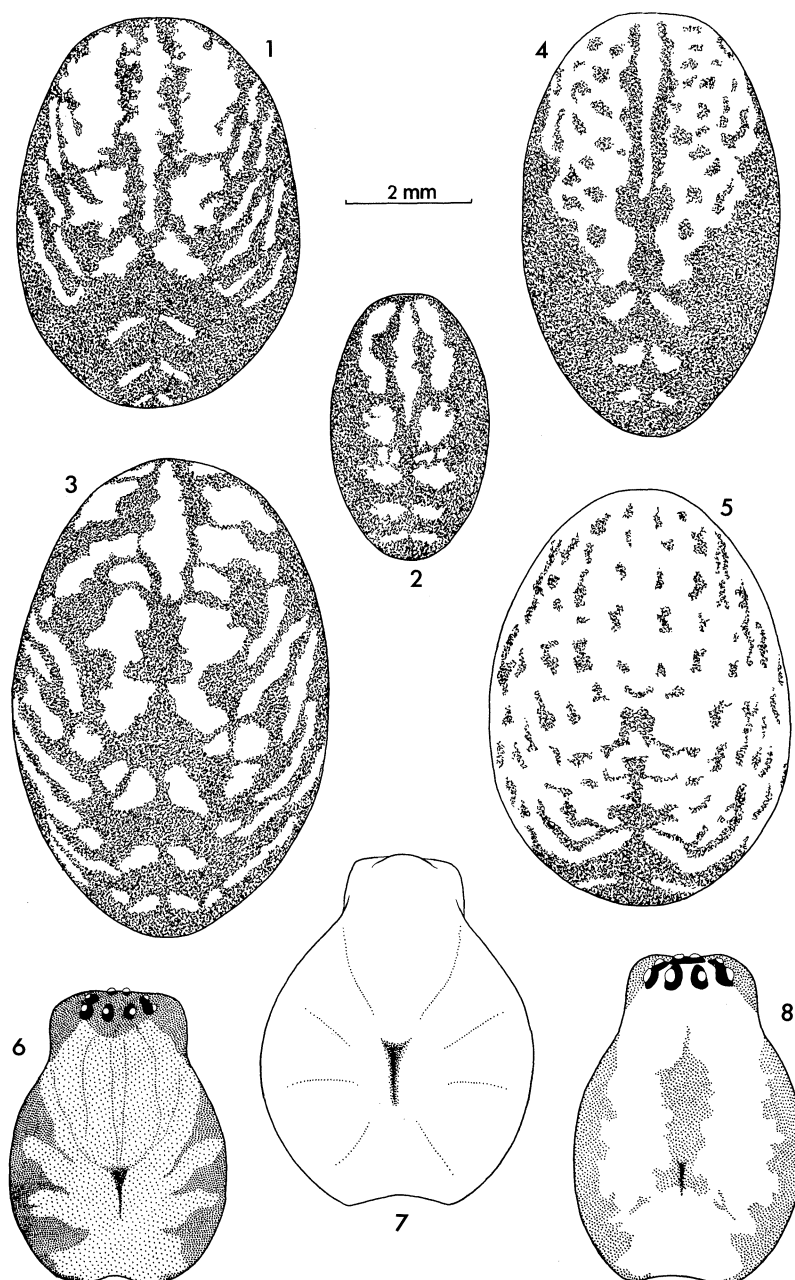
FEMALE: Dimensions (mm). — Carapace length 4.78-4.92; width 3.34-3.43. Abdomen length 6.12-6.38; width 4.15-4.25. Colour — Carapace dark greyish brown, otherwise as for genus. Abdomen dark grey with a narrow, pale mid dorsal stripe flanked by well defined pale brown lateral patches and posterior chevron markings. Ventral surface grey, bounded laterally by paler stripes, with several pale spots in front of spinnerets. Eyes — Diameters (mm): AME 0.15; ALE 0.21; PLE 0.17; PME 0.18. Interdistances (mm): AME-AME 0.11; AME-ALE 0.17; ALE-PLE 0.11; PLE-PME 0.28; PME-PME 0.25. M.O.Q. (mm): posterior width 0.61; anterior width 0.41; length 0.61. Clypeus height 2.2 diameters of an AME. Cheliceral teeth — Retromargin, 2 widely separated; Promargin, 7-8. Legs — 1243. Tarsi straight. Spination. LEG I: femur p1111; metatarsus p1102. LEG II: tibia p0111, r1111. LEG III: femur d12222. *Female genitalia* — Epigynum weakly sclerotised. Fossa opening large, transversely oval, anteriorly placed. Internal posterior extension of fossa long and placed well in front of the spermathecae to which it is joined by broad ducts coiled closely once around the front of the spermathecae. Ducts diverge from fossa. Spermathecae in contact in the midline.

MALE: Dimensions (mm). — Carapace length 4.81-5.20; width 3.46-3.81. Abdomen length 4.32-4.53; width 2.90-3.30. Eyes — Diameters (mm): AME 0.13; ALE 0.20; PLE 0.16; PME 0.16. Interdistances (mm): AME-AME 0.11; AME-ALE 0.15; ALE-PLE 0.09; PLE-PME 0.21; PME-PME 0.23. M.O.Q. (mm): posterior width 0.55; anterior width 0.37; length 0.57. Clypeus height 3.0 diameters of an AME. Legs — Spination: LEG I, femur r0010, tibia v2212; LEG IV, femur d11122, metatarsus d001. *Male palp* — Cymbium length-width ratio 2.4:1, without basal processes; apical part conical, not dorsally flexed, longer than basal part. Origin of embolus subcentral on retrolateral side. Embolic duct visible on tegulum. Embolus makes almost a complete turn from origin, terminating on anterior conductor process. Terminal processes of conductor subapical to central on retrolateral side. Anterior process elongate, slender, spiniform (longer than wide in ratio 14:1), directed basally; posterior process slender, spoon shaped. Tibia eight times as long as wide and only slightly longer than patella. Retrolateral tibial process with a long, slender, spiniform extension, directed apically.

HOLOTYPE FEMALE: KS 1683 — Glenelg River, nr Dartmoor, Vic. 25.iii.1974. M. Gray.

PARATYPES: KS 1681 and KS 1682 — males, Glenelg River, nr. Dartmoor, Vic. 26.iii. 1974, M. Gray. KS 1684 — Female, Glenelg River, nr. Dartmoor, Vic. 25. iii. 1974, M. Gray.

RECORDS: KS 1726 — Juv., Zumsteins, Grampian Ra., Vic. 3.v.1973, M. Gray.



Figs. 1-8. Dorsal views of abdomen (Fig. 1-5) and carapace (Fig. 6-8). Figs. 1, 2, 3 and 6 are representative of typical 'basic colour patterns' in the genus. 1, *Baiami brockmani*, female. 2, *B. volucripes*, male. 3, *B. torbayensis*, female. 4, *B. montana*, female. 5, *B. teganarioides*, female. 6, *B. volucripes*, female. 7, *B. mullamullangensis*, penult. juvenile. 8, *B. teganarioides*, female.

Baiami loftyensis n. sp.

Figs. 9, 20, 29, 36

FEMALE: Dimensions (mm) — Carapace length 5.91; width 4.25. Abdomen length 4.90; width 3.42. Colour — Carapace dark grey-brown, otherwise as for genus. Abdomen dark grey with a pale narrow mid-dorsal stripe flanked laterally by brownish patches with paler chevron markings posteriorly. Ventral abdomen grey bounded laterally by pale stripes, with several pale spots centrally. Eyes — Diameters (mm): AME 0.14; ALE 0.24; PLE 0.17; PME 0.19. Interdistances (mm): AME-AME 0.15; AME-ALE 0.25; ALE-PLA 0.11; PLE-PME 0.28; PME-PME 0.25. M.O.Q. (mm): posterior width 0.63; anterior width 0.43; length 0.69. Clypeus height 3.2 diameters of an AME. Cheliceral teeth — Retromargin, 2 widely separated; Promargin, 6-8. Legs — 1423. Tarsi straight. Spination: LEG I, femur p1(weak)111, tibia d000, metatarsus v220; LEG II, metatarsus p111, r111; LEG IV, femur d1122. *Female genitalia* — Epigynum with a narrow, strongly sclerotized transverse border behind the anteriorly sited ovoid fossa. Internal posterior extension of fossa short and broad, connected to the spermathecae by thin ducts which curve toward each other between the widely separated spermathecae and then coil loosely once around them.

MALE: Dimensions (mm) — Carapace length 5.02-5.12; width 3.70-3.75. Abdomen length 4.90-5.50; width 3.12-3.80. Eyes — Diameters (mm): AME 0.12; ALE 0.19; PLE 0.17; PME 0.18. Interdistances (mm): AME-AME 0.11; AME-ALE 0.19; ALE-PLA 0.04; PLE-PME 0.23; PME-PME 0.17. M.O.Q. (mm): posterior width 0.53; anterior width 0.35; length 0.58. Legs — Spination: LEG I, metatarsus r1102; LEG IV, metatarsus d001. *Male palp* — cymbium length-width ratio 2.6:1, basal processes lacking; apical part conical, not dorsally flexed, longer than basal part. Origin of embolus central on retrolateral side. Embolic duct visible on tegulum. Embolus makes a complete turn from origin, terminating on anterior conductor process. Anterior border of conductor straight. Terminal processes of conductor apical on retrolateral side. Anterior process long, triangular, spiniform (longer than wide in ratio 7:1), directed laterally; posterior process spoon shaped, very shallow. Tibia eight times longer than wide and only slightly longer than patella. Retrolateral tibial process with a long, slender, spiniform extension, directed apically.

HOLOTYPE FEMALE: KS 1687 — Cleland Conserv. Res., Sthn. Mt. Lofty Ra., S.A. 11.iv.1973, M. Gray.

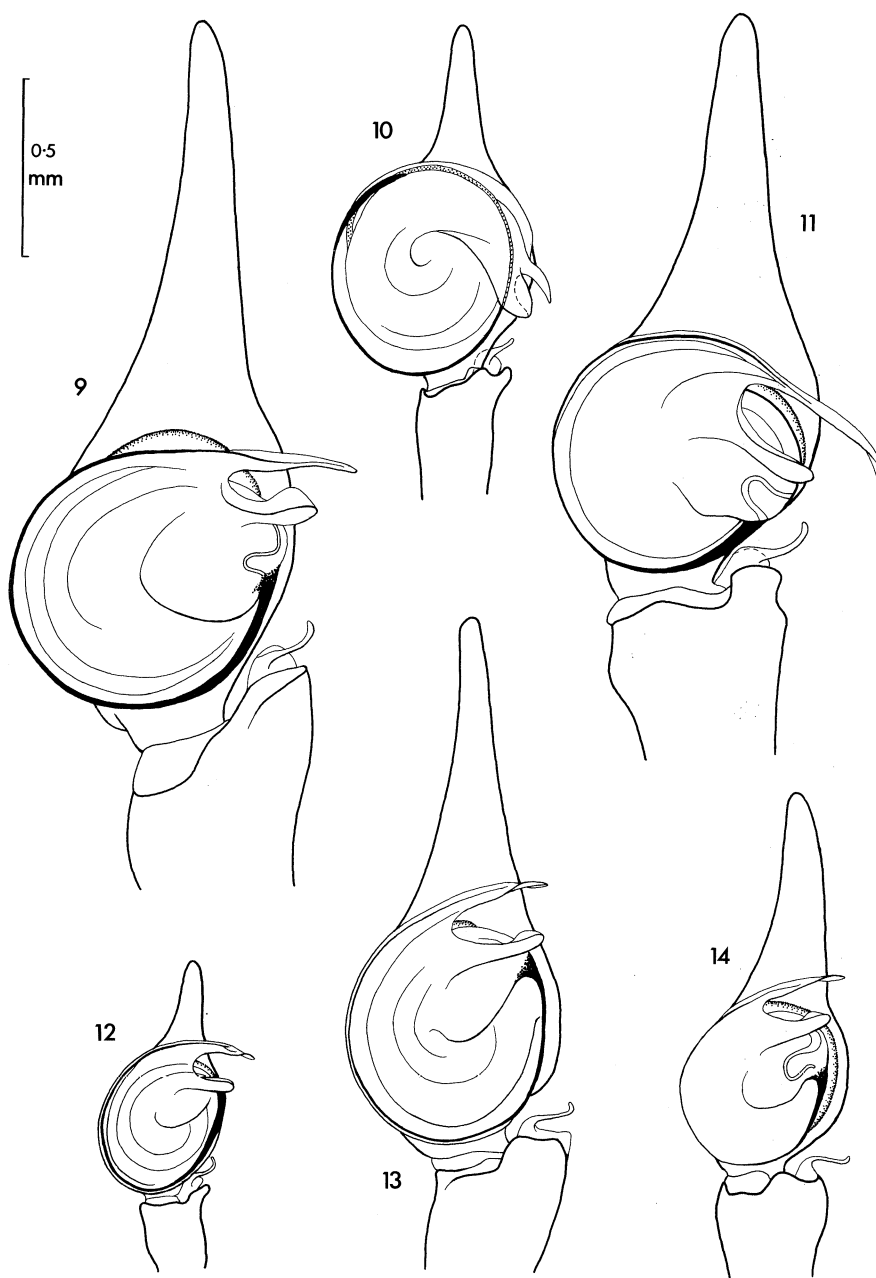
PARATYPES: KS 1685 — Male, Morialta Nat. Pk., Sthn. Mt. Lofty Ra., S.A., 15.iv.1973, M. Gray. KS 1686 — Male, Cleland Conserv. Res., Sthn. Mt. Lofty Ra., S.A., ii. 1973, M. Gray.

RECORDS: KS 1690 — Juv., Hahndorf, Sthn. Mt. Lofty Ra., S.A., Dec. 1908.

Baiami torbayensis n. sp.

Figs. 3, 13, 21, 30, 37

FEMALE: Dimensions (mm) — Carapace length 5.17; width 3.37. Abdomen length 6.70; width 4.75. Colour — Carapace grey-brown, otherwise as for genus. Abdomen brown with a narrow pale mid-dorsal stripe flanked by pale grey patches with paler chevron markings posteriorly which tend to merge laterally. Ventral abdomen orange-brown with four pale parallel stripes running from genital fold almost to spinnerets. Eyes — Diameters (mm): AME 0.14; ALE 0.19; PLE 0.17; PME 0.19. Interdistances (mm): AME-AME 0.09; AME-ALE 0.14; ALE-PLA 0.12; PLE-PME 0.26; PME-PME 0.26. M.O.Q. (mm): posterior width 0.64; anterior width 0.37; length 0.65. Clypeus height 2.78 diameters of AME. Cheliceral teeth — Retromargin, 2 widely separated; Promargin, 6. Legs — 1423. Tarsi curved. Spination: LEG IV, femur d11122,



Figs. 9-14 Male palp (*Glenelgi* species group), palpal organ, distal tibia, ventral. 9, *B. loftyensis*. 10, *B. volucripes*. 11, *B. glenelgi*. 12, *B. stirlingi*. 13, *B. torbayensis*. 14, *B. montana*.

tibia v112. *Female genitalia* — Epigynum with a broad sclerotised border enclosing the transversely ovoid opening of the fossa posterolaterally. Fossa deep but without internal posterior extension, leading into broad ducts which curve inwards towards the midline, then coil loosely once around the frontal aspects of the spermathecae. Spermathecae in contact anteriorly.

MALE: Dimensions (mm) — Carapace length 4.59; width 3.31. Abdomen length 4.30; width 2.70. *Eyes* — Diameters (mm): AME 0.14; ALE 0.19; PLE 0.16; PME 0.19. Interdistances (mm): AME-AME 0.07; AME-ALE 0.14; ALE-PLE 0.07; PLE-PME 0.16; PME-PME 0.20. M.O.Q. (mm): Posterior width 0.58; anterior width 0.35; length 0.59. Clypeus height 2.14 diameters of an AME. *Legs* — Spination: LEG I, tibia p1111, metatarsus r1102; LEG IV, femur d111122. *Male palp* — Cymbium length-width ratio 2.5:1, basal processes lacking; apical part conical, not dorsally flexed, longer than basal part. Origin of embolus subapical on retrolateral side. Embolic duct not visible on tegulum. Embolus makes a complete turn from origin, terminating on anterior conductor process. Terminal processes of conductor apical. Anterior process long, triangular, spiniform (longer than wide in ratio 7:1), directed apically; posterior process spoon shaped. Tibia eight times longer than wide, longer than patella in ratio 1.3:1. Retrolateral tibial process with a long slender spiniform extension, directed apically.

HOLOTYPE FEMALE: KS 1671 — Torbay Head, nr. Albany, W.A. 15.i.1975, B. Y. Main.

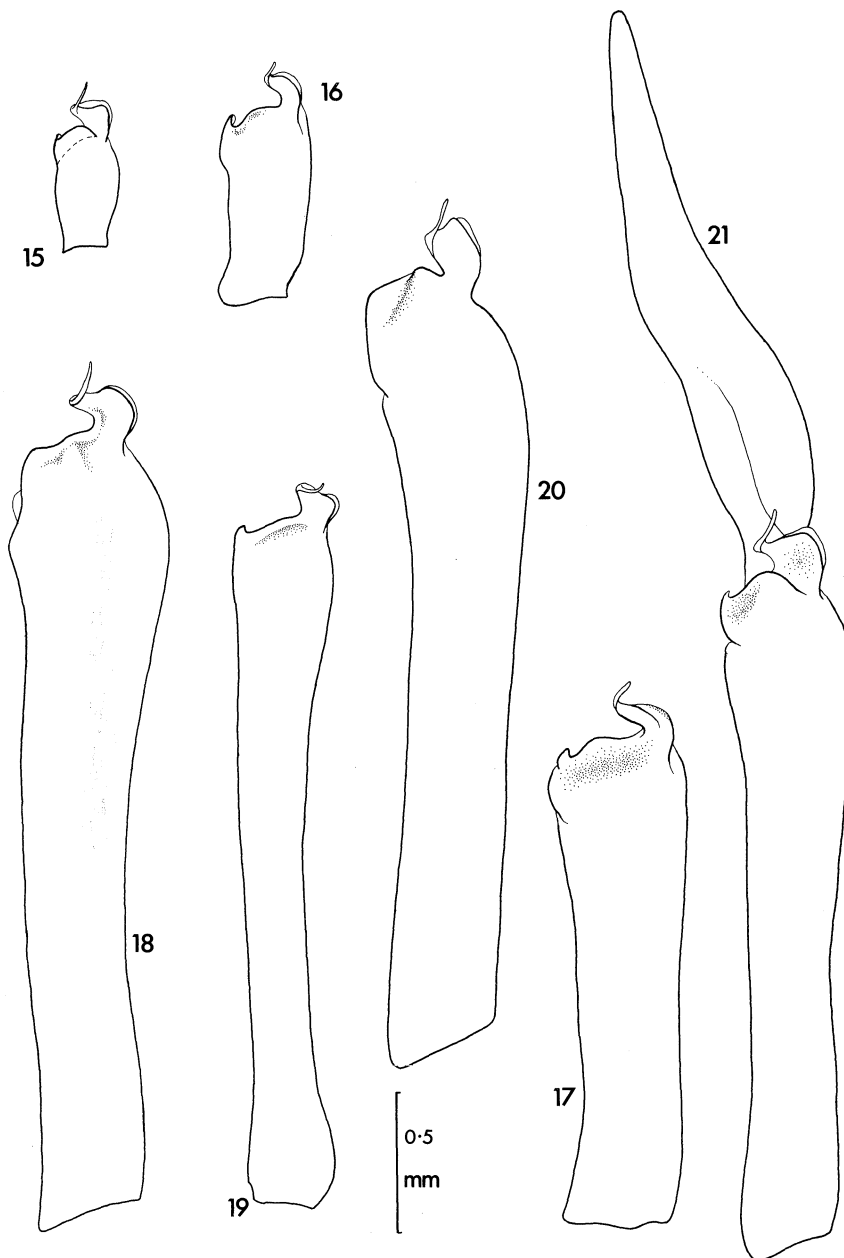
PARATYPES: KS 1670 — Male, Torbay Head, nr. Albany, W.A., 15.i.1975, B. Y. Main. KS 3105 — Male and Female, Two People Bay Nat. Pk., nr. Albany, W.A., Feb. 1979, M. Gray.

Baiami montana n. sp.

Figs. 4, 14, 19, 33, 38; 46.

FEMALE: Dimensions (mm) — Carapace length 3.88-4.75; width 2.80-3.22. Abdomen length 5.39-5.70; width 3.20-4.20. Colour — Carapace dark grey-brown, otherwise as for genus. Abdomen dark grey posteriorly, lighter grey spotting anteriorly with a narrow pale mid-dorsal stripe flanked by pale brownish patches followed by several paler chevron markings posteriorly. Ventral surface grey with four pale parallel stripes running between genital fold and spinnerets. *Eyes* — Diameters (mm): AME 0.16; ALE 0.20; PLE 0.17; PME 0.19. Interdistances (mm): AME-AME 0.09; AME-ALE 0.16; ALE-PLE 0.11; PLE-PME 0.21; PME-PME 0.25. M.O.Q. (mm): posterior width 0.63; anterior width 0.41; length 0.67. Clypeus height 2.12 diameters of an AME. Cheliceral teeth — Retromargin, 2 widely separated; Promargin, 6. *Legs* — 1423. Tarsi slightly curved. Spination: LEG II, femur p0111, tibia r1111; LEG IV, tibia p0111, r111, metatarsus r1112. *Female genitalia* — Epigynum small with a deep, rounded fossa, delimited posteriorly by a raised, weakly sclerotised border. Internal posterior extension of fossa narrow with ducts diverging from it to coil tightly once about the anterior aspect of spermathecae. Spermathecae slightly separated.

MALE: Dimensions (mm) — Carapace length 3.85-4.51; width 2.91-3.10. Abdomen length 4.05-4.42; width 2.42-2.80. *Eyes* — Diameters (mm): AME 0.14; ALE 0.21; PLE 0.16; PME 0.18. Interdistances (mm): AME-AME 0.05; AME-ALE 0.08; ALE-PLE 0.06; PLE-PME 0.18; PME-PME 0.19. M.O.Q. (mm): posterior width 0.54; anterior width 0.33; length 0.55. Clypeus height 1.25 diameters of an AME. *Legs* — Spination: LEG I, femur p0111, metatarsus p111, v202; LEG II, tibia d000; LEG IV, femur p10111, d2222, metatarsus p112. *Male palp* — Cymbium length-width ratio 2.4:1, without basal processes; apical part conical, not dorsally flexed, longer than basal part. Origin of embolus central on retrolateral side. Embolic duct visible on tegulum. Embolus makes a three quarter turn



Figs. 15-21 Male palp, (*glenelgi* species gp.) tibia, retrolateral. 15, *B. stirlingsi*. 16 and 17, *B. volucripes*. 18, *B. glenelgi*. 19, *B. montana*. 20, *B. loftensis*. 21, *B. torbayensis*, tibia and cymbium.

from origin, terminating on anterior conductor process. Terminal processes of conductor apical. Anterior process long, triangular, spiniform (longer than wide in ratio 9:1), directed apically; posterior process spoon shaped. Tibia ten times as long as wide and only slightly longer than patella. Retrolateral tibial process with a long, slender, spiniform extension, directed dorsally.

HOLOTYPE FEMALE: KS 1697 — Castle Rock Trail, Porongorup Range Nat. Pk., W.A., 16.i.1974, M. Gray.

PARATYPES: KS 3157 — Males, Castle Rock Trail, Porongorup Range Nat. Pk., W.A., Feb. 1979, M. Gray. KS 3158 — Female, White Gum Flat Fire Trail, Stirling Range Drive, Stirling Range Nat. Pk., W.A., Feb. 1979, M. Gray. KS 3159 — Male, White Gum Flat Fire Trail, Stirling Range Drive, Stirling Range Nat. Pk., W.A., Feb. 1979, M. Gray.

RECORDS: KS 3163 — Male and Female, Hayward Trail, Bolganup Rd., Porongorup Range Nat. Pk., W.A., Feb. 1979, M. Gray.

Baiami stirlingi n. sp.

Figs. 12, 15

MALE: Dimensions (mm) — Carapace length 1.66; width 1.36. Abdomen length 1.51; width 1.03. Colour — Carapace grey-brown, otherwise as for genus. Abdomen grey with pale mid-dorsal stripe flanked by brownish patches behind which are several large pale chevron markings. Ventral abdomen grey with paler lateral lines and indistinctly limited pale patches centrally. Eyes — Diameters (mm): AME 0.07; ALE 0.10; PLE 0.09; PME 0.09. Interdistances (mm); AME-AME 0.04; AME-ALE 0.05; ALE-PLE 0.03; PLE-PME 0.07; PME-PME 0.11. M.O.Q. (mm): posterior width 0.29; anterior width 0.18; length 0.28. Clypeus height 1.5 diameters of an AME. Cheliceral teeth — Retromargin, 2 widely separated; Promargin, 5. Legs — 1423. Tarsi curved. Spination: LEG I, femur p0011, d1111, tibia p001, metatarsus p011, r001; LEG II, femur p011, d1111; tibia r101, v02, metatarsus p012, r011; LEG III, femur p011, d1111, tibia r101, v01; LEG IV, femur p001, d111121, tibia v12. *Male palp* — Cymbium length-width ratio 2.1:1, basal processes lacking; apical part conical, not dorsally flexed, shorter than basal part. Origin of embolus subapical on retrolateral side. Embolic duct not visible on tegulum. Embolus makes a complete turn from origin, terminating on anterior conductor process. Terminal processes of conductor apical on retrolateral side. Anterior process long, triangular, spiniform (longer than wide in ratio 6.75:1), directed laterally; posterior process slender, spoon shaped. Tibia longer than wide in ratio 2.3:1 and shorter than patella in ratio 0.9:1. Retrolateral tibial process with a long, slender spiniform extension, directed apically.

HOLOTYPE MALE: KS 1699 — White Gum Flat Fire Trail, Stirling Range Drive, Stirling Range Nat. Pk., W.A., 15.i.1974, M. Gray.

PARATYPE: KS 3160 — male, locality as for holotype, Feb. 1979, M. Gray.

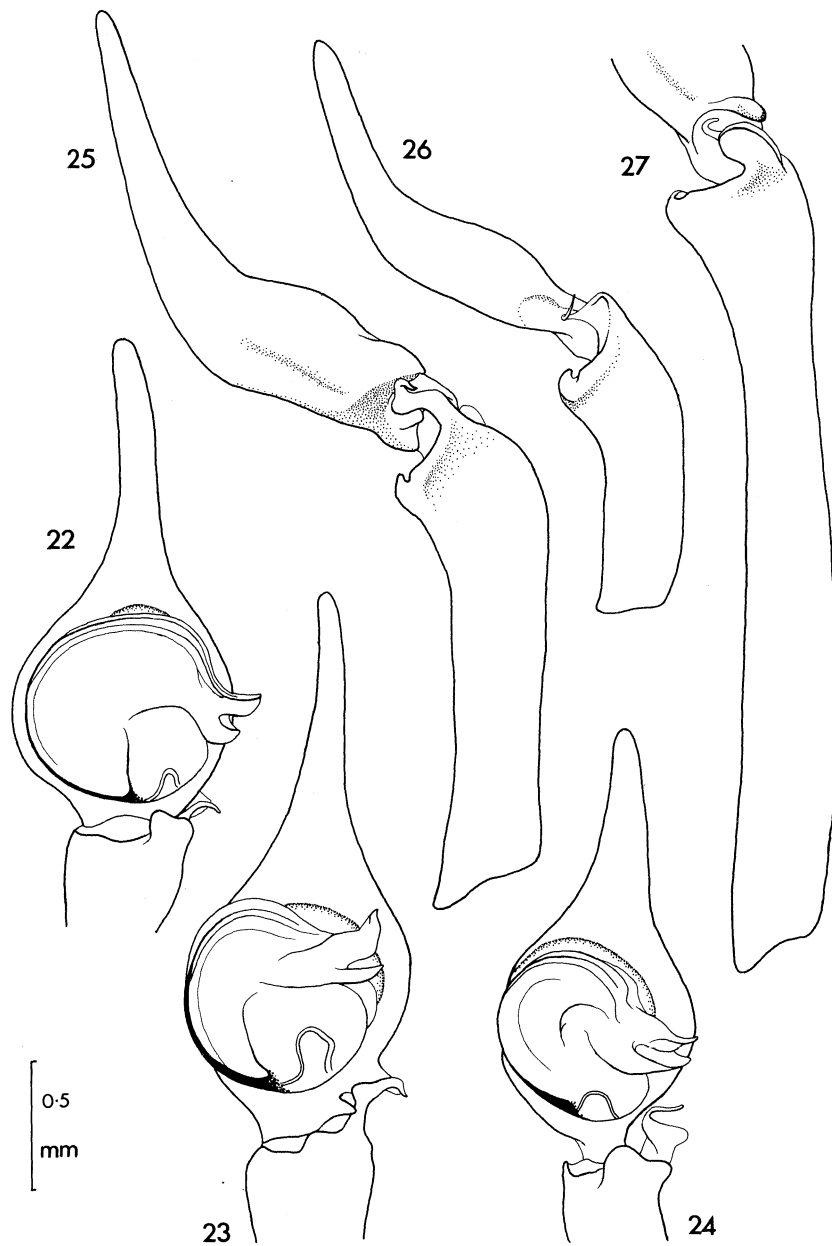
Baiami volucris (Simon, 1908)

Figs. 2, 6, 10, 16, 17, 31, 32, 41, 46

Epimecinus volucris Simon, 1908: 377

Baiami volucris Lehtinen, 1967: 218

FEMALE: Dimensions (mm) — Carapace length 3.02-4.75; width 2.26-3.84; Abdomen length 3.50-5.20; width 2.40-4.25. Colour — Carapace grey-brown, otherwise as for genus. Abdomen greyish overall with a paler mid dorsal stripe flanked by pale brownish



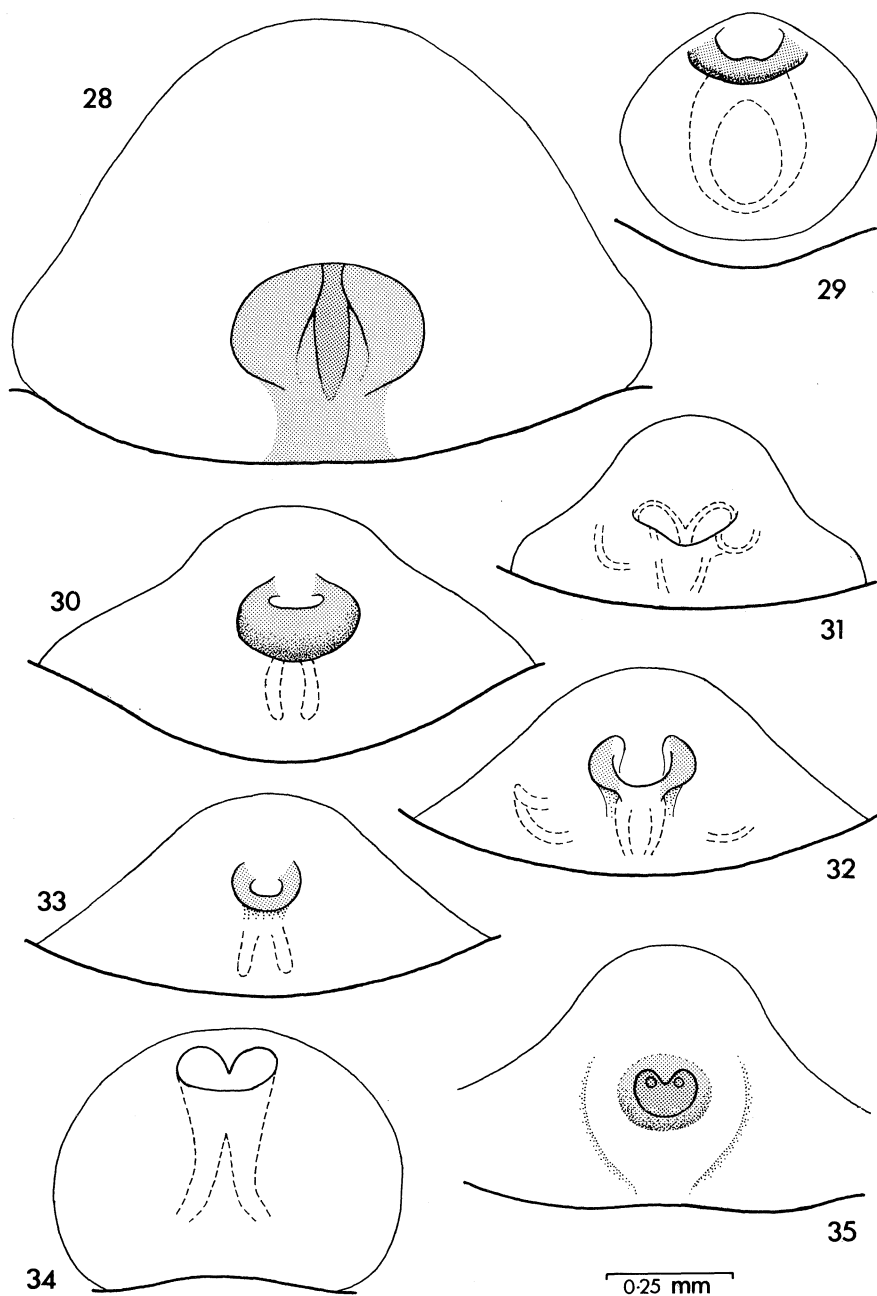
Figs. 22-27. Male palp (*tegenarioides* species gp.) Figs. 22-24: palpal organ, distal tibia, ventral, 22, *B. mullamullangensis*. 23, *B. tegenarioides*. 24, *B. brockmani*. Figs. 25-27, tibia and cymbium, retrolateral; 25, *B. tegenarioides*. 26, *B. brockmani*. 27. *B. mullamullangensis*.

areas and followed by several pale chevron markings. Ventral abdomen light grey, bounded on each side by paler lines with two less distinct parallel lines centrally. Eyes — Diameters (mm): AME 0.11; ALE 0.18; PLE 0.16; PME 0.16. Interdistances (mm): AME-AME 0.11; AME-ALE 0.20; ALE-PLE 0.09; PLE-PME 0.25; PME-PME 0.26. M.O.Q. (mm): posterior width 0.58; anterior width 0.33; length 0.55. Clypeus height 3.27 diameters of an AME. Cheliceral teeth — Retromargin, 2 widely separated; Promargin, 6. Legs — 1423. Tarsi straight. Spination: LEG I, tibia v122, metatarsus p0101, r0101, v220; LEG II, tibia v122, metatarsus r012; LEG III, tibia v212. *Female genitalia* — Epigynum weakly sclerotised with raised, swollen posterolateral border around opening of the large, centrally placed fossa. Fossa deep, internal posterior extension short, leading into slender ducts coiled twice around the frontal region of the spermathecae. Spermathecae in contact in midline.

MALE: Dimensions (mm) — Carapace length 2.54-4.00; width 1.72-3.05. Abdomen length 1.85-3.35; width 0.87-2.05. Eyes — Diameters (mm): AME 0.09; ALE 0.14; PLE 0.11; PME 0.12. Interdistances (mm): AME-AME 0.05; AME-ALE 0.08; ALE-PLE 0.04; PLE-PME 0.11; PME-PME 0.12. M.O.Q. (mm): posterior width 0.36; anterior width 0.23; length 0.37. Clypeus height 1.33 diameters of an AME. Legs — Spination: LEG I, tibia r111, v122, metatarsus v220; LEG III, femur p1111. *Male palp* — Cymbium length-width ratio 1.6:1, without basal processes apical part conical, weakly dorsally flexed, shorter than basal part. Conductor large, circular. Origin of embolus central to subapical on prolateral side. Embolic duct not visible on tegulum. Embolus makes one and a half turns from origin, terminating on anterior conductor process. Terminal processes of conductor placed centrally-subbasally on retrolateral side. Anterior process short, curved, spiniform (longer than wide in ratio 3.5:1), directed basally; posterior process broad, spoon shaped. Conductor margin slightly indented distally. Tibia three to five times as long as wide and equal to or slightly longer than patella. Retrolateral tibial process with a slender spiniform extension, directed apically.

TYPES: National Museum, Paris — Female, AR 387, Southwestern Australia, 1905, W. Michaelsen and R. Hartmeyer. Zoological Museum, Berlin — Juveniles, ZMB 13841, Rottnest, ZMB 13842 and 13843 Jarrahdale, ZMB 13844, Pickering Brook, Southwestern Australia, 1905, W. Michaelsen and R. Hartmeyer. Zoological Institute and Zoological Museum, Hamburg — specimens (not seen) from Jarrahdale and Rottnest, Southwestern Australia, 1905, W. Michaelsen and R. Hartmeyer.

RECORDS: KS 1711 — Male and female, Jarrahdale, 12.6km E., nr. creek beyond Arboretum Road T.O. on Balmoral Road, W.A., 24.xii. 1973, M. Gray. KS 1712 — Male and female, Regan's Ford, Moore R., W.A., 26.xii. 1973, M. Gray. KS 1713 — Male and female, Stirling Ra., White Gum Flat Fire Trail, Stirling Ra. Drive, W.A., 15.i. 1974, M. Gray. KS 1714 — Male, Bridgetown, W.A., M. Gray. KS 3103 — Male, Boranup Drive, N.W. of Karridale, W.A., Feb. 1979, M. Gray. KS 1715 — Juv., 9.6km E. of Mundaring Weir, W.A., 28.xii. 1973, M. Gray. KS 1716 — Male and juv., Mundaring, W.A., 5.xi. 1971, J. A. Springett. KS 1717 — Juv., Gleneagle, W.A., 1971, J. A. Springett. KS 1718 — Male and female, Un-named Cave, SH20, Nambung Nat. Pk., nr. Cervantes, W.A., 23.ii. 1974, J. W. J. Lowry. KS 1719 — Female and juv., Unnamed Cave, Nambung Nat. Pk., nr. Cervantes, W.A., 23.ii. 1974, J. W. J. Lowry. KS 1720 — Female, Echnida Cave, SH51, Nambung Nat. Pk., nr. Cervantes, W.A., 23.ii. 1974, J. W. J. Lowry. KS 1722 — Male, Census Cave, Main Chamber nr. Yanchep, W.A., 22.viii. 1965, B. Muir. KS 1723 — Juv., Census Cave, nr. Yanchep, W.A., 22.viii. 1966, B. Muir. 74/6 (W.A. Mus. coll.) — Juv., Yanchep area, in cave, W.A., 22.i. 1912, Bennett and Baynes. BS 1596 (S.A. Mus. coll.) — Juv., Yanchep Cave, Yanchep, W.A., 7.v. 1967, E. Hamilton Smith. BS 2122 (S.A. Mus. coll.) — Juv., Unnamed Cave, SH5, Nambung R., W.A., 19.v. 1973, R. Shoosmith. BS 1590 (S.A. Mus. coll.) — Juv., Mambiddy Cave, Yanchep, W.A., 7.v. 1967, E. Hamilton Smith.



Figs. 28-35. Female external genitalia. 28, *B. tegerarioides*. 29, *B. loftyensis*. 30, *B. torbayensis*. 31, *B. volucripes*, TYPE. 32, *B. volucripes*. 33, *B. montana*. 34, *B. glenelgi*. 35, *B. brockmani*.

Baiami brockmani n. sp.

Figs. 1, 24, 26, 35, 40

FEMALE: Dimensions (mm) — Carapace length 3.80-5.75; width 2.59-3.85. Abdomen length 3.60-7.00; width 2.65-4.20. Colour — Carapace dark grey-brown, otherwise as for genus. Abdomen dark grey-brown with a narrow, pale mid-dorsal stripe flanked anteriorly by pale brown patches with several distinct chevron markings posteriorly. Ventral abdomen grey, delimited by paler stripes laterally, with indistinct paler markings centrally, most noticeably a pair of white spots behind the epigynal fold. *Eyes* — Diameters (mm): AME 0.12; ALE 0.21; PLE 0.16; PME 0.17. Interdistances (mm): AME-AME 0.12; AME-ALE 0.29; ALE-PLE 0.11; PLE-PME 0.37; PME-PME 0.30. M.O.Q. (mm): posterior width 0.64; anterior width 0.36; length 0.66. Clypeus height 3.54 diameters of an AME. Cheliceral teeth — Retromargin, 2 widely separated; Promargin, 6. *Legs* — 1423. Tarsi slightly curved. Spination: LEG I, metatarsus r0101; LEG II, tibia p1111, r0101; LEG III, metatarsus d010; LEG IV, femur d1122, metatarsus r102. *Female genitalia* — Epigynum a small, circular, strongly sclerotised plate. Fossa a slight indentation only, the paired openings of the spermathecal ducts visible laterally. Ducts short and broad, not coiled. Spermathecae elongate, in contact in midline.

MALE: Dimensions (mm) — Carapace length 3.05-4.60; width 2.37-3.42. Abdomen length 2.00-4.60; width 1.60-3.55. *Eyes* — Diameters (mm): AME 0.10; ALE 0.17; PLE 0.14; PME 0.15. Interdistances (mm): AME-AME 0.12; AME-ALE 0.17; ALE/PLE 0.10; PLE-PME 0.26; PME-PME 0.25. M.O.Q. (mm): posterior width 0.55; anterior width 0.32; length 0.52. Clypeus height 3.12 diameters of an AME. *Legs* — Spination: LEG I, tibia r1011, metatarsus r1102; LEG II, femur p0111, metatarsus r012. *Male palp* — Cymbium length-width ratio 2:1, without basal processes; apical part conical, strongly flexed dorsally, as long as basal part. Origin of embolus basal. Embolic duct visible on tegulum. Embolus makes a half turn from origin, terminating proximal to anterior conductor process. Terminal processes of conductor placed centrally on retrolateral side. Anterior process broad, triangular, spiniform (2.5 times longer than basal width), directed laterally; posterior process broad, spoon shaped. Conductor margin indented distally, anterior process set at obtuse angle to it. Tibia four times as long as wide and half as long as patella. Head of tibia flexed ventrally. Retrolateral tibial process with a long, slender, spiniform extension, directed anteriorly.

HOLOTYPE FEMALE: KS 1693 — Brockman Nat. Pk., nr. Pemberton, W.A., 22.i.1974, M. Gray.

PARATYPES: KS 1692 — Male, Pemberton, W.A., 1971, J. A. Springett. KS 1694 — Male, Brockman Nat. Pk., nr. Pemberton, W.A., 22.i.1974, M. Gray. KS 3104 — Male and female, Hilltop Rd., Walpole-Nornalup Nat. Pk., W.A., Feb. 1979, M. Gray. *Records:* KS 1695 — Juv., Shannon, Sutton Block, W.A., 1971, J. A. Springett. KS 1696 — Juv., Shannon R., Nelson Rd., S. of Shannon, W.A., 22.i.1974, M. Gray. W. A. Mus. coll. — Female, Warren Nt. Pk., nr. Pemberton, W.A., 19.v.1970, J. A. Springett.

Baiami mullamullangensis (Gray, 1973)

Figs. 7, 22, 27, 45, 46.

Tartarus mullamullangensis Gray, 1973: 211

MALE: Dimensions (mm) — Carapace length 5.58; width 4.29, cephalic region narrow, thoracic region subcircular. Abdomen length 5.90; width 4.30. Colour — pigmentation absent. Carapace pale amber, a little darker towards caput. Abdomen cream coloured. *Eyes* — absent. Cheliceral teeth — Retromargin, 3 to 5; Promargin, 6 to

7, all approximately equal in size. *Legs* — 1243, very long. Tarsi curved. Plumose hair abundant. Spination reduced and as follows: LEG I, femur p11111, d21112101, tibia v0101, metatarsus p1101, v2020 (irreg.); LEG II, femur p2(weak)111, d222101, tibia p0111, r1111, do, v0110, metatarsus p1111, r1101; LEG IV, femur p1100, d21211, tibia p111, r11111, do, v010, metatarsus p1111, r1011, d20. *Male palp* — Cymbium length-width ratio 2.5:1. One basal process on dorsal retrolateral aspect of cymbium base. Apical part of cymbium very slender, digitiform, flexed dorsally and much longer than basal part. Origin of embolus basal. Embolic duct visible on tegulum. Embolus makes a three quarter turn from origin, terminating proximal to conductor processes. Terminal processes of conductor centrally placed on retrolateral side. Anterior process short, thick, spiniform (2 times as long as wide), directed laterally; posterior process a short, heavy spoon. Conductor margin indented distally, anterior process set at right angles to it. Tibia 9.5 times as long as wide and 1.5 times as long as patella. Head of tibia weakly flexed ventrally. Retrolateral tibial process with a mildly tapered, blunt, spiniform extension, curved dorsally.

HOLOTYPE MALE: BS 1860 (S.A. Mus. coll.) — Mullamullang Cave, N37 (Dome Chamber), Nullarbor Plain, nr. Madura, W.A., 10.i.1969, P. Hawkes.

PARATYPES: KS 0005 — Juv., Mullamullang Cave, N37 (Dome Chamber), Nullarbor Plain, W.A., 4.i.1972, G. Sjoberg and M. Gray. KS 0006 — Juv., Mullamullang Cave, N37 (Dome Chamber), Nullarbor Plain, W.A. 25.xii.1967, M. Gray and B. Muir.

RECORDS: KS 1724 — Juv. (exoskeleton only), Mullamullang Cave, N37 (The Sail), Nullarbor Plain, W.A., 21.vii.1977, G. Campbell.

***Baiami tegenarioides* (Simon, 1908)**

Figs. 5, 8, 23, 25, 28, 42

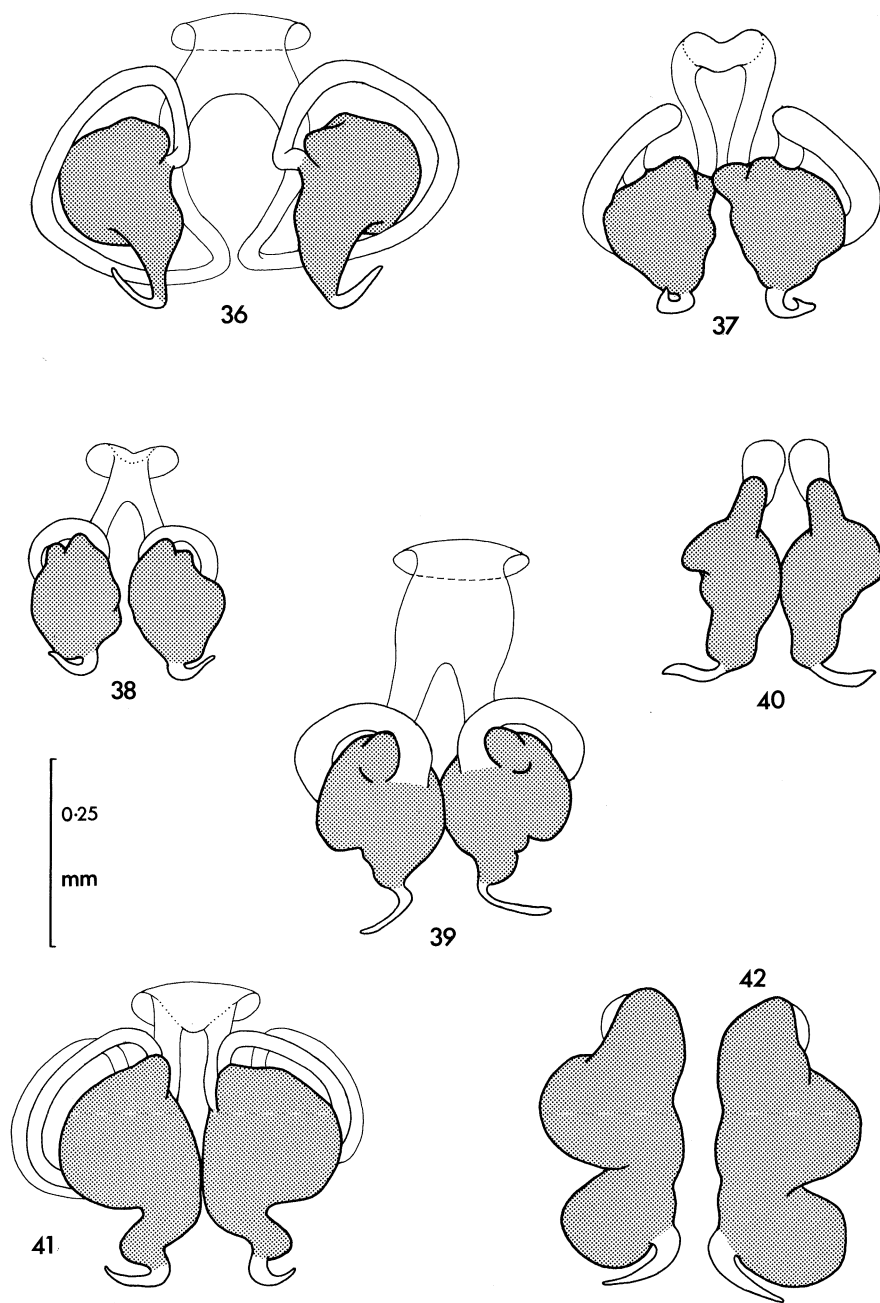
Epimecinus tegenarioides Simon, 1908: 378

Baiami tegenarioides Lehtinen, 1967: 218

Tartarus tegenarioides Gray, 1973: 215

FEMALE: Dimensions (mm) — Carapace length 5.75-7.36; width 3.90-5.01. Abdomen length 5.80-11.50; width 3.85-7.55. Colour — Carapace pallid grey with a large patch of dark grey pigment in front of the fovea. A broad sinuous band of dark grey pigment extends around the lateral thoracic margins. Abdomen grey overall, palest anteriorly with pigmentation in form of large, well spaced spots and darkest posteriorly with pigment spots small and more approximated. A more or less defined pale mid-dorsal anterior stripe is followed by several pale posterior chevrons. Ventral abdomen pale grey. *Eyes* — Diameters (mm): AME 0.16; ALE 0.26; PLE 0.24; PME 0.24. Interdistances (mm): AME-AME 0.16; AME-ALE 0.32; ALE-PLE 0.16; PLE-PME 0.44; PME-PME 0.44. M.O.Q. (mm): posterior width 0.92; anterior width 0.48; length 0.94. Clypeus height 4.19 diameters of an AME. Cheliceral teeth — Retromargin, 2 widely separated; Promargin, 5. *Legs* — 1423, long. Tarsi curved. Spination: LEG I, femur p1111, tibia p1111, r0111, metatarsus v220; LEG II, tibia p0111, r1111; LEG III, tibia v212; LEG IV, femur d2122, tibia v211. *Female genitalia* — Epigynum a strongly sclerotised, raised plate with a shallow median longitudinal extension into which the spermathecal ducts open on each side. Ducts short and broad. Spermathecae elongate, subdivided into two distinct bulb-like sections. Spermathecae narrowly separated.

MALE: Dimensions (mm) — Carapace length 5.65-6.12; width 4.20-4.36. Abdomen length 5.00-5.50; width 2.75-3.30. *Eyes* — Diameters (mm): AME 0.15; ALE 0.21; PLE 0.20; PME 0.21. Interdistances (mm): AME-AME 0.12; AME-ALE 0.22; ALE-PLE 0.11; PLE-PME



Figs. 36-42. Female internal genitalia, dorsal. 36, *B. loftyensis*. 37, *B. torbayensis*. 38, *B. montana*. 39, *B. glenelgi*. 40, *B. brockmani*. 41, *B. volucripes*. 42, *B. tegenarioides*.

0.31; PME-PME 0.31. M.O.Q. (mm): posterior width 0.72; anterior width 0.42; length 0.76. Clypeus height. 2.87 diameters of an AME. *Legs* — Spination: LEG I, femur d22122, metatarsus p1101, v220; LEG II, femur d21122, tibia p0111, r1111; LEG III, tibia v212; LEG IV, femur d11122, tibia v211. *Male palp* — Cymbium length-width ratio 3:1. Two basal processes, a large process arising from the dorsal retrolateral aspect of the cymbial base and below this, a smaller process projecting from the retrolateral aspect. Apical part of cymbium very slender, conical, flexed dorsally and much longer than basal part. Origin of embolus basal. Embolic duct visible on tegulum. Embolus makes a half turn from origin, terminating on anterior conductor process. Terminal processes of conductor subapical on retrolateral side. Anterior process broad, spiniform (2 times as long as wide), tip directed apically; posterior process a narrow, bluntly pointed spoon. Conductor margin indented distally, anterior process set at obtuse angle to it. Tibia 5 to 6 times as long as wide and two-thirds the length of the patella. Head of tibia flexed ventrally. Retrolateral tibial process a narrow lamina with a short, thick spiniform extension, directed dorsally.

TYPES: Not available, presumed lost — Juveniles, Southwest Australia, W. Michaelsen and R. Hartmeyer, 1905. *Neotype:* KS 003 — Male, Connollys Cave, Margaret R., W.A., 17.v.1970, J. Lowry. Erection of a neotype for *Baiami tegenarioides* (Simon) is proposed on the basis of the following information — enquiries regarding the whereabouts of the original type specimens of *B. tegenarioides* have been made to the museums in which E. Simon's type specimens were lodged, namely the Museum National D'Histoire Naturelle, Paris (Dr M. Hubert), The Zoologisches Museum, Humboldt Universität, Berlin (Dr M. Moritz) and the Zoologisches Institut und Zoologisches Museum, Hamburg (Dr G. Rack). Dr Moritz informed me that type specimens of *Epimecinus tegenarioides* Simon were once held in the Zoologisches Museum collections but are now presumed lost. Dr Hubert and Dr Rack indicated that the type specimens are not held in their respective collections.

RECORDS: KS 004 — Females, Easter Cave, nr. Augusta, W.A., 12.ix.1965, J. Lowry. KS 1703 — Male, Strong's Cave, nr. Augusta, W.A., 19.vi.1965, J. Lowry. KS 1704 — Female and juv., Easter Cave, W.A., 12.i.1966, J. Lowry. KS 1705 — Female and juv., Shannon R., W.A., 22.i.1973, M. Gray. KS 1706 — Female and juv., Shannon, Sutton Block, W.A., 16.xi.1971, J. A. Springett. KS 1707 — Juv., Brockman Nat. Pk., Picnic area, W.A., 22.i.1973, M. Gray. KS 1708 — Juv., Strong's Cave, nr. Augusta, W.A., 20.vi.1965, J. W. J. Lowry. KS 1709 — Juv., Calgadup, W.A., 2.i.1971, J. W. J. Lowry. KS 1710 — Juv., Golgotha Cave, nr. Wichcliffe, W.A., 24.i.1975, M. Gray. KS 3106 — Male, female and juvs., Hilltop Rd., Walpole-Nornalup Nat. Pk., W.A., Feb. 1979, M. Gray. BS 0867 (S.A. Mus. coll.) — Female, Conference Cave, Margaret R., W.A., 8.i.1965, E. Hamilton Smith. 74/1 (W.A. Mus. coll.) — Female, Bridge Cave, Margaret R., W.A., Easter 1970, A. Page. 74/16-19 (W.A. Mus. coll.) — Juv., 12 mls. W. of Manjimup, W.A., 11.iii.1971, H. Butler. 74/22 (W.A. Mus. coll.) — Juv., 3 mls. E. of Dwellingup, W.A., 24.iii.1971, H. Butler.

BEHAVIOURAL NOTES

These spiders construct more or less horizontal sheet webs (Fig. 45, upper) of cribellate silk extending out from a retreat funnel for as much as 100cm. in *B. tegenarioides* and as little as 7cm. in *B. stirlingi*. In some of the larger webs the lower border of the retreat funnel is extended outwards for a short distance giving the impression of a second, smaller sheet below the main upper sheet. The spider moves on the under side of the sheet which is commonly guyed out into surrounding vegetation. The retreat funnel extends back into the shelter of a hole or crevice in or under the soil bank, log, stump or rock from which the sheet is slung. Species such as *B. tegenarioides*, *B. volucripes* and probably *B. glenelgi* are troglomorphic and can commonly be found

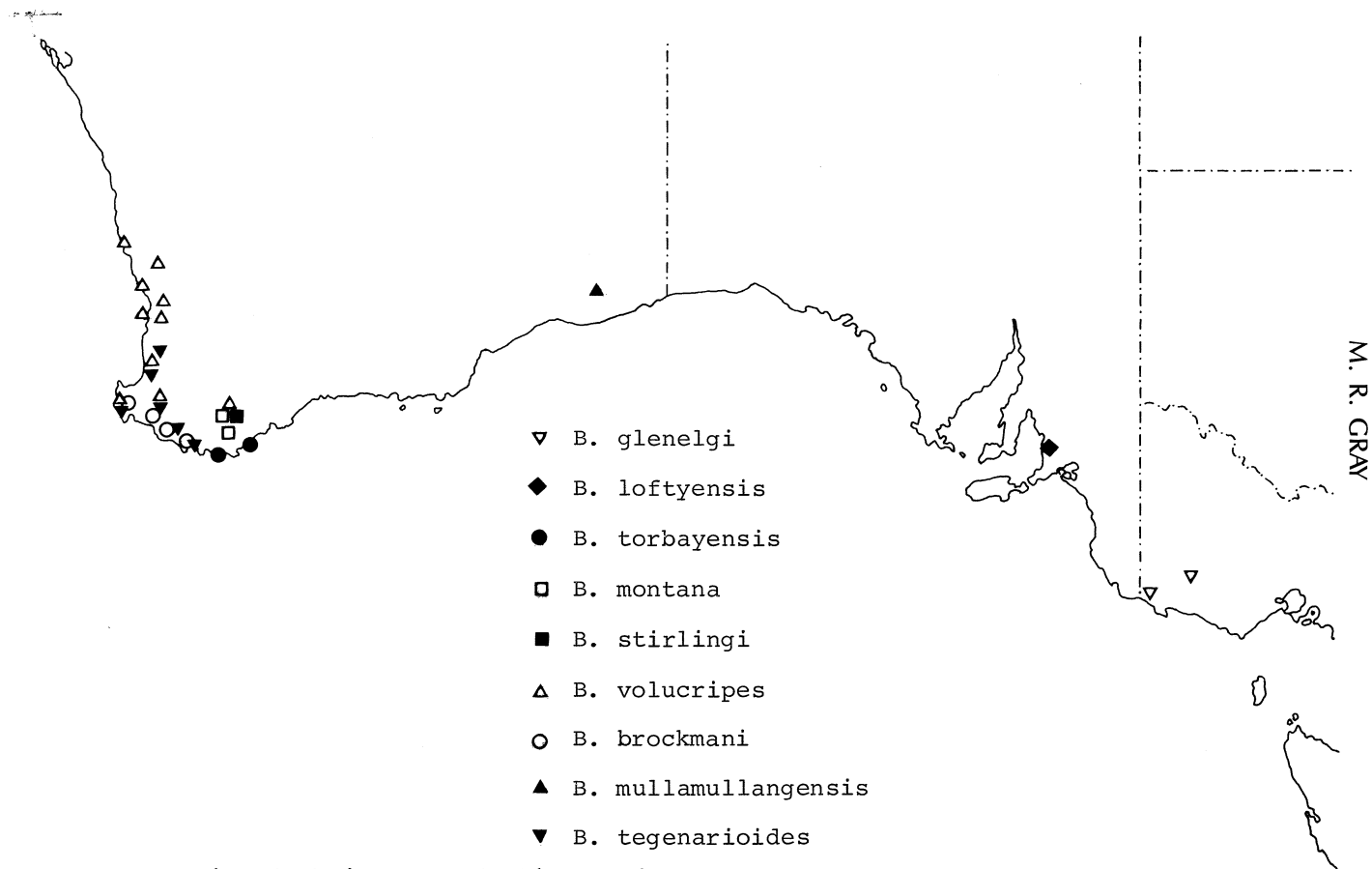


Fig. 43. Distribution of species in the genus *Baiami* from southern Australia.

occupying cave entrance and twilight zones where their webs are slung among rockpiles or between rock walls.

A significant modification of the sheet web configuration is seen in the web of the troglobitic species, *B. mullamullangensis* (Gray, 1973). This spider constructs a broad, short, funnel shaped cribellate web inside which it sits on the rock wall to which the circular base of the web is attached (Fig 45, lower). This web could be derived simply by enlargement of the retreat funnel section of the normal web, so that the funnel now serves both retreat and catching functions and the horizontal sheet component is eliminated. The hypochilid spider, *Hypochilus gertschi*, constructs a very similar type of web on rock walls in cave-like habitats (Shear, 1967).

The egg sacs form slightly irregular spheres constructed of a closely woven inner and loose outer layers of silk onto which particles of soil and litter are attached. The sac, containing nonglutinous eggs, is suspended within the retreat funnel. At least two egg-sacs may be made during the summer-autumn breeding period. *Baiami* females do not construct a closed brood chamber for the sacs although an irregular barrier network of threads may be erected in the retreat funnel.

Mated females, particularly in the *tegenarioides* group, may have their epigynal structure obscured by a hard plug which presumably functions to prevent subsequent matings.

PHYLOGENY AND DISTRIBUTION

A preliminary scheme of relationships based on sexual characters (Table 1) is given in the form of a cladogram (Fig. 44). Two species groups are recognised: the *glenelgi* group (*B. glenelgi*, *B. loftyensis*, *B. torbayensis*, *B. volucripes*, *B. stirlingi*, *B. montana*), characterised by the apomorphic possession of a deeply invaginated epigynal fossa; and the *tegenarioides* group (*B. brockmani*, *B. tegenarioides*, *B. mullamullangensis*) characterised by the apomorphic possession of a basal origin of the embolus, uncoiled spermathecal ducts and an apical ventral flexure of the tibia. *B. stirlingi* has affinities with *B. montana* but its final placement will have to wait until female specimens are available.

The generic relationships of *Baiami* remain uncertain. Lehtinen's (1967) placement of the genus in his Amaurobiidae: Stiphidiinae was based partly on New Caledonian material now excluded from *Baiami*. Possible relationship with the Tasmanian genus *Tjurunga* Lehtinen 1967 will be clarified only with the collection of additional material, especially males. Forster (1973) places *Baiami* (syn. *Tartarus*) within his Stiphidiidae with what seems to be a somewhat diverse assemblage of genera, the inclusion of *Corasoides* and *Stiphidion* being particularly questionable. However, the closest relatives of *Baiami* include several undescribed genera from S.E. Australia. One of these is of particular interest because it possesses a large median apophysis which, in position and shape, closely corresponds to the posterior conductor process present in *Baiami*. If this relationship is correct it suggests that this process may represent a fused median apophysis in *Baiami* rather than a true conductor element.

The distribution of *Baiami* (Fig. 43), as now constituted, is confined primarily within the southern Australian humid-subhumid climatic zones west of the Grampian Range in association with forest, riparian and karst habitats. The one exception is the cavernicolous relict species *B. mullamullangensis* from a southern arid zone karst. Species richness is greatest in the southwest where seven species occur, including representatives of both species groups. The two south-eastern species both belong to the *glenelgi* group.

TABLE 1. Proposed character states for the genus *Baiami*.

	PLESIOMORPHIC STATE	APOMORPHIC STATE
CYMBIUM		
1. Basal processes	absent	present
2. Number of basal processes	1	2
3. Dorsal flexure	present	absent
4. Apical shape	coniform	digitiform
EMBOLUS		
5. Embolic coil	single	double
6. Origin	apical-lateral	basal
CONDUCTOR		
7. Anterior process shape	triangular	attenuate
8. Anterior margin	gently curved	straight
TIBIA		
9. Retrolateral spine slope	apical	dorsal
EPIGYNUM		
10. Fossa	absent	present
11. Posterior margin of fossa	weakly sclerotised	strongly sclerotised
12. Posterior margin width	narrow	broad
13. Shape of fossa opening	broad, oval	small, subcircular
INTERNAL GENITALIA		
14. Coiling of ducts	loose	tight
15. Spermathecal duct openings	not visible externally	visible externally

Baiami seems to have had a long history in southern Australia. Perhaps as early as the middle Miocene, when warm temperate-subtropical climates prevailed across southern Australia, representatives of both the *glenelgi* and *tegenarioides* groups were already in existence; the former ranging right across southern Australia to the western margin of the marine Murray Basin, while the latter were more south-western in their distribution (in any event, the *tegenarioides* group has left no known eastern representatives). With the onset of drier conditions in the later Miocene-Pliocene trans-southern distributions were disrupted and contracted into eastern and western refuge areas where relatively moist climatic conditions still prevailed. An early consequence of this progressive environmental drying may have been the origin of *B. volucris* which is both the most widely distributed and apparently environmentally tolerant of the western species of *Baiami*. The remaining western species were restricted to moist areas associated with forest habitats on the southern coastal and highland regions, such as the Porongorup and Stirling Ranges. Johnstone et al. (1973) suggest that these ranges may have a long tertiary history extending back to Eocene times.

Subsequent speciation within the genus seems related to continuing climatic and eustatic fluctuations associated with Pliocene and Pleistocene glaciation. The origin of the species *B. brockmani*, *B. montana* and *B. stirlingi* may be attributed simply to episodes of fragmentation of the south western forest region into isolated southern coastal and highland areas during 'interpluvial' phases. West to east trans-southern range extensions may have been involved in the origin of some species, notably the sister species pairs *B. torbayensis* – *B. loftyensis* and *B. tegearioides* – *B. mullamullangensis*. Such E ↔ W 'migrations' presumably became possible under 'pluvial' climatic regimes,

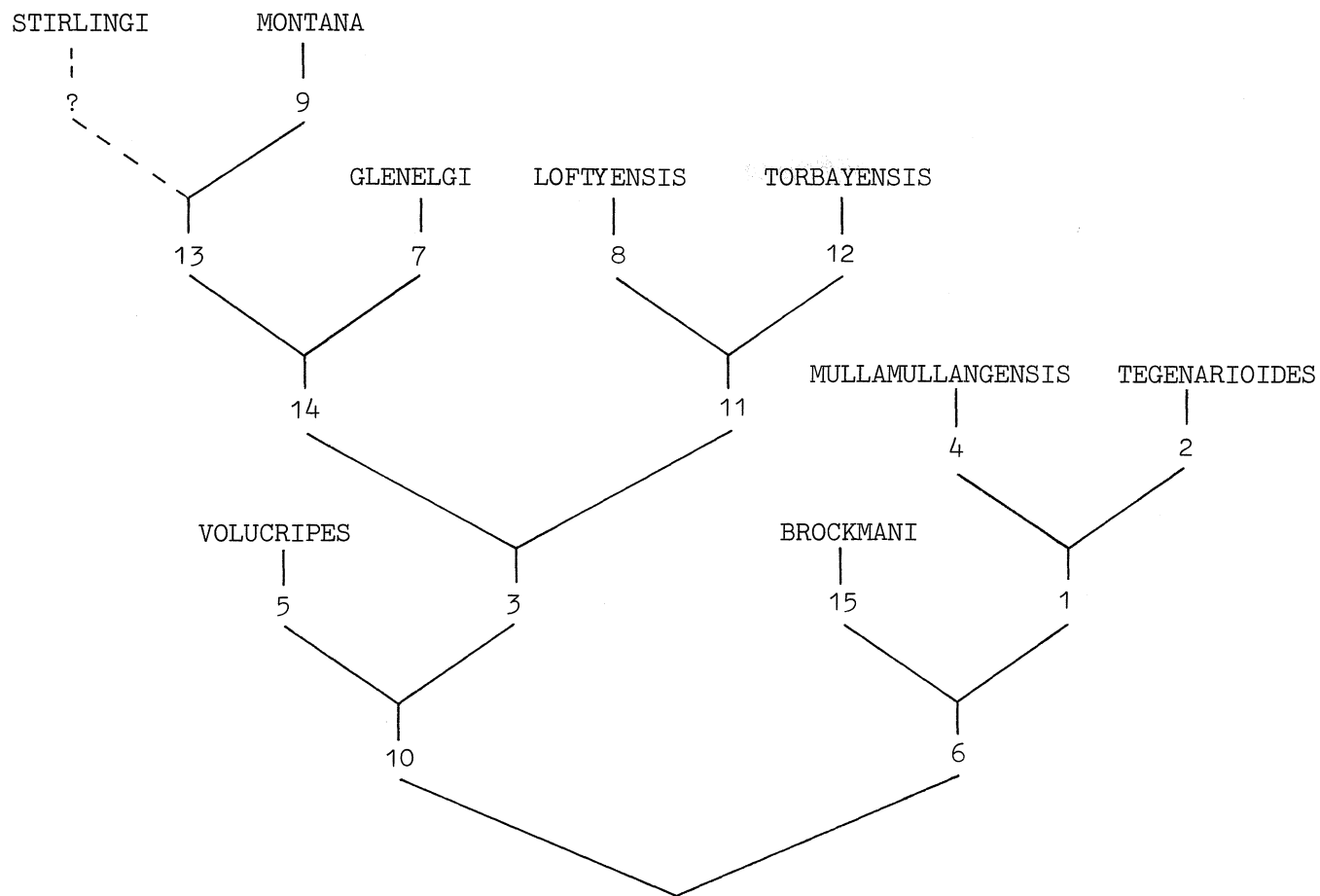


Fig. 44. Cladogram of relationships within the genus *Baiami*.

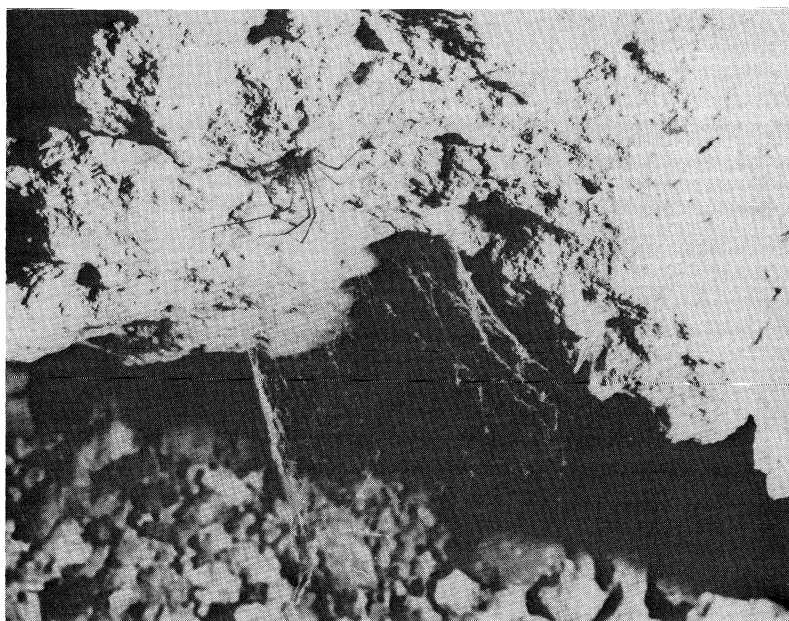


Fig. 45. Upper: *B. tegerarioides*, sheet web on soil bank. Lower: *B. mullamullangensis*, spider in web on cave rockpile.

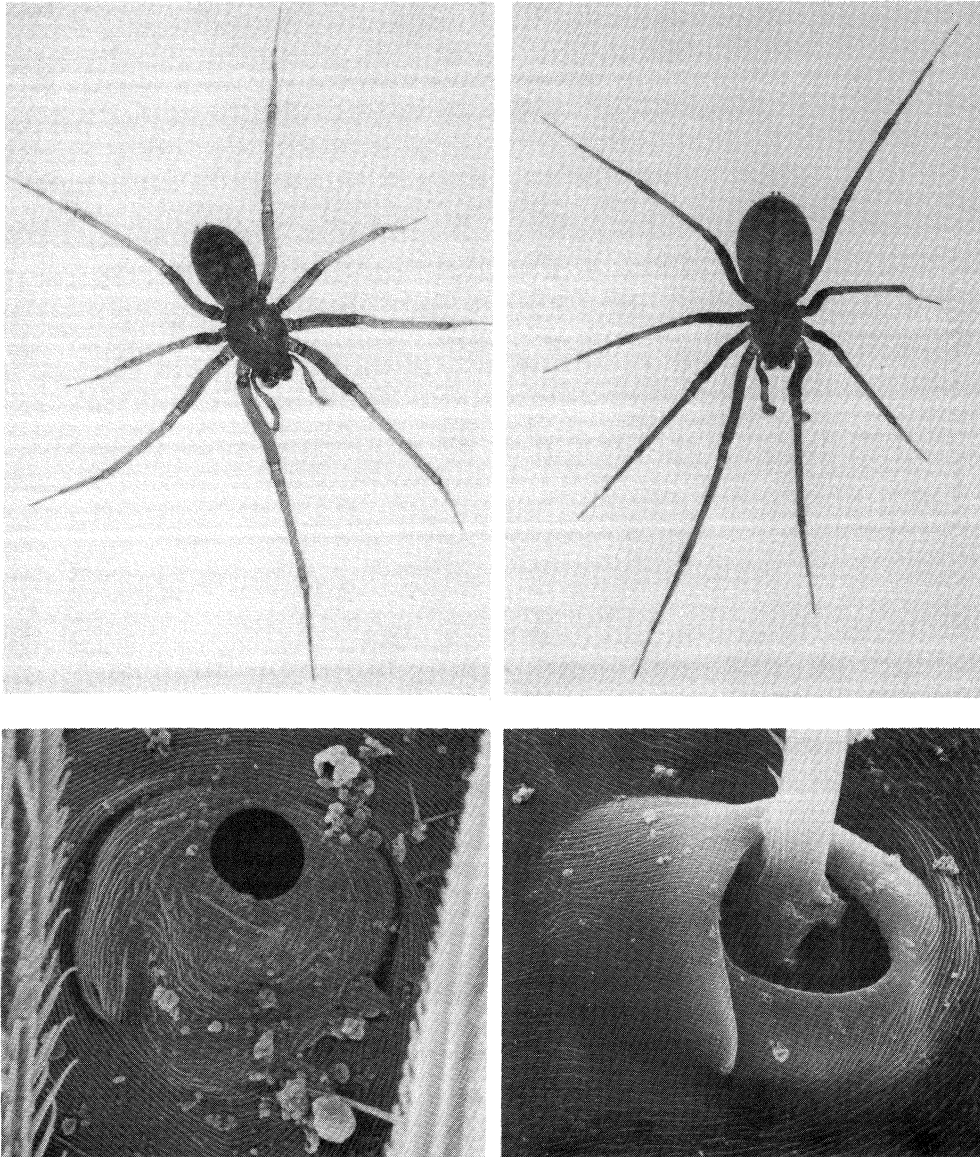


Fig. 46. Upper left: *B. volucripes*, dorsal. Upper right: *B. brockmani*, dorsal. Lower left: *B. mullamullangensis*, tarsal organ (x 1040). Lower right: *B. tegerarioides*, trichobothrium base, metatarsus (x 780).

speciation occurring with population isolation during subsequent 'interpluvials'. Examples of this have been given for several animal groups, notably frogs (Main, 1970). A considerably more speculative speciation event involving an early E↔W range extension relates to the suggested origin of *B. glenelgi* in the east and the progenitor species of *B. montana* and *B. stirlingi* in the west, if indeed the latter prove to be sister species as tentatively postulated here.

ACKNOWLEDGEMENTS

My thanks to Dr B. Y. Main who made available material from her personal collection. Dr M. Moritz and Dr M. Hubert kindly loaned type material from the collections of the Natural Museum, Paris and the Zoological Museum, Berlin respectively. Inking and shading of drawings was done by Ms P. Greer.

REFERENCES

- Berland, L., 1924. Araignees de la Nouvelle Caledonie et des Iles Loyalty. *Nova Caledonia* 3: 157-257.
- Forster, R. R. and C. L. Wilton, 1973. The spiders of New Zealand, Part IV. *Otago Mus. Bull.* 4: 1-309.
- Gray, M. R., 1973. Cavernicolous spiders from the Nullarbor Plain and southwest Australia. *J. Aust. Ent. Soc.* 12: 207-221.
- Johnstone, M. H., D. C. Lowry and P. G. Quilty, 1973. The Geology of southwestern Australia — a review. *J. Roy. Soc. W.A.* 56(1-2): 5-15.
- Lehtinen, P. T., 1967. Classification of the cribellate spiders and some allied families with notes on the evolution of the suborder Araneomorpha. *Annls. Zool. Fenn.* 4: 199-468.
- Main, A. R., 1970. Ecology, systematics and evolution of Australian frogs. *Adv. Ecol. Res.* 5: 37-86.
- Shear, W. A., 1969. Observations on the predatory behaviour of the spider *Hypochilus gertschi* Hoffman (Hypochilidae). *Psyche* 76: 407-417.
- Simon, E., 1980. Araneae, Part I. In Michaelsen and Hartmeyer (ed.) *Die Fauna Sudwest-Australiens*. 1(12): 359-446.

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