

Review of the genera *Glabromantis*, *Paraoxypilus*, and *Phthersigena* (Mantodea: Nanomantidae: Fulciniinae)

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ABSTRACT. Three genera of the mantis subfamily Fulciniinae (Mantodea: Nanomantidae: Fulciniinae) are revised. In the genus *Glabromantis* two species are recognized, in *Paraoxypilus* five species and in *Phthersigena* one species is recognized. The genus *Myrmecomantis* is synonymized with *Paraoxypilus*. *Paraoxypilus laticollis* is a new synonym of *P. kimberleyensis*. *P. distinctus* and *P. flavifemur* are new synonyms of *P. tasmaniensis*. *Phthersigena centralis*, *Phthersigena insularis*, *Phthersigena minor*, *Phthersigena timorensis* and *Paraoxypilus insularis* are new synonyms of *Phthersigena conspersa*. *Glabromantis melania* is a new synonym of *Glabromantis nebulosa* and *Glabromantis pallidifemur* is a new synonym of *Glabromantis unicornis*.

Introduction

The Paraoxypilina (Fulciniinae, Paraoxypilini) are small mantids (body length 20–30 mm) that have a unique spination pattern on the raptorial forelimb. They appear to be restricted to the Australasian region. They live on tree branches and trunks or on the ground and are cryptically coloured, often with various tubercles and spines on the dorsal side of the body. The females of most species are brachypterous or apterous and some species are ant mimics. It seems likely that ants form at least part of the diet for many species. The unique morphology of the forelimb spination may be an adaptation to this diet. Some species display rhythmic movements of the fore limbs, sometimes referred to boxing behaviour. It is not clear what the function of this behaviour is.

In the most recent classification of the Mantodea as a whole by Schwarz & Roy (2019), the Paraoxypilina contained eight genera, seven of which were restricted to the Australasian region. Apart from Milledge (1990), there have been no taxonomic studies on this group since the original species descriptions. The form of the male genitalia, which is considered crucial for species diagnoses in modern treatments, were not examined in earlier descriptions so there has been a need to fully describe and illustrate them. Therefore, the aim of this study was to revise the genera *Glabromantis*, *Paraoxypilus* and *Phthersigena* to help provide further taxonomic clarity to this poorly known group of mantids.

Keywords: Praying mantis, taxonomy, Fulciniinae, Australia

ZooBank registration: urn:lsid:zoobank.org:pub:9DD048E4-84CD-4B07-AC4C-B38E2929A94B

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Submitted: 27 July 2023 **Accepted:** 1 February 2024 **Published:** 15 May 2024 (in print and online simultaneously)

Publisher: The Australian Museum, Sydney, Australia (a statutory authority of, and principally funded by, the NSW State Government)

Citation: Milledge, G. A. 2024. Review of the genera *Glabromantis*, *Paraoxypilus* and *Phthersigena* (Mantodea: Nanomantidae: Fulciniinae).

Records of the Australian Museum 76(2): 69–103. <https://doi.org/10.3853/j.2201-4349.76.2024.1862>

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Materials and methods

Methods and terminology follow Milledge (1990, 1997, 2005, 2014). Habitus photographs were taken with a Canon EOS 5DS camera with EF 100mm macro lens using a StackShot macro rail. Image stacks were composited using Zerene Stacker v. 1.04. Close up shots were taken with a Leica M205 A stereomicroscope camera and software. Images were processed in Adobe Photoshop®. The following abbreviations are used for the male genitalia; *dpr*, distal process of ventral phallomere, *ml*, median lobe, *pa*, phalloid apophysis, *vspr*, ventral sclerified process of right dorsal phallomere. Specimens were not examined from every Australian insect collection for this study due to the covid epidemic. However, specimens from the largest collection of Australian Mantodea, that of the ANIC, and specimens from the AM were available. Specimens which are preserved in ethanol are notated (w) after the locality data. Abbreviations used for institutions where material is held are as follows: AM—Australian Museum, Sydney; ANIC—Australian National Insect Collection, Canberra; Distribution maps were generated using Atlas of Living Australia spatial analysis tools; <https://www.ala.org.au/>, and data points are of examined specimens only, except where noted.

Relationships

The essentially Australasian subtribe *Paraoxypilina* has historically been regarded as a subfamily of the family *Amorphoscelidae* based largely on the reduction of spination on the foretibia. The other subfamilies included in this family, *Amorphoscelinae* and *Perlamantinae*, occur in Africa and Asia. However, recent genetic studies suggested that many of the currently recognized families and subfamilies of the Mantodea were paraphyletic (Svenson & Whiting, 2004, 2009). In the phylogeny generated by Svenson & Whiting (2009), the *paraoxypiline* genera sampled came out as sister group to another Australasian clade of small sized mantises traditionally included in several other families and subfamilies. The more recent re-organization of the classification of the Mantodea by Schwarz & Roy (2019), which builds on these studies using the morphology of male genitalia, places this group as a subtribe in the tribe *Paraoxypilini* (*Fulciniinae*). The sister group to the subtribe *Paraoxypilina* is the tribe *Bolbina*.

Taxonomy

Order Mantodea Latreille, 1802

Family Nanomantidae Brunner de Wattenwyl, 1893

Subfamily Fulciniinae Ehrmann & Roy, 2002

Tribe *Paraoxypilini* Saussure, 1872

Subtribe *Paraoxypilina* Saussure, 1872

Paraoxypilus Saussure, 1870

Paraoxypilus Saussure, 1870: 227. Type species *Paraoxypilus tasmaniensis* Saussure, 1870 designated by Giglio-Tos (1913).

Exparaoxypilus Beier, 1929 (Connors, 2023).

Myrmecomantis Giglio-Tos, 1913: 5. Type species *Myrmecomantis atra* Giglio-Tos, 1913 by monotypy. **syn. nov.**

Diagnosis. Members of this genus can be distinguished from other members of the *Paraoxypilina* by having the anterior margin of the forecoxa armed with small teeth (e.g., Figs. 6 E, F).

Description. Body small, overall colour some shade of brown, grey or black.

Head wider than high, with a pair of prominent apophyses on the vertex beside each eye and sometimes with other spines and tubercles; frontal shield wider than high, with pronounced sub antennal ridge. Antennae fine and filamentous, slightly longer than prothorax in female, about three times longer than prothorax in male.

Pronotum short and broad, margin with slight to pronounced supracoxal expansion and with a more or less prominent spine at each corner, dorsal surface variously spined and/or tuberculate, margins tuberculate to denticulate, with distinct median carina which has more or less well-developed dorsal projections.

Forecoxa with anterior margin slightly expanded and armed with small teeth, inner face often with contrasting markings, outer face divided by strong longitudinal ridge, coxa longer than pronotum. Fore femur strongly expanded dorsally, dorsal margin broadly arched, inner face often with contrasting markings, outer face with central longitudinal ridge; claw groove at midpoint, deep and pronounced; ventrally with three discoidal spines, in length from longest to shortest 2–1–3, outer row of five small spines, inner row of five spines and double row of small tubercles between spines one and two; area between inner and outer spines tuberculate, often with several low sclerotized ridges and with central longitudinal depression in which the tibia rests. Fore tibia without spines but with inner row of small tubercles near claw corresponding to similar row on femur; outer face slightly concave, inner face often marked with contrasting colours.

Male with wings longer than abdomen, forewings translucent to semi opaque, hindwings mostly hyaline; female apterous, although very small vestiges of wings apparent. Mesonotum and metanotum with small caudal projection on median carina.

Mid and hind legs slender, unmodified, often with pale banding.

Abdomen of male elongate, narrow, lateral margins slightly expanded, dorsal median carina slightly expanded toward posterior margins of tergites; abdomen of female with lateral margins strongly expanded giving abdomen and ovoid appearance, posterior margins of tergites with scattered bumpy protuberances, with distinct dorsal median carina which is expanded toward posterior margins of tergites, anterior margin of tergite 1 often whitish in colour; supra-anal plate of male shorter than subgenital plate, that of female elongate, covering ovipositor, carinate with blunt pointed tip. Cerci short, about the same length as supra-anal plate in male, about half the length of supra-anal plate in

female. Female genitalia with apical lobe of gonapophysis 8 prominent and spatulate. Male with relatively short styli. Male genitalia with vspr prominent.

Remarks. *Myrmecomantis atra* shows no apomorphic characters that warrant separation from *Paraoxyphilus*. Giglio-Tos (1913) did not list any diagnostic characters in his description of *M. atra*. His generic key (Giglio-Tos 1913) separated these two genera based on several characters of the pronotum and forecoxa. Only three species of *Paraoxyphilus* were known at the time. His later generic key (Giglio-Tos, 1927) separates this genus from *Paraoxyphilus* by the possession of a well-developed pre-acetabular spine, a character which varies in other *Paraoxyphilus* species from poorly to well developed.

Species of *Paraoxyphilus* are commonly known as boxer mantids due to the curious boxing like movements of their forelegs. This is possibly associated the expanded femora and distinctive colour patterns of these limbs. The function of this behaviour is unclear but may involve intraspecific signalling. This behaviour is also displayed in at least some species of *Bolbe*, which, according to the phylogeny of Schwarz & Roy (2019) is in sister group to the *Paraoxyphilina*.

Male genital morphology is conserved compared to many other Mantodean taxa, with relatively small differences between species and genera. The morphology of the right phallomere varies little between species, so is only illustrated for the type species of *Paraoxyphilus* and *Glabromantis*.

Key to species of *Paraoxyphilus*

- | | | |
|---|-----------------------------------------------------------------------------------|--------------------------|
| 1 | Head with distinct par-ocular spines (Fig. 6C) | 2 |
| — | Head without distinct par-ocular spines | 3 |
| 2 | Inner face of foreleg with strongly contrasting colours (Fig. 6E, F) | <i>P. tasmaniensis</i> |
| — | Inner face of foreleg without strongly contrasting colours (Fig. 7E, F) | <i>P. armatus</i> |
| 3 | Apophyses on vertex of head with pointed apex (Fig. 8A, B) | <i>P. verreauxii</i> |
| — | Apophyses on vertex of head with broadly rounded apex (Figs. 9A, B, 10A, B) | 4 |
| 4 | Pronotal margin with prominent spine adjacent to coxal base (Fig. 4B) | <i>P. kimberleyensis</i> |
| — | Pronotal margin with minute spine adjacent to coxal base | <i>P. atra</i> |

Paraoxyphilus tasmaniensis Saussure, 1870

Figs. 1A–B; 3A–B; 6 A–F; 14 A–B; 15A–D; 19A

Paraoxyphilus tasmaniensis Saussure, 1870: 155.

Paraoxyphilus flavifemur Sjöstedt, 1918: 3, **syn. nov.**

Paraoxyphilus distinctus Beier, 1929: 129–131, **syn. nov.**

Type material. Not examined but good quality images of the holotypes of *Paraoxyphilus tasmaniensis*, and *Paraoxyphilus distinctus* examined. Sjöstedt (1918) provides good description and illustrations of *Paraoxyphilus flavifemur*.

Material examined. Australian Capital Territory. 1♀, Tidbinbilla Nature Reserve, 35°25'05"S 148°55'20"E, 1980, P. Ormay (AM). 1♂, Blundell's, 33.3km W of Canberra, 20 Feb 1953, I.F.B. Common. 1♀, Canberra, Nov 1949, Wylie. 1♀, Canberra, 2 Mar 1952, K.H.L. Key. 1♂, Coppins Crossing, Murrumbidgee R., 16 Apr 1982, J.C. Wombey. 1♂, Mt Franklin Chalet, 1 Apr 1953, K.H.L. Key. 1♂, Mt Franklin, Brindabella Ra., 35°30'S 148°47'E, 15 Mar 1982, D.C.F. Rentz. 1♀, Mt Franklin, Brindabella Ra., 16 Feb 1975, R.C. Lewis. 1♀, Wamboin, ca 11km NE of Queanbeyan, 11 Feb 1985, G. Greig (all ANIC). Queensland. 1♂, Binna Burra, Lamington NP, 4 Dec 1985, H. Imai & M. Kubota. 1♀ juv., Blackdown Tableland, Expedition Range, 8 Jan 1976, G. Daniels. 1♂, Bluff Ra., near Biggenden, 3 May 1972, H. Frauca. 1♀, Camp Milo, Cooloola NP, 26°00'S 153°05'E, 16–20 Oct 1978, D.C.F. Rentz & J. Balderson. 1♀, Carnarvon Gorge NP, Mossvale Gardens, 30 Nov 1993, G. Cassis. 1♂, Finch Hatton Gorge, W of Mackay, 14–15 Dec 1982, G. Theischenger (w). 1♀, 'Gwinganna', Lookout Junction, 6km SSW of Tallebudgera, 28°11'S 153°23'E, 18–23 Apr 1995, D.C.F. Rentz et al. (w). 1♀, Highvale, 23km NW of Brisbane, 24 Jan 1960, R. Straatman. 1♂, Kenmore, 23 Oct 1927, M.A. Schneider (both AM). 1♀, Mt Coot-tha,

Brisbane, 19 Jul 1952, K.H.L. Key. 3♂, Nth Tamborine, 10 Jan 1961, M.S. Upton. 1♂, Parkhurst, Rockhampton, 23°18'S 150°31'E, 18 Sep 1979, I.F.B. Common. 1♀, 13km N of Quinalow, 23 Dec 1982, J.T. Doyen (w). 1♀, Rainbow Falls, Expedition Ra., SW of Dingo, 23°51'S 149°06'E, 1 Feb 1981, D.C.F. Rentz & D.T. Gwynne (w). 3♂, 13.7km NNE of Ravenshoe, 22 Apr 1969, I.F.B. Common & M. Upton (all ANIC). New South Wales. 1♀, 3km W of Baerami, Wollemi NP, 32.38430° S 150.43741° E, 9–19 Jan 2012, J. Gollan & M. Ashcroft (w). 1♂, Bombala, 4 Mar 1932, A.J. Barrett, K64965. 1♀, Cessnock, 14 Feb 1947, M. Cooke. 1♀, Collaroy, 11 Feb 1949, C.W. Offner. 1♀, Como, 14 Dec 1952, J. Freeland. 1♂, Coogee, 3 Dec 1922, G.P. Whitley. 1♀, Dungog State Forest, 3 Dec 1966, J. Walsh & G. Holloway. 1♂ juv., Glenorie, 9 Oct 1992, A. Leask. 1♀, Gunning, 1949, L. Stevens. 1♀, Heathcote, Mar 1962, R. Witchard. 1juv., Jannali, 14 Mar 1976, G. Levot. 1♂, Kilarney Gap, Kaputar NP, 30.138°S 150.007°E, 14 Nov 2009, D. Britton & J. Rescei (w). 1♂, 1♀ juv., Kunderang Trail, 50m s of Wonga Gully, 30°48'S 152°07'E, 4 Feb–9 Apr 1993, M. Gray & G. Cassis (w). 1♀, Leura, Jan 1932, K.K. Spence. 1♀, Longueville, 5 May 1930, E.B. Taylor, K64207. 1♀, Main Ck., track of Mt Tindal Rd., Ramornie SF, 4 Feb–9 Apr 1993, 29°43'S 152°38'E, M. Gray & G. Cassis (w). 1♂, Maroubra, Nov 1921, T.A. Murphy. 1♂ juv., Middle Cove, Apr 1992, M. Guider. 1♂ juv., Mooney Mooney Ck., Nov 1980, B.J. Day & W. Loh. 1♀, 4km SW of Mt. Tomah, Blue Mountains, 3 Mar 1979, G. Daniels. 1♂, 'Mudaridge', Gloucester River Rd., 32°03'17"S 151°44'42"E, 3 Mar 2016, G. Milledge & H. Smith (w). 2♀, Newnes SF, Blackfellows Hand R., 5.9km from Sunnyside Rd., 33°21'26"S 150°08'40"E, 6–20 Mar 2006, G. Milledge & M. Beatson (w). 1♀, Padstow, 2 Oct 1961, Roehmer. 1♂, Port Macquarie, 2 Dec 1961, McAlpine & Lossin. 1♀, Royal National Park, 21 Aug 1957, J. Dole. 1♀, 7km NW of Rylstone, 32.73996° S 149.92805° E, 9–19 Jan 2012, J. Gollan & M. Ashcroft (w). 1♀, Smiths Lake, 20 Aug 1971. 2juv., Spirabo State Forest, 29°17'S 152°05'E, M. Gray & G. Cassis, 4 Feb–9 Apr 1993 (w). 1♂, Sydney, C.F. Kelaher, K42268. 1♀, Vaucluse, Jan 1928, R.S. Watsford, K57455. 1♂, vicinity of Spring Ridge, 17km NW of Gulgong, 5 Apr 1979, D.K. McAlpine & B.J. Day.

1♂, Wahroonga, 1 Apr 1922, Nicholson. 1♀, Wahroonga, 23 Apr 1943, A. Musgrave. 1♂, 3km E of Wedderburn, 34°08'S 150°49'E, 13 Mar 2006, D. Britton. 1♀, 0.5km from Wheatly Rd., on Camp Creek Rd., 28°47'S 152°19'E, 4 Feb–9 Apr 1993, M. Gray & G. Cassis (w). 1♀, Woy Woy, 12 Nov 1921, Nicholson (all AM). 1♂, Arrawarra, 3 Apr 1968, C.W. Frazier. 1♀, Balls Head, Apr 1923. 1♀, Bundjalung Reserve, 5km SW of Evans Head, 8 Mar 1981, H.M. Cameron. 3♀, Barrington Tops, 1946, H.M. Cane. 1♂, Boyd Creek Crossing, 16.8km SE of Jenolan Caves, 33°58'S 150°03'E, 31 Jan 1969, J. Balderson. 1♀, Broulee, 31°51'S 150°11'E, 25 Feb 1979, K.H.L. Key. 1♀, same data except 28 Jan 1984. 1♂, Broulee, 27 Feb 1962, M.S. Upton. 1♂, Broulee, 24 Feb 1962, M.S. Upton. 1♀, Brown Mt., 12 Mar 1969, D.F. Waterhouse. 1♂, Congo, 8km ESE of Moruya, 35°58'S 150°09'E, 12 Mar 1983, M.S. Upton. 1♂, same data except 6 Jan 1983. 1♂, same data except 26 Jan 1980. 1♂, same data except 5 Jan 1981. 1♀, same data except 29 Dec 1979. 1♂, same data except 15 Mar 1980. 1♂, same data except 16 Mar 1980. 1♂, same data except 27 Oct 1979. 1♂, Cudgera Ck., near Byron Bay, 14 Dec 1985 (w). 1♂, Dandahra Ck., Grafton Rd., 100km from Glen Innes, 12 Oct 1962, A. Stock. 1♀, 3km SE of Evans head, 29°07'S 153°27'E, 7 Jan 1971, K.H.L. Key. 1♀, 7.2km N of Evans Head, 29°03'S 153°25'E, 17 Dec 1971, Key & Balderson. 3♂, Gibraltar Range State Forest, 8 Dec 1964, C.W. Frazier. 2♀, Guyra, 5 Jan 1949, A. Dyce. 1♂, Guyra, 27 Dec 1949, A. Dyce. 1♀, Littledale Stn., near Cootamundra, 19 Mar 1978, R.C. Lewis. 2♂, 8.3km SSW of Macksville, 9 Nov 1967, K.H.L. Key. 1♂, Merimbula, 36°54'S 149°56'E, 15 Mar 1998, E.C. Zimmerman. 1♀, Mongarlowe, near Braidwood, 22 Mar 1986, R. Whitten. 1♀, Paddy's R., 11.6km NE of Marulan, 29 Mar 1959, K.R. Norris. 3♂, Pilot Hill, Bago Forest, Batlow, 1 Mar 1957, T.G. Campbell. 1♂, Sawtell, 5 Dec 1939, CRW. 1♂, Slaty Ck., 31km ENE of Tenterfield, 16 Nov 1982, D.C.F. Rentz & C.D. MacNeill. 1♂, Tea Tree Creek, Armidale, 25 Jan 1962, C.W. Frazier. 1♀, Yetman, 22 Nov 1964, J. Frazier. 1♂, Walla Lake, 15 Mar 1981, H. Black. 1♀, 'Wamboin', 11km NE of Queanbeyan, 5 Dec 1982, J.M. Walker. 2♀, Wilton (CSIRO Field Station), 7 Jun 1965, CSIRO staff. 1♀, Wingham, 3 Feb 1964, J.S. McKay (all ANIC).

South Australia. 1♀, Whyalla, Mar 1951, H. Mincham (AM). 1♀, Ardrossan, 28–29 Dec 1954, M.J.D. White. 1♂, Buckaringa Gorge, Flinders Ranges, ca 30km NNW of Quorn, 18 Dec 1985, C. Reid. 1♀, Normanville, 25 Dec 1974, M.J.D. White. 1♀, Oakland Park, Adelaide, 24 Dec 1966, M.S. Upton. 1♀, 79km NNW of Renmark, 33°31'S 140°24'E, 12–21 Dec 1995, S. Dominelli & K.R. Pullen (w). 1♂, same data except 11 Oct–9 Nov 1995, K.R. Pullen. 1♂, 14km NNW of Yalata Mission, 31°22'S 131°47'E, 10 May 1983, E.S. Nielsen & E.D. Edwards (w) (all ANIC).

Tasmania. 2♂, 1km SSE of Gladstone, 40°58'S 148°01'E, 6 Feb 1983, J.C. Cardale (w). 3♂, Freycinet National Park, 28 Feb 1963, I.F.B. Common & M.S. Upton (all ANIC).

Victoria. 1♂, Blairgowrie, near Sorrento, 16 Feb 1963, J.C. LeSouef. 1♀, Millgrove, 3.3km W of Warburton, 1 May 1964, R. Crozier. 1♂, Omeo, 26 Feb 1980, J.C. Cardale. 1♀, Skyline Rd., Kangaroo Ground, 12 Feb 1982, I.A.E. Bayly (all ANIC).

Western Australia. 3♂, N of Cave Rock Camp, 28.6km S of Burra Rock, 31.640°S 121.209°E, 17 Nov 2007, D.R. Britton & D.J. Bickel (AM). 2♂, 1.7km WNW of Balladonia Motel, 3 Nov 1969, Key & Upton. 1♀, Crawley, 15 Jan 1936, K.R. Norris. 1♀, Darlington, 20 Sep 1964, G.I. Bush. 1♀, 3.3km NE of Fraser Ra. H.S., 4 Nov 1969, Key & Upton. 1♀, Kalgoorlie, 8 Jan 1986, A.J. Graham. 2♂, 40km WSW of Madura, 30 Apr 1968, I.F.B. Common & M.S. Upton. 1♂, Nedlands, 17 Mar 1961, M.M.H. Wallace. 1♂, same data except 18 Mar 1963. 1♂, same data except 21 Feb 1961. 1♀, Thomas R., 23km WNW of Mt Arid, 7 Nov 1977, M.S. Upton & J.E. Feehan. 1♀, Vasse at Boyatupur Drain (Highway 10), 33°40'S 115°14'E, 29 Oct 1999, D.C.F. Rentz & Y.N. Su (w). Near Warriup Hill, 63km ENE of Albany, 34°44'S 118°28'E, 14–17 Jan 1991, Rentz et al (all ANIC).

Diagnosis. *Paraoxyphilus tasmaniensis* can be separated from other species in the genus by the possession of distinct par-ocular spines and pointed vertical apophyses on the head and possession of a unique contrasting colour pattern on the inner face of the foreleg.

Description. Body colour mottled brown, peppered with darker spots. Head (Fig. 6A–B) with vertical apophyses prominent, pointed and lightly tuberculate; par-ocular spines pronounced; ocelli at base of pointed projections (lateral ones more prominent); frontal shield with subantennal ridge produced into small tooth at mid-point.

Prozone of thorax (Fig. 6C–D) with low diagonal ridge, either side of carina, which is produced into a point near

saddle groove; metazone with two pairs of spiny projections posterior to saddle groove, second pair less prominent in male; median carina distinct and undulating with several blunt projections; pronotal margin tuberculate, expanded and produced into a point above coxal insertions; prosternum black with white markings, with small pre-acetabular spine.

Wings with tegmina translucent, peppered with darker and lighter spots and blotches; hindwings with costal margin brownish tinged, tip similar colour to tegmina, remainder hyaline.

Forecoxa (Fig. 6E–F) with 6–8 distinct spines on anterior margin and a larger adjacent pair near coxal base, posterior margin with double row of fine tubercles; inner face with scattered small tubercles and a larger pair of tubercles near coxal base posteriorly, colour cream or yellowish to orange with blackish brown bands proximally and distally; outer face with anterior half similar to inner face, posterior half similar in colour to rest of body. Inner face of fore femur (Fig. 6E–F) with broad cream or yellowish to orange central band bounded by broad dark band distally (with pale transverse bands in male) and narrow dark band proximally, femoral brush somewhat raised; outer face body coloured or slightly lighter than rest of body, with central longitudinal ridge. Inner face of fore tibia blackish, with white spot near tarsal insertion and proximal white band in male. Fore tarsus dark with white banding.

Dpr of male genitalia (Fig. 15A–D) with broad truncate central process and narrow dextral process with shagreened tip. Pa with single spinose, knob-like anterior projection and broad sclerotized region between it and ml. Ml squat, stout and shagreened.

Immature stages. Juveniles similar in appearance to adult females; ootheca (Fig. 14A–B) cream coloured, short and narrow.

Distribution and habits. Widespread, found from east coastal Queensland through southeastern Australia to southwestern Australia (Fig. 19A). Most often found at ground level but also sometimes on tree trunks. Males attracted to lights at night.

Remarks. Specimens from the northern end of the distribution have less pronounced protuberances on the head and thorax than southern populations but are otherwise indistinguishable. This is the form described as *P. flavifemur* by Sjöstedt, 1918. The morphological differences used by Beier (1929) to distinguish *P. distinctus* from both *P. tasmaniensis* and *P. flavifemur* are minor and fall well within the range of variation for this species.

Paraoxyphilus armatus Giglio-Tos, 1913

Figs. 3C, F; 7A–F; 16A–B; 19B

Paraoxyphilus armatus Giglio-Tos, 1913: 5.

Type material. Not examined.

Material examined. Queensland. 1♀, Collinsville, 22 May 1974, A.A. Lazer. 1♀, Marbuiag Island, Torres Strait, 1926, J. Dorne, K54236 (both AM). 1♀, Annan R., 3km SW of Black Mountain, near Cooktown, 15°41'S 145°12'E, 26–27 Apr 1981, D.C.F. Rentz (w). 1♀, Batavia Downs, 12°40'S 142°39'E, 22 Jun–23 Aug 1992, P. Zborowski & J. Cardale (w). 1♀, 4km E of Batavia Downs, 12°39'S 142°42'E, 22 Jun–23 Aug 1992, P. Zborowski & J. Cardale (w). 1♂, 10km SE of Black Mtn Rd, on Toll Road (Quaid

Rd., 16°35'39.49"S 145°27'03.86"E, 29 May 2011, D.C.F. Rentz & B. Richardson. 1♀, Cockatoo Ck. Xing, 17km NW of Heathlands, 11°39'S 142°27'E, 1–21 Mar 1992, P. Feehney (w). 1♂, Julatten, 22 Jan 1995, B.P. Moore. 1♀, 3km NE of Mt Webb, near Cooktown, 15°03'S 145°09'E, 3 Oct 1980, T.A. Weir & R.A. Barrett. 1♀, Pascoe R., 16 Jul 1986, D.C.F. Rentz (all ANIC).

Northern Territory. 5♂, Borrooloola, 16°04'S 136°18'E, 22 Dec 1991, M.S. & B.J. Moulds. 1♂, Darwin, Jan 1939, M. Kamper (AM). 2♀, Cooinda, ca. 19km SW of Mt Cahill, 7–8 Sep 1982, H.B. Gill & J.C. Wombey (w). 1♂, Darwin (Rapid Creek), 10 Mar 1972, B.C. Abbey. 1♂, Darwin, 10 Apr 1972, G.A. Silsby. 1♂, Darwin, 22 May 1972, B.C. Abbey. 1♂, Darwin, 25 Apr 1972, B.C. Abbey. 1♂, 1♀, Deaf Adder Gorge, 15 Oct 1972, E.F. Reik. 1♂, Goose Lagoon, 11km SSW of Borrooloola, 16°10'S 136°15'E, 31 Oct 1975, M.S. Upton. 1♂, Goose Lagoon, 11km SSW of Borrooloola, 16°10'S 136°15'E, 17 Apr 1976, Key, Balderson et al. 1♂, Tindal, 14°31'S 132°22'E, 1–20 Dec 1967, W.J.M. Vestjens. 1♀, Urralugoorwa Waterhole, 24km ESE of Munmarlary H.S., Mar 1983, H.B. Gill & J.C. Wombey (w) (all ANIC).

Diagnosis. *Paraoxyphilus armatus* can be separated from other species in the genus by the possession of distinct parocular spines and pointed vertical apophyses on the head and lack of a contrasting colour pattern on the inner face of the foreleg.

Description. Body colour yellow brown or brown, peppered with slightly darker spots. Head (Fig. 7A–B) with vertical apophyses prominent, pointed and lightly tuberculate; parocular spines pronounced; ocelli at base of short, pointed projections; frontal shield with subantennal ridge lacking projections.

Prozone of thorax (Fig. 7C–D) tuberculate with low diagonal ridge either side of carina; metazone anteriorly tuberculate with two pairs of spiny projections posterior to saddle groove, second pair more prominent; median carina distinct and undulating with several large triangular projections in female, small projections in male; pronotal margin spinose, expanded and produced into spine above coxal insertions; prosternum pale with some darker markings and with well-developed pre-acetabular spine.

Wings (Fig. 3A) with tegmina translucent, peppered with a few darker spots and blotches; hindwings with tip similar colour to tegmina, remainder hyaline.

Forecoxa (Fig. 7E–F) with 8–9 long spines interspersed with smaller spines on anterior margin, posterior margin with double row of numerous fine teeth; inner face with scattered small tubercles on distal half and a row of hirsute tubercles near coxal base posteriorly, colour pale with some darker pigment around tubercles; outer face divided by strong longitudinal dentate ridge, similar in colour to rest of body. Inner face of fore femur (Fig. 7E–F) pale with a few slightly darker markings, femoral brush somewhat raised; outer face body coloured, with central longitudinal ridge. Inner face of fore tibia without distinctive colour markings. Fore tarsus with pale banding.

Dpr of male genitalia (Fig. 18C–D) with short narrow central process, moderately broad dextral process with shagreened tip and slight sinistral projection. Pa with single moderate, distinctly spinose, anterior projection and narrow sclerotized section between it and ml. Ml squat, stout and shagreened.

Immature stages. Juvenile stages and ootheca unknown.

Distribution and habits. Found in the northern parts of Queensland and the Northern Territory (Fig. 19B). Habits unknown but probably similar to other species in the genus.

Remarks. This species is distinctly more spinose and generally lighter in colour than others in the genus.

Paraoxyphilus verreauxii Saussure, 1870

Figs. 1 C–E; 3 D–E; 8 A–F; 14C; 16A–B; 20A

Paraoxyphilus verreauxii Saussure, 1870: 155.

Exparoxyphilus africanus Beier, 1929 (Connors, 2023)

Type material. The holotype, which is in the Muséum national d'Histoire naturelle in Paris, was not examined (see remarks below).

Material examined. Queensland. 3♂, Abattoir Swamp Environmental Park, Mossman–Mt Molloy Rd., 16°38'08"S 145°19'29"E, 30 Apr 1998, G. Milledge (w). 1♂, Almaden, Chillagoe district, Jun–Oct 1931, W.D. Campbell. 2♀, Almaden, Chillagoe district, Nov 1929, W.D. Campbell, K57397. 1♂ juv., Blackdown Tableland, Expedition Range, 9 Jan 1976, G. Daniels. 1♀, Brisbane, Illidge, K43784. 2♂ juv., Bundaberg, Moore Park, 21 Apr 1973, KRB-CV. 1♀, Byfield, near Yeppoon, Oct 1924, A. Musgrave. 1♀, Byfield State Forest, 1 Jan 1976, G. Daniels. 1♂, Byfield State Forest, 1 Dec 1979, G. Daniels. 1♂, Carnarvon Range, Dec 1941, N. Geary. 1♀, Clairview, 22°07'S 149°32'E, 17 Apr 1998, G. Milledge (w). 1♂, 1♀, Clermont, Jan 1928, K.K. Spence, K63531 & K63532. 1♂, Dawson R., N. of Injune, 25°23'02"S 148°38'44"E, 11 Jan 1999, M.S. & B.J. Moulds. 1♀ juv., Eungella area, road to Eungella Dam, at junction of Freegards Rd., 21°12'S 148°29'E, 21 Apr 1998, G. Milledge (w). 1♂ juv., Grants Ck, Dawes Range, SW of Gladstone, 24°28'S 151°08'E, O. Griffiths. 1♂, Ingham, 8 Aug 1983, N.W. Rodd. 1♀, Kamerunga, near Cairns, 3 Apr 1975, M.S. Moulds. 1♀, Kuranda, 25 Dec 1958, D.K. McAlpine. 1♂ juv., Marlborough Rd, 2km N of junction with Apis Creek Rd, 22° 52'50"S 149° 32'19"E, 29 Nov 2008, G. Milledge (w). 1♀, Marlborough Rd., 7.4km W of Bruce Hwy., 22°52'15"S 149°50'04"E, 29 Nov 2008, G. Milledge & H. Smith (w). 1♀, Stradbroke Island, Brown Lake, 1 Mar 1980, G. Daniels. 1♀, Warwick, 1950, E. Miller (all AM). 1♂, 23km E of Almaden, 17°21'S 144°54'E, 31 Mar 1984, A. Calder & T. Weir. 1♀, Balgal Beach, 50km N of Townsville, 19°01'S 146°24'E, 6 Nov 1991, L. Weight (w). 5♂, 4♀, Barron Falls, near Kuranda, Jan 1976, W. Walford-Huggins. 1♀, Bin Bin Ra., near Didcot, 7 Jan 1975, H. Frauca. 1♂, 17km SE of Black Mtn Rd, on Toll Road, 16°46'S 146°25'E, 6 Dec 2010, D.C.F. Rentz & B. Richardson. 1♂, 8♀, 1 juv., Bluff Ra., near Biggenden, Jan 1972, H. Frauca. 1♀, same data except Aug 1971. 3♂, 1♀, same data except 3 May 1972. 1♀, same data except Aug 1971. 1♀, same data except 21 Apr 1977. 1♀, same data except 13 Mar 1977. 1♂, Brisbane, 25 Feb 1941, C.F. Ashby. 1♂, Burnett R. crossing, 10km NE of Eidsvold, 9 Jan 1970, Britton et al. 3♂ 1♀, Cairns, 24 Nov 1971, R. Hardie. 1♂, 0.8km SE of Camp Milo, Coolooloo NP, 26°00'S 153°05'E, 16 Apr 1982, D.C.F. Rentz. 1♂, Camp Milo, Coolooloo NP, 26°00'S 153°05'E, 16–20 Oct 1978, D.C.F. Rentz & J. Balderson. 1♀, near Clohesy R., 12km SW of Kuranda, 16°54'S 145°34'E, 7 Feb 1988, D.C.F. Rentz. 1♀, 2km W of Cunninghams Gap, 25 Dec 1982, J.T. Doyen (w). 1♀, Davies Ck., ca. 14km NE of Mareeba, 20 Jan 1977, B.P. Moore. 1♂, 3.3km SE of Eidsvold, 26 Oct 1967, M.J.D. White et al. 2♀, Electra, S of Bundaberg, 19 Mar 1977, H. Frauca. 1♀, 3–10 km SW of Electra, 25°01'S 152°09'E, 2 Aug 1977, J. Balderson. 1♂, Emu Ck., 27km SW of Dimbulah, 25 Nov 1981, J. Balderson. 1♀, 7km W of Emu Park, 23°15'S 150°45'E, 15 Oct 1973, K.H.L. Key. 1♀, Eureka Ck., 9km SW of Dimbulah, 17°11'S 145°02'E, 25 Nov 1981, J. Balderson. 1♀, Forty Mile Scrub NP, 55km SSW of Mt Garnet, 18°06'S 144°50'E, 29–30 Nov 1981, J. Balderson. 1♂, Flinders R., 59km SW of Normanton, 18°10'S 140°51'E, 1 Dec 1981, J. Balderson. 1♀, Fraser I., 20–26 Apr 1975, V.B. Brown. 2♂, 25km E of Georgetown, 26 Apr 1996, J. & P. Hasenpusch. 1♀, Great Keppel I., 23°11'S 150°58'E, 1 Jul 1980, Balderson & Vickery. 1♂, Heathlands, 11°45'S 142°35'E, 24–28 Feb 1993, P. Zborowski. 1♀ juv., same data except 15–26 Jan 1992, I. Naumann & T.A. Weir, (w). 1♂, Hogback Ra., near Gin Gin, 11 Apr 1972. 1♂ juv., 1♀, same data except 3 Apr 1972. 1♂, 1♀, 14km NW of Hope Vale Mission, near Cooktown, 15°16'S 144°59'E, 9 Oct 1980, T.A. Weir & R.A. Barrett. 3♂, 1♀, 14km NW of Hope Vale Mission, near Cooktown, 15°16'S 144°59'E, 7–10 Oct 1981, D.C.F. Rentz. 3♀, 8juvs., same data except (w). 1♂, Horseshoe Lookout, Blackdown Tableland, SW of Dingo, 23°46'S 149°06'E, 1–2 Feb 1981, D.C.F. Rentz & D.T. Gwynne. 1♂ juv., 6km SE of Ilbilbie, SSE of Sarina, 7 Jul 1980, Balderson & Vickery. 1♂, Ingham, 14 Mar 1961, R. Straatman. 1♂, Ingham, 29 Mar 1961, K.L. Harley. 2♂, Ingham, 27 Apr 1961, K.L. Harley. 1♂, 8.3km ENE of Ingham, 26 May 1961, R. Straatman. 1♂, 22km N of Ingham, 18°27'S 146°08'E, 28 Sep 1979, J. Balderson. 1♂, 20km N of Ingham, 14 Sep 1956, M.J.D. White. 2♂, Isabella Ck., 32km WNW of Cooktown, 15°18'S 145°00'E, 22 May 1977, I.F.B. Common & E.D. Edwards. 1♀, Lake Tinaroo, 18 Jun 1962, R. Taylor. 1♂, Magnetic I., 1 Aug 1966, B.P. Moore. 1♂, 10km SW of

Mareeba, 25 Nov 1981, J. Balderson. 1♂, 24km NW of Mareeba, 16°47'S 145°22'E, 24–25 Nov 1981, J. Balderson (w). 1♂, Mckinnon Ck., 1km S of The Lynd H.S., 18°57'S 144°30'E, 12 Nov 1981, J. Balderson. 2♂, Mimosa Ck., Expedition Ra., SW of Dingo, 23°48'S 149°04'E, 1 Feb 1981, D.C.F. Rentz & D.T. Gwynne. 2♀, 10km SE of Mt Carbine, 16°37'S 145°12'E, 24 Nov 1981, J. Balderson. 1♀, 4km S of Mt Coolon, 1 Apr 1977, R.C. Lewis. 1♂ 2♀, 16.6km SWS of Mt Faulkner, Clermont distr., 7 Jan 1965, M.J.D. White. 1♀, 5km SW of Mt Garnet, 26 Jan 1996, B.P. Moore. 1♂, 1km N of Mount Molloy, 16°40'S 145°20'E, 24 Nov 1981, J. Balderson. 3♂, 1♀, Mt Walsh NP, Bluff Ra., near Biggenden, 8 May 1972, H. Frauca. 1♂, 3km NE of Mt Webb, near Cooktown, 15°03'S 145°09'E, 3 Oct 1980, T.A. Weir & R.A. Barrett. 1♀, Mulgrave R. Valley, SW of Gordonvale, 17°13'S 145°45'E, 15 Nov 1981, J. Balderson. 1♂, Pine Creek, 19km S of Bundaberg, 11 Dec 1975, H. Frauca. 2♂, 8.3km SE of Planet Downs H.S., E of Rolleston, 25 Oct 1967, M.J.D. White et al. 1♂, Repulse Ck., 23km NE of Bauhinia Downs, 24°24'S 149°23'E, 22–23 Apr 1981, I.D. Naumann. 1♂, same data except D.C.F. Rentz. 3♂, 1♀, 1km N of Rounded Hill, near Cooktown, 15°17'S 145°13'E, 5–7 May 1981, D.C.F. Rentz. 2♀, 3juv., same data except (w). 1juv., same data except 6 Oct 1980, T.A. Weir & R.A. Barrett. 1♀, 9km WSW of Seaforth, 1 Oct 1979, J. Balderson. 1♀, Shipton Flat, near Cooktown, 15°47'S 145°14'E, 18 Oct 1980, T.A. Weir & R.A. Barrett. 1♂, Shiptons Flat, near Cooktown, 15°47'S 145°14'E, 16–18 May 1981, D.C.F. Rentz. 1♂, Silverwood Dam, via Warwick, 27 Dec 1938. 1♀, Smithfield, 13km NW of Cairns, 30 Jun 1982, N. Quick. 1♂, 80km NNE of St George, 21 Nov 1986, M.S. & B.J. Moulds. 1♂, Stockyard Ck., 61km NW of Malborough, 2 Oct 1979, J. Balderson. 1♂, Tannum Beach, near Gladstone, 22–23 Dec 1955, M.J.D. White. 1♂, Townsville, 15 Nov 1967, P. Ferrar. 1♀, Townsville, Dec 1981, Preston-Maffam. 2♀, 11.7km NE of Twin Hills H.S., 7 Jan 1965, M.J.D. White. 2♀, Watalgan Ra., near Bundaberg, Apr 1971, H. Frauca. 1♂, 45km NE of Windorah, 14 Feb 1972, R.C. Lewis (all ANIC).

New South Wales. 1♂, Deriah Aboriginal Area, 20.9km E of Narrabri, 30.368°S 149.991°E, 11 Nov 2009, D. Britton & J. Rescei (w). 1♂, Goonoo State Forest, 5 mi. S of Mendooran, 23 Mar 1971, D.K. McAlpine. 1♀, Goonoo State Forest, 5 mi. S of Mendooran, 1–3 May 1970, G. Daniels. 1♂, Moema NP, 36.5km NE of Narrabri, 30.064°S 149.965°E, 13 Nov 2009, D. Britton & J. Rescei (w). 1♂, Moree, watercourse, Nov 1923, A. Musgrave. 1♀, Moree, 7 Apr 1975, N. Southwell (all AM). 1♂, 5km E of Collie, 22 Sep 1977, R.C. Lewis. 6♂, 6♀, 3.3km SE of Gin Gin, 15 Feb 1962, Strautmanis & Chinnick. 1♀, Moree, 20 May 1952, A. Dyce. 1♀, Moree, Mar 1952, A. Dyce. 1♂, Pine Clump, NE of Warren, 31°23'S 148°09'E, 2 May 1978, R.C. Lewis. 1♀, Trangie, 4 May 1950, L.J. Chinnick. 5♂, 1♀, Trangie, 16 Feb 1962, J. Strautmanis. 4♂, 10♀, 5km NW of Trangie, 14 Feb 1962, Strautmanis & Chinnick (all ANIC).

Diagnosis. *P. verreauxii* can be separated from other species in the genus by the absence par-ocular spines, pointed vertical apophyses and a distinct colour pattern on the inner face of the foreleg with two prominent horizontal white bands on the femur.

Description. Body colour mottled brown to black. Head (Fig. 8A–B) with vertical apophyses prominent, pointed and lightly tuberculate; par-ocular spines absent; ocelli at base of only slight projections; frontal shield with subantennal ridge produced into small tooth at mid-point (very small in males).

Prozone of thorax (Fig. 8 C–D) with low tuberculate diagonal ridge, either side of carina, which is produced into a point near saddle groove; metazone with two pairs of spiny projections posterior to saddle groove, second pair less prominent in male; median carina distinct and undulating with relatively minor projections; pronotal margin tuberculate, expanded and produced into a small point above coxal insertions; prosternum black with white markings, with small pre-acetabular spine.

Wings (Fig. 3D) with tegmina translucent to semi opaque, peppered with darker and lighter spots and blotches; hindwings with costal margin brownish tinged, tip similar colour to tegmina, remainder hyaline.

Forecoxa (Fig. 8E–F) with 6–8 small spines on anterior margin and a larger adjacent pair near coxal base, posterior margin with double row of fine tubercles; inner face with

scattered small tubercles and a larger pair of tubercles near coxal base posteriorly, colour black proximally and distally, central section reddish orange with pale cross band and pale distal margin; outer face with anterior half similar to inner face, posterior half similar in colour to rest of body. Inner face of fore femur (Fig. 8E–F) black with narrow median longitudinal white band and similar band along line of inner spines, femoral brush somewhat raised; outer face body coloured, with central longitudinal ridge. Inner face of fore tibia with proximal two thirds blackish, distal third yellowish orange. Fore tarsus dark with white banding.

Dpr of male genitalia (Fig. 16C–D) with short narrow central process and narrow dextral process with shagreened tip. Pa with single moderate, distinctly spinose, anterior projection and narrow sclerotized section between it and ml. Ml squat, stout and shagreened.

Immature stages. Juveniles similar in appearance to adult females; ootheca (Fig. 14C) pale brown coloured, short to elongate, narrow.

Distribution and habits. Found from east coastal Queensland to north-eastern New South Wales (Fig. 20A). Most often found on tree trunks but sometimes at ground level. Males attracted to lights at night.

Remarks. The type specimen, a male, was described as being from Tasmania, however, as pointed out by Connors (2023), no further specimens of this species have been recorded further south than north-eastern New South Wales. Connors (2023) confirmed the identity of this species based on photographs of the holotype, which are available for examination on the MNHN website. The female of the species was described later by Saussure (1871) and clearly belongs to the species described here. I have examined photographs of the type of *Exparoxypilus africanus* and can confirm Connors (2023) conclusion that it is a synonym of *P. verreauxii*. The reddish orange colouration on the forelegs generally fades in preserved specimens. The black area on the inside face of these limbs often has a bluish metallic lustre.

Paraoxypilus kimberleyensis

Sjöstedt, 1918

Figs. 1 F–G; 4 A–B; 9 A–F; 17 A–B; 20B

Paraoxypilus kimberleyensis Sjöstedt, 1918: 5.

Paraoxypilus laticollis Tindale, 1923: 426, **syn. nov.**

Type material. Not examined but Sjöstedt, 1918 gives a full description with good images for this species.

Material examined. Queensland. 2♂, Almaden, Chillagoe district, Oct 1926, W.D. Campbell, K55296. 3♂, 37km W of Alpha, 23°37.4'S 146°16.2'E, 12 Jan 2002, Cooley et al. 1♀, Marlborough Rd., 7.4km W of Bruce Hwy., 22°52'15"S 149°50'04"E, 29 Nov 2008, G. Milledge & H. Smith (w). 1♂, Normanby River crossing, 15°17'S 144°50'E, 2 Jan 1994, M.S. & B.J. Moulds. 1♂, North Camp Beagle, ~45km N of Aurukun, 25 Feb 1981, M. Robinson. 1♂juv., 19km W of Paluma, 18°59'S 146°02'E, 18 Feb 2006, D.C.F. Rentz et al. 1♂, Rhonella Park, 18°41'S 145°20'E, 12 Jun 1994, J. Coughlan (w). 1♂juv., Station Ck, 15km N of Mount Molloy, 22 Jan 1981, M.S. & B.J. Moulds (all AM). 1♂, Bluewater Ck., near Paluma Range, 19°14'S 146°29'E, 17 Nov 1990, T. Woodger. 1♂, 9km WSW of Cheshire HS, near Tambo, 24°18'S 146°23'E, 29 Sep 1977, Rentz & White. 1♂, Cloncurry, 22 Apr 1962, K.H.L. Key & E.L. Corby. 1♂, Cockatoo Ck., Xing, 17km NW of Heathlands, 11°39'S 142°27'E, 15–26

Jan 1992, I. Naumann & T. Weir (w). 1♂, 50km W of Collinsville, 12 Sep 1950, E.F. Reik. 1♂, 27km S of Gayndah, 1 Jan 1956, M.J.D. White. 1♀, 6.6km ENE of Gogango, 25–26 Dec 1955, M.J.D. White. 1♂, 16km NW of Heathlands, 11°40'S 142°28'E, 18 Mar 1992, D.C.F. Rentz. 1♂, Heathlands, 11°45'S 142°35'E, 15–26 Jan 1992, T.A. Weir & I.D. Naumann (w). 1♂, 8km NNW of Herberton, 17°22'S 145°19'E, 27 May 1977, I.F.B. Common & E.D. Edwards. 1♀, 23km NW of Jericho, 23°34'S 145°54'E, 30 Sep 1977, Rentz & White. 2♂, 2km NNW of 'Jowalbinna' +, 15°45'S 144°15'E, 17 Jan 1994, P. Zborowski & E.D. Edwards (w). 1♀, Leichhardt Ra., 150km SW of Bowen, 27 Mar 1965, D.E. Havenstein. 1♂, Marsupial Ck., E of Croydon, 26 Apr 1996, J. Hasenpusch. 1♂, 3.3km NE of Mourangee H.S., near Edungalba, 23°43'S 149°51'E, 26 Nov 1968, E.B. Britton & E.E. Adams. 1♂, 3.5km WSW of Mt Baird, near Cooktown, 15°10'S 145°07'E, 3–5 May 1981, D.C.F. Rentz. 1♂, Mt Garnet, 20 Jan 1996, J. & P. Hasenpusch. 1♀, Running R., 22km W of Paluma, 10 Feb 1971, J.G. Brooks. 1♂, Selwyn Mine, 160km SE of Mt Isa, 21°41'S 140°30'E, 29 Dec 1991, T. Woodger. 1♀, St Ronans Rd, 14 Feb 1986, B.P. Moore. 1♂, Yeppoon, 23 Dec 1964, I.F.B. Common (all ANIC).

New South Wales. 1♀, Armidale, 25 Apr 1970, J. Spencer. 1♂, Fowlers Gap, N of Broken Hill, 26–28 May 1954, M.J.D. White. 1♀, 6km SSW of Tiboburra, 29°29'S 142°00'E, 17 Feb 1986, R.A. Barrett (w). 3♂, 82km NW of Wentworth, 33°23'S 141°40'E, 28 Apr 1976, I.F.B. Common & E.D. Edwards (all ANIC).

Northern Territory. 1♀, Alice Springs, Mar 2001, J. Comber. 1♂ juv., 37km E of Borroloola, 21 Dec 1991, M.S. & B.J. Moulds. 1♀, 46km SSW of Borroloola, 16°28'S 136°09'E, 28 Oct 1975, M.S. Upton. 1♀, Cape Arnhem, 15 Aug 1948, J.E. Bray. 1♂, Ellery Creek Gap, 1–2 Sep 1958, D.F. McMichael (w). 1♂, Finke Gorge, 10 Jul 2001, A. Ryan. 1♀, Groote Eylandt, June 1948, J.E. Bray. 1♂, Macarthur River Base Camp, 4 Feb 1976, P. Webber (all AM). 1♂, Alice Springs, 20–25 Apr 1955, N. Forde. 1♂, Alice Springs, 15 Nov 1966, White et al. 3♂, 32km WNW of Alice Springs, 23°36'S 133°35'E, 8 Oct 1978, M.S. Upton. 1♂, 32km SE of Alice Springs, 23°59'S 133°56'E, 23 Sep 1978, M.S. Upton. 1♂, 39km E of Alice Springs, 23°41'S 134°15'E, 25–26 Sep 1978, D.C.F. Rentz. 1♂, 41km SE of Alice Springs, 24°03'S 133°59'E, 4 Oct 1979, M.S. Upton. 1♂, 56km SE of Alice Springs, 24°11'S 134°01'E, 24 Sep 1978, M.S. Upton. 1♂, Alpha Ck., 33.3km W of Timber Creek, 17 Oct 1969, White & Marginson. 1♀, 17.4km W of Arlntunga (ruins), 25 May 1983, R.C. Lewis. 2♂, Bukalara Ra., 47km SSW of Borroloola, 16°28'S 136°08'E, 23 Apr 1976, Key, Balderson et al. 1♂, Daly Waters, 1972, D. Reid. 2♀, Darwin (Moil), 23 Aug 1972, B.C. Abbey. 1♀, Darwin (Moil), 19 Jun 1972, B.C. Abbey. 1♂, 48.3km SW of Dorisvale H.S., 14°48'S 131°02'E, 7 Aug 1968, M. Mendum. 1♂, Emily Gap, Alice Springs, 21 May 1978, J.C. Cardale. 1♂, Finke River at Running Water, 24°20'S 132°53'E, 15 Mar 1995, T. Weir (w). 1♂, Gubarra car park, Kakadu NP, 12°50'S 131°51'E, 13 Jul 1994, T. Weir & A. Roach. 1♀, 5km W of Jabiru, 29 Sep 1982, H.B. Gill & J.C. Wombey (w). 1♂, Junction Waterhole, Todd R., 9km NE of Alice Springs, 23°38'S 133°53'E, 1 Sep 1978, M.S. Upton. 1♂, same data except 10 Sep 1978. 1♀, 23km N of Kalkarindji (Wave Hill), 17°18'S 130°57'E, 26 Mar 1999, D.C.F. Rentz & P. Naskrecki (w). 1♂, Katherine, 17–18 Aug 1973, L.P. Kelsey. 1♂, same data except 14–16 Jul 1979. 2♂, Magela Ck., 9km SSE of Mudginbarry H.S., 12°40'S 132°54'E, 25 May 1973, K.H.L. Key. 6♂, McArthur R., 14km SW of Cape Crawford, 16°47'S 135°45'E, 11 Apr 1976, Key, Balderson et al. 1♂, Mimets Crossing, McArthur R., 48km SSW of Borroloola, 16°27'S 136°05'E, 22 Apr 1976, Key, Balderson et al. 1♀, 16km NE of Mt Cahill, 12°50'S 132°51'E, 13 Apr 1973, M.S. Upton & J.E. Feehan. 3♂, Roe Ck., 12km WSW of Alice Springs, 23°46'S 133°47'E, 9 Oct 1978, M.S. Upton. 2♂, same data except 27 Sep 1978. 1♀, Stuart Hwy, 100km N of Alice Springs, 23 May 1983, R.C. Lewis. 1♂, Suprise Ck., SSW of Borroloola, 16°25'S 136°05'E, 5 Nov 1975, M.S. Upton. 2♂, 8.3km N of Tennant Creek, 22 Aug 1960, M.J.D. White. 1♂, near Tennant creek, Jun–Jul 1940, J. Ivanac. 1♂, Tindal, 14°31'S 132°22'E, 1–20 Dec 1967, W.J.M. Vestjens. 1♂, Tindal, 8km ESE of Katherine, 14°31'S 132°22'E, 5 Dec 1967, W.J.M. Vestjens (w). 1♂, 70km WNW of Victoria River Downs H.S., 16°12'S 130°26'E, 25 Jun 1968, M. Mendum. 1♂, Victoria River Roadhouse, 21 Apr 1982, R.W. Howell (w) (all ANIC).

South Australia. 1♂, Coward Springs, 1 May 1990, G.A. Clark. 1♂, Nackara, Dec 1950, W. Mincham (both AM). 1♂ juv., 18.3km NNW of Bookaloo, 28 Mar 1958, L.J., M.F. Chinnick & J. Walker. 1♂, Hambidge NP, Eyre Peninsula, 33°30'S 135°54'E, 16–17 Dec 1970, E.B. Britton. 1♀, 7km NW of Morgan, 16 Dec 1976, P.J.M. Greenslade. Mudla Miracka Waterhole, 27°40'S 136°48'E, 1 Nov 1989, I Bunic. 1♂, Witjers NP, 26°27'E 135°21'E, 25 Aug 1992, ANZSES Survey (all ANIC).

Western Australia. 1♂, Point Sampson, 23 July 1978, G.A. Holloway. 1♀, Southern Cross, 1931, Harris, K64274. 1♂, Yanmarie River, Barradale Roadhouse, 22 Jul 1978, G.A. Holloway (all AM). 1♀, Beagle Bay, West Kimberley dist., 16°59'S 122°40'E, 30 Apr 1977, D.H. Colless. 2♂, 33.3km

SW of Bedford Downs H.S., 16 Jul 1964, R. Plumb. 2♀, Cape Bernier, Kimberley Region, 14°07'S 127°31'E, June 1988, A.N. Anderson. 3♂, 31.7km WSW of Carnamah, 16 Apr 1968, I.F.B. Common & M.S. Upton. 1♂, Carson Escarpment, Kimberley distr., 14°49'S 126°49'E, 9–15 Aug 1975, Common & Upton. 1♀, 13km NW of Coolgardie, 26 Jan 1974, M.G. Freeman. 1♀, Coorie Billabong, near Fitzroy Crossing, 21 Jun 1970, W. Martin (w). 1♂, Drysdale R. Crossing, ca 70km N of Gibb River H.S., 19 Apr 1979, M. King. 1♂, Drysdale R. crossing, Kalumburu Rd., Kimberley distr., 15°25'S 126°20'E, 18 Jun 1985, L.A. Craven. 2♂, Fortescue R., 15km NE of Mardie H.S., 29 Aug 1964, P.B. & L.C. Carne. 1♂, 11km N of Geraldton, 8 Dec 1972, N. McFarland. 1♂, Kalbarri, 25 Sep–6 Oct 1979, L.P. Kelsey. 1♂, 1♀, 2juv., 12km S of Kalumburu Mission, 14°25'S 126°38'E, 7–11 Jun 1988, T.A. Weir (w). 6♂, Karolin Rock, 18km W of Bullfinch, 30°59'S 118°53'E, 11 May 1984, E.S. Nielsen & E.D. Edwards (w). 1♂, 7km S of Kumarina, 17 Jan 1972, M.J.D. White. 1♂, Kununurra, 16–19 Sep 1979, L.P. Kelsey. 5♂, 40km WSW of Madura, 30 Apr 1968, I.F.B. Common & M.S. Upton. 1♂, Madura Pass, 31°54'S 127°01'E, 30 Apr 1984, E.S. Nielsen & E.D. Edwards (w). 1♂, Millstream H.S., 21°35'S 117°04'E, 3 Nov 1970, M.S. Upton & J.E. Feehan. 1♂, 0.5km WNW of Millstream H.S., 21°35'S 117°04'E, 19 Apr 1971, Upton & Mitchell. 1♂, same data except 14 Apr 1971. 2♂, 3km WNW of Millstream H.S., 21°34'S 117°03'E, 11 Apr 1971, Upton & Mitchell. 3♂, same data except 22 Apr 1971, Key, Upton & Mitchell. 1♂, 5km SE of Millstream H.S., 21°37'S 117°06'E, 17 Apr 1971, Upton & Mitchell. 2♂, Mining Camp, Mitchell Plateau, 14°49'S 125°50'E, 9–19 May 1983, D.C.F. Rentz & J. Balderson. 3♂, 10km NNW of Mining Camp, Mitchell Plateau, 14°45'S 125°47'E, 11 May 1983, D.C.F. Rentz & J. Balderson. 1♂, 4km SW of Mining Camp, Mitchell Plateau, 14°52'S 125°50'E, 2–6 Jun 1988, I.D. Naumann (w). 1♀, 16km W of Mt Aloysius, 16 Nov 1977, M.S. Upton & J.E. Feehan. 3♂, 15km NE of Mt Singleton, 29°21'S 117°20'E, 28–29 Sep 1981, I.D. Naumann & J.C. Cardale (w). 3♂, Newman Rock, 32°07'S 123°10'E, 7 May 1983, E.S. Nielsen & E.D. Edwards (w). 1♂, Ord River, 'Crossing Falls', 9km S of Kununurra, 15°52'S 128°45'E, 21 Apr 1985, K.H.L. Key. 1♂, Redbluff, WNW of Ajana, 23 Nov 1971, N. McFarland. 1♂, same data except 5 Dec 1971. 1♂, Synnot Ck., 16°31'S 125°16'E, 17–20 Jun 1988, T.A. Weir (w) (all ANIC).

Diagnosis. *Paraoxyphilus kimberleyensis* can be separated from other species in the genus by the combination of the absence of distinct par-ocular spines, rounded vertical apophyses and distinct colour pattern on the inner face of the foreleg. From *P. atra* it can also be distinguished by the margin of the prothorax having a distinct spine above the coxal insertion.

Description. Body colour blackish brown to pale brown, lighter specimens peppered with darker spots. Head (Fig. 9A–B) with vertical apophyses prominent, rounded and lightly tuberculate; par-ocular spines absent; ocelli at base of slight projections; frontal shield with subantennal ridge not produced into small tooth at mid-point.

Pronotum short and broad, relatively shorter, and broader than in *P. tasmaniensis*. Prozone of thorax (Fig. 9C–D) with low tuberculate diagonal ridge, either side of carina, which is not produced into a point near saddle groove; metazone with two pairs of spiny projections posterior to saddle groove reduced to large tubercles; median carina distinct and undulating with several low blunt projections; pronotal margin spinose, expanded and produced into a point above coxal insertions; prosternum black with white markings, with small pre-acetabular spine.

Wings (Fig. 4A) with tegmina translucent, peppered with darker and lighter spots and blotches; hindwings with costal margin brownish tinged, tip similar colour to tegmina, remainder hyaline.

Forecoxa (Fig. 9E–F) with 6–8 small spines on anterior margin and a larger adjacent pair near coxal base (more prominent than in *P. tasmaniensis*), posterior margin with double row of fine tubercles; inner face with scattered small tubercles and a larger group of 2–3 tubercles near coxal base posteriorly, colour cream or yellowish to orange with black

band proximally and often distally; outer face with anterior half similar to inner face, posterior half similar in colour to rest of body. Inner face of fore femur (Fig. 9E–F) cream or yellowish to orange with slightly diagonal dark band distally (sometimes with lighter markings), femoral brush somewhat raised; outer face body coloured, with central longitudinal ridge. Inner face of fore tibia blackish, with white spot near tarsal insertion and sometimes with proximal white band. Fore tarsus dark with white banding.

Dpr of male genitalia (Fig. 17A–B) with narrow central process and narrow dextral process with shagreened tip, sinistral margin expanded into a squarish angle. Pa with single moderate, distinctly spinose, anterior projection and narrow sclerotized section between it and ml. Ml squat, stout and shagreened.

Immature stages. Juvenile stages unknown.

Distribution and habits. Widespread across northern and central Australia (Fig. 20B). Habits not known but likely to be similar to other species in the genus. Males attracted to lights at night.

Remarks. This is the likely sister species of *Paraoxyphilus atra*. It displays similar reduction of apophyses and spination on the head and the form of the male genitalia is close to that species. It is somewhat ant-like in form but not as distinctly as *P. atra*.

Paraoxyphilus laticollis Tindale is clearly a synonym of this species. Tindale (1923) notes the morphological differences between *P. laticollis* and *P. tasmaniensis* but curiously makes no comparison with *P. kimberleyensis*, despite briefly describing a male of *P. kimberleyensis* in the same publication.

Paraoxyphilus atra (Giglio-Tos, 1913)

comb. nov.

Figs 2A: 4C–D; 10A–F; 17C–D; 21A

Myrmecomantis atra Giglio-Tos, 1913: 5.

Type material. Not examined but good image of type female examined.

Material examined. Queensland. 1♀ juv., near Station Creek, 16°36'48"S 145°13'18"E, 3 Jun 2000, J. Thompson & J. Olive (w) (AM). 1♂, Bin Bin Ra., near Didcot, 7 Jan 1975, H. Frauca. 1♂, Ingham, 29 Mar 1961, K.L. Harley. 2♂, Ingham, 20 Apr 1961, R. Straatman. 1♂, 16.6km WSW of Mt Faulkner, Clermont distr., 7 Jan 1965, M.J.D. White. 1♀, Silver Plains Homestead, Cape York Pen., 18 Nov 1961, J.L. Wassell. 1♀, 3.3km N of Warrigal Rly. Sta., Pentland distr., 9–10 Jan 1965, M.J.D. White (all ANIC). New South Wales. 1♀, Brummagem Ck., near Dubbo, 1–15 Apr 1962, M. & V. Gregg (AM). 1♂, 1.6km ESE of Warrigal, 25 Apr 1954, Key & Chinnick (ANIC). Western Australia. 1♀, Kimberley Region, Great Northern Hwy., Dunham Hill, 68km N of Turkey Creek, 16°22'36"S 128°13'06"E, 1–12 Jun 1999, Gray, Milledge & Smith (w) (AM). 2♂, 4km W of King Cascade, CALM Site 28/3, 15°38'S 125°15'E, 12–16 Jun 1988, T.A. Weir (w). 1♀, 30km NE of Nullagine, 21°49'S 120°24'E, D.C.F. Rentz & J. Otto (ANIC).

Diagnosis. *P. atra* can be separated from other species in the genus by the absence of distinct par-ocular spines, rounded vertical apophyses, reduced spination of the pronotal margin and distinct colour pattern on the inner face of the foreleg. From *P. kimberleyensis* it can be distinguished by the lack of a distinct spine on the pronotal margin above the coxal

insertion.

Description. Body colour blackish to lighter brown, lighter specimens peppered with darker spots. Head (Fig. 10A–B) with vertical apophyses reduced, rounded and very lightly tuberculate; par-ocular spines absent; ocelli without projections; frontal shield with subantennal ridge not produced into small tooth at mid-point; antenna in female with white coloured mid-section.

Pronotum short and broad, dorsal surface without prominent spines or ridges (Fig. 10C–D); median carina low, with only small projections; pronotal margin finely spinose or tuberculate, only slightly expanded and produced into only a very small point above coxal insertion; prosternum black with white markings, with prominent pre-acetabular spine.

Wings (Fig. 4C) with tegmina semi opaque brown or blackish, with whitish patch at discoidal spot; hindwings with costal margin brownish tinged, tip similar colour to tegmina, remainder hyaline.

Forecoxa (Fig. 10E–F) with several small spines on anterior margin and a prominent single or paired spine on inner face adjacent to anterior margin near coxal base, posterior margin with double row of fine tubercles; inner face with scattered small tubercles and a larger group of 2–3 tubercles or spines near coxal base posteriorly, colour yellowish with black band proximally; outer face with anterior half similar to inner face, posterior half similar in colour to rest of body. Inner face of fore femur (Fig. 10E–F) yellowish in proximal half, distal half dark brown, femoral brush somewhat raised; outer face body coloured, with central longitudinal ridge. Inner face of fore tibia blackish brown. Fore tarsus dark with white banding.

Dpr of male genitalia (Fig. 17C–D) with narrow central process and narrow dextral process with shagreened tip, sinistral margin not noticeably expanded. Pa with single moderate, distinctly spinose, anterior projection and narrow sclerotized section between it and ml. Ml squat, stout and shagreened.

Immature stages. Juvenile stages unknown.

Distribution and habits. Scattered records from across the northern and eastern parts of Australia (Fig. 21A), possibly rare in nature. Habits not known. Males attracted to lights at night. This species is clearly an ant mimic and some of its morphological features parallel those found in *Nesoxypilus*, another paraoxyphiline ant mimic.

Remarks. This is the likely sister species *P. kimberleyensis*. The form of the male genitalia is similar to that species.

Phthersigena Stål, 1871

Phthersigena Stål, 1871: 400. Type species *Phthersigena conspersa* Stål, by monotypy.

Diagnosis. Members of this genus have can be distinguished from other members of the Paraoxyphilina, except *Gyromantis*, by having the anterior margin of the forecoxa unarmed, by having a distinct spine at the corner of the pronotal margin above the coxal insertion and by the females having very reduced wings. From *Gyromantis* they can be distinguished by the reduced vertical apophyses (prominent and pointed in *Gyromantis*) and by the extreme reduction of the female wings (moderately reduced in *Gyromantis*).

Description. Body rather small, colour some shade of brown or grey. Head wider than high, with a pair of low apophyses on the vertex beside each eye and a pair of low par-ocular spines; frontal shield wider than high, with pronounced sub antennal ridge. Antennae fine and filamentous, slightly longer than prothorax in female, about three to four times longer than prothorax in male.

Pronotum short and broad, margin with slight supracoxal expansion with a distinct spine at each corner, surface finely tuberculate with a few low spines and ridges, margins finely tuberculate, with distinct median carina which has several low projections.

Forecoxa longer than pronotum, anterior margin smooth, inner face smooth, outer face divided by strong longitudinal ridge. Fore femur slightly expanded dorsally, inner face with contrasting markings, outer face with central longitudinal ridge; claw groove at midpoint, deep and pronounced; ventrally with three discoidal spines, in length from longest to shortest 2 1 3, outer row of five small spines, inner row of five spines and double row of small tubercles between spines one and two; area between inner and outer spines tuberculate, often with several low sclerotized ridges and with central longitudinal depression in which the tibia rests. Fore tibia without spines but with inner row of small tubercles near claw corresponding to similar row on femur; outer face slightly concave, inner face marked with contrasting colours.

Male with wings longer than abdomen, forewings translucent to semi opaque, hindwings mostly hyaline; female strongly brachypterous. Mesonotum and metanotum with small caudal projection on median carina.

Mid and hind legs slender, unmodified, often with pale banding.

Abdomen of male elongate, narrow, lateral margins slightly expanded, dorsal median carina slightly expanded toward posterior margins of tergites; abdomen of female with lateral margins slightly expanded, posterior margins of tergites gently undulating, with distinct dorsal median carina which is moderately expanded toward posterior margins of tergites; supra-anal plate of male shorter than subgenital plate, that of female elongate, covering ovipositor, carinate with blunt pointed tip. Cerci short, about the same length as supra-anal plate in male, about half the length of supra-anal plate in female. Female genitalia with apical lobe of gonapophysis 8 prominent and spatulate. Male with relatively short styli.

Remarks. *Phthersigena* appears to sit between *Paraoxyphilus* and *Glabromantis* morphologically.

Phthersigena conspersa Stål, 1871

Figs. 2B,D; 5C,F; 11A–F; 14D; 18A–D; 21B)

Phthersigena conspersa Stål, 1871: 401.

Phthersigena centralis Giglio-Tos, 1915: 32, **syn. nov.**

Phthersigena insularis Beier, 1965, **syn. nov.**

Phthersigena minor Sjöstedt, 1918: 10, **syn. nov.**

Phthersigena timorensis Beier, 1952: 296–297, **syn. nov.**

Paraoxyphilus insularis Tindale, 1923: 427, **syn. nov.**

Type material. Not examined.

Material examined. Queensland. 4♂, Fanning River, 18°45'S 146°27'E, 9 May 1995, J. Coughlan, (w). 1♂, same data except 11 May 1995. 2♂, same

data except 13 Oct 1994. 1♂, same data except 14 Oct 1994. 2♂, same data except 15 Oct 1994. 2♂, same data except 2 Dec 1994. 1♂, same data except 3 Dec 1994. 2♂, same data except 18 Jun 1994. 1♂, same data except 29 Apr 1994. 2♂, same data except 30 Apr 1994. 1♂, same data except 4 May 1993. 1♂, same data except 15 Jun 1994. 1♂, same data except 14 Aug 1994. 1♂, same data except 16 Oct 1994. 1♂, Rhonella Park, 18°41'S 145°20'E, 22 Aug 1994, J. Coughlan (w). 1♂, same data except 10 Apr 1994 (all AM). 2♂, Arbovin Mine Rd., off Petford – Herberton Rd at Gorge Ck., 17°21'S 145°16'E, 24 Jan 2011, D.C.F. Rentz & B. Richardson. 1♀, 25km SW of Augathella, 13 Jan 1965, M.J.D. White. 1♂, 58km SE of Ayr, 3 Oct 1950, E.F. Riek. 1♂, Barron Falls, near Kuranda, Jan 1976, W. Walford-Huggins. 1♀, 52km SSE of Bauhinia Downs H.S., 24 Mar 1962, Chinnick & Corby. 2♀, 15km NNE of Mt Bingeringo, S of Charters Towers, 8 Jan 1965, M.J.D. White. 2♂, Bluff Range, near Biggenden, Jan 1972, H. Frauca. 1♂, same data except 13 Mar 1977. 1♀, Castle Hill, Townsville, 3 Apr 1962, K.H.L. Key. 2♀, 44km NNE of Charleville, 26°05'S 146°25'E, 10 Nov 1981, J. Balderson. 1♂, 8km S of Clermont, 18 Mar 1982, M.S. & B.J. Moulds. 1♂, 7km SSW of Clermont, 2 Apr 1977, R.C. Lewis. 1♀, near Clohesy R., 12km SW of Kuranda, 16°54'S 145°34'E, 7 Feb 1988, D.C.F. Rentz. 1♀, 47km SE of Croydon, 18°16'S 142°41'E, 1 Dec 1981, J. Balderson. 1♂, 3.3km NW of Darr, 26 Aug 1960, M.J.D. White. 3♂, 1♀, Einasleigh R., 22km SW of Lyndhurst H.S., 19°25'S 144°20'E, 11–12 Nov 1981, J. Balderson. 1♂, 3km SE of Electra, 29 Apr 1977, H. Frauca. 1♀, Emu Ck., 27km SW of Dimbulah, 17°20'S 144°57'E, 25 Nov 1981, J. Balderson. 1♀, 55km WSW of Eromanga, 15 Jan 1965, L.J. Chinnick. 2♂, 1♀, Eureka Ck., 9km SW of Dimbulah, 17°11'S 145°02'E, 25 Nov 1981, J. Balderson. 1♀, 2km NW of Flaggy Rock, SSE of Sarina, 21°58'S 149°26'E, 7 Jul 1980, Balderson & Vickery. 1♂, Granite Gorge, 6km SW of Mareeba, 17°01'S 145°22'E, 19 Mar 1988, D.C.F. Rentz. 2♂, 2km NW of Gumlu, SE of Ayr, 19°52'S 147°40'E, 29 Sep 1979, J. Balderson. 1♂, Heathlands, 11°45'S 142°35'E, 17–19 Sep 1992, P. Zborowski & L. Miller. 1♂, 3km ENE of Innot Hot Springs, near Ravenshoe, 17°39'S 145°16'E, 29 Nov 1981, J. Balderson. 1♀, Jondaryan, 2 Jan 1956, M.J.D. White. 1♂, 7km E of Laura, 15°35'S 144°30'E, 27 May 1993, A.M.E. Roach. 1♂, Limestone Ck., 42km NNW of Boulia, 22°35'S 139°43'E, 11 May 1973, M.S. Upton et al. 1♀, Macrossan, 14 May 1961, R. Straatman. 1♂, Mareeba, 5 Aug 1986, L. Sanchez. 1♀, 10km SW of Mareeba, 17°01'S 145°20'E, 25 Nov 1981, J. Balderson. 2♂, 1♀, Mitchell River Settlement, Apr 1969, A.L. Dyce. 2♂, 1♀, Mt Garnet, 20 Jan 1996, J. Hasenpusch. 1♀, 7km S of Mt Morgan, 23°42'S 150°23'E, 3 Oct 1979, J. Balderson. 2♀, Pump Ck., 1km S of Almaden, 17°20'S 144°40'E, 27 Nov 1981, J. Balderson. 4♂, Repulse Ck., 23km NE of Bauhinia Downs, 24°24'S 149°23'E, 22–23 Apr 1981, D.C.F. Rentz. 2♂, 47km SW of Sarina, 27 Mar 1962, Chinnick & Corby. 1♂, Silver Plains H.S., Cape York Pen., 4 Jan 1960, J.L. Wassell. 1♂, Split Rock, 15°39'S 144°31'E, 18 Feb–25 Apr 1993, P. Zborowski (w). 1♂, The Maiden Mt., 40km NW of Bowen, 19°56'S 147°52'E, 29 Sep 1979, J. Balderson. 1♂, Thursday I., 13 Jul 1978, R. Barrett. 1♀, 3km N of Warrigal Rly. Stn., Pentland dist., 9–10 Jan 1965. 1♀, 13km SE of Weipa, 12°40'S 143°00'E, P. Zborowski (w) (all ANIC).

New South Wales. 1♂, Gundabooka NP, Belah Shearers Quarters, 30°33'26"S 145°35'40"E, 19 Oct 2010, G. Milledge & H. Smith (w). 1♀, Gundabooka NP, Bourke – Wilcannia Rd., 30°16'43"S 145°32'22"E, 21 Oct–23 Nov 2010, G. Milledge & H. Smith (w). 1♀, Paroo-Darling NP, 9.8km N of turnout to Peery Station, 30°43'34"S 143°28'46"E, 27 Oct–25 Nov 2010, G. Milledge & H. Smith (w) (all AM). 1♀, Foster Mountain, 55km WNW of Warren, 21 Sep 1977, R.C. Lewis. 2♂, Lake Mere Station, 36km N of Louth, 30°15'S 144°53'E, 6–7 Sep 1991, P.J. Greenslade & J. Balderson (w). 1♀, Mt Nobby, near Condoobolin, 10 Apr 1971, D. Andria (w). 1♂, Pallal Ck., 17km SW of Bingara, 5–6 Jan 1956, M.J.D. White (all ANIC).

Northern Territory. 1♂, Alice Springs, Aug 1936, H.O. Fletcher & W. Barnes. 1♀, Stuart Hwy., N of Tennant Creek, 19°05'S 134°10'E, 18 May 1999, G. Milledge (w) (AM). 1♂, Alice Springs, 13 Aug 1960, M.J.D. White. 1♂, Alice Springs, 19 Sep 1955, L.J. Chinnick. 1♂, Alice Springs, 23°42'S 133°53'E, 8 Oct 1972, J.E. Feehan. 1♂, 32km WNW of Alice Springs, 23°36'S 133°35'E, 8 Oct 1978, M.S. Upton. 1♂, Barkly Hwy., 75km ESE of junction with Tablelands Hwy., 4 Jan 1987, M.S. & B.J. Moulds. 1♂, 150km SW of Barrow Creek, 21°40'S 132°45'E, 12 Oct 1972, M.S. Upton. 1♂, Berimah, 20 Mar 1972, B.C. Abbey. 1♂, Bessie Spring, 8km ESE of Cape Crawford, 16°40'S 135°51'E, 26 Oct 1975, M.S. Upton. 1♂, near Borrooloola, 29–30 Oct 1975, M.S. Upton. 1♂, 12km NNE of Borrooloola, 15°58'S 136°21'E, 1 Nov 1975, M.S. Upton. 1♂, 22km WSW of Borrooloola, 16°08'S 136°06'E, 16 Apr 1976, Key, Balderson et al. 1♂, 37km SSW of Borrooloola, 16°21'E 136°06'E, 14 Apr 1976, Key, Balderson et al. 1♂, Bukalara Ra., 47km SSW of Borrooloola, 16°28'S 136°08'E, 23 Apr 1976, Key, Balderson et al. 2♂, Camfield River, 17°01'S 131°07'E, 4 Jun 1993, E.D. Edwards (w). 1♂, 2km NW of Cahills Crossing, East Alligator R.,

14 Sep 1982, M. Brooker (w). 1♂, Clay Pan Well, 38km NW of Tanami, 12 Apr 1963, L.J. Chinnick. 1♂, Darwin, 28 Jun 1976, B.L. Bolton. 1♂, Devils Marbles NP, 10km N of Wauchope, 6 May 1983, J.T. Doyen (w). 1♀, Devils Marbles, 19 Nov 1966, White, Blackith & Blackith. 3♂, Finke R., 25km SW of Renners Rock, 14–15 Nov 1966, White, Blackith & Blackith. 1♂, The Granites, 11 Apr 1963, L.J. Chinnick. 1♂, 1♀, 14.5km S of Hermannsburg Mission, 24 May 1983, R.C. Lewis. 1♀, 10km SW of Hermannsburg Mission, 22 Jun 1989, R.C. Lewis. 1♀, Jabiru, 7km SSE of Mudginbarry H.S., 30 Aug 1981, H.B. McGill (w). 1♂, 5km W of Jabiru, 7–10 Feb 1983, H.B. McGill & J.C. Wombey (w). 1♂, Katherine, 27 Nov 1967, W.J.M. Vestjens. 1♂, Katherine, 17–18 Aug 1973, L.P. Kelsey. 1♂, same data except 20 Aug 1973. 1♂, same data except 14–16 Jul 1979. 1♂, 22km E of Mataranka, 19 Aug 1960, M.J.D. White. 1♂, McArthur R., 14km SW of Cape Crawford, 16°47'S 135°45'E, 11 Apr 1976, Key, Balderson et al. 1♂, 15km E of Mt Cahill, 12°52'S 132°50'E, 8 Mar 1973, K.H.L. Key et al. 1♂, same data except 10 Mar 1973. 2♂, 17.7km SSW of Mt Sanford, 31 Jul 1973, L.P. Kelsey. 1♂, Plenty Hwy., 268km NE of Alice Springs, 22°47'S 136°18'E, 14 Oct 1978, M.S. Upton. 1♂, Plenty River area, Hart's Range, 22 May 1949, A. Stern. 1♂, Stuart Hwy., Two Mile Ck., 16°05'S 133°21'E, 26 Feb 1999, D.C.F. Rentz (w). 1♂, Tempe Downs H.S., 17 Aug 1963, P.R. Ranford. 1♀, Tennant Creek, Jun–Jul 1949, J. Ivanac. 3♂, 27km E of Tennant Creek, 21 Oct 1965, Blackith & Mesa. 1♂, Tindal, 13km ESE of Katherine, 14°31'S 132°22'E, 5 Dec 1967, W.J.M. Vestjens (w). 1♂, 8km ENE of Victoria River Downs, 12 Jul 1973, L.P. Kelsey. 3♂, Victoria Hwy, 38.5km SW of Timber Creek, 15°42'40"S 130°07'48"E, 6–13 Jun 2001, M.E. Irwin et al., (w). 1♂, Wauchope, 21 Mar 1955, K.H.L. Key. 1♀, Wollogorang Stn, near Settlement Ck., 10 Sep 1930, T.G. Campbell (all ANIC). Western Australia. 6♀, Kimberley region, Parry Lagoon Nature Reserve, 15°39'36"S 128°16'30"E, 29 May–13 Jun 1999, Gray, Milledge & Smith (w) (AM). 1♂, 85km ESE of Broome, 18°22'S 122°53'E, 20 Aug 1976, I.F.B. Common. 1♂, 101km ESE of Broome, 18°27'S 123°03'E, 27 Aug 1976, I.F.B. Common. 1♂, 145km ESE of Broome, 18°55'S 123°27'E, 7 Aug 1976, I.F.B. Common. 1♂, 150km ESE of Broome, 18°55'S 123°14'E, 12 Aug 1976, I.F.B. Common. 1♂, same data except 13 Aug 1976. 2♂, 163km ESE of Broome, 18°49'S 123°17'E, 3 Aug 1976, I.F.B. Common. 3♂, same data except 4 Aug 1976. 1♂, same data except 5 Aug 1976. 4♂, 186km ESE of Broome, 18°53'S 123°43'E, 9 Aug 1976, I.F.B. Common. 17♂, 8km WSW of Cane River H.S., 22°07'S 115°33'E, 31 Mar 1971, Upton & Mitchell. 1♂, 8km S of Cape Bertholet, West Kimberley distr., 17°19'S 122°10'E, 19 Apr 1977, D.H. Colless. 1♂, Carson Escarpment, Kimberley distr., 14°49'S 126°49'E, 9–15 Aug 1975, Common & Upton. 1♂, Charnley R., 2km SW of Rolly Hill, 16°22'S 125°12'E, 16–20 Jun 1988, I.D. Naumann (w). 2♂, Drysdale R., Kimberley distr., 15°02'S 126°55'E, 3–8 Aug 1975, Common & Upton. 1m #, Mt Goldsworthy, E of Port Headland, 11 Aug 1966, D.P. Carne. 1♂, Halls Creek, May 1964, H.K. Herbert. 1♂, Halls Creek, 28 Oct 1969, White & Margison. 1♀, 48km S of Halls Creek, 14 Apr 1963, L.J. Chinnick. 1♂, Kalumburu, 14°17'S 126°39'E, 13 Jun 1985, L.A. Craven. 1♂, Kimberley Research Stn, via Wyndham, 16 Jun 1955, E.C.B. Langfield. 2♂, same data except 14 Jun 1955. 1♂, same data except, 24 Jan 1955. 1♂, 13km S of Landsdowne H.S., 12–17 Jul 1964, R. Plumb. 1♀, same data except 5 Aug 1964. 1♂, Martins Well, West Kimberley distr., 16°34'S 122°51'E, 24 Apr 1977, D.H. Colless. 1♂, 0.5km W of Millstream H.S., 21°35'S 117°04'E, 2 Apr 1971, E.F. Riek. 3♂, Mining Camp, Mitchell Plateau, 14°52'S 125°50'E, 13 May 1983, D.C.F. Rentz & J. Balderson. 1♂, 4km SW of Mining Camp, Mitchell Plateau, 14°49'S 125°50'E, 9–19 May 1983, D.C.F. Rentz & J. Balderson. 1♂, Mitchell River, 15°07'S 125°45'E, 29 May 1993, E.D. Edwards (w). 2♂, Python Pool, near Mt Herbert, 35.5km ENE of Nautarra H.S., 22°25'S 115°49'E, D.C.F. Rentz & R. Lowe (w). 1♂, Tunnel Creek, E of Derby, 1 Nov 1978, M.S. & B.J. Moulds. 1♂, Wyndham, 8 Mar 1930 (all ANIC). Papua New Guinea. 1♂, 1♀, Moitaka, Port Moresby, Mar 1962, K.R. Norris (ANIC).

Diagnosis. As for the genus.

Description. Body colour dark brown to pale mottled brown, peppered with darker spots.

Head (Fig. 11A–B) with vertical apophyses low, pointed and lightly tuberculate; par-ocular spines present but small; ocelli without associated projections.

Prozone of thorax (Fig. 11C–D) with low diagonal ridge either side of carina; metazone with single pair of low pointed projections posterior to saddle groove, barely apparent in

male; median carina distinct and undulating with 2–3 low blunt projections; pronotal margin finely tuberculate to smooth, expanded and produced into a point above coxal insertions; prosternum black with white markings, with barely apparent pre-acetabular spine.

Wings of male (Fig. 5C) with tegmina translucent to semi opaque, peppered with darker blotches; hindwings with tip similar colour to tegmina, remainder hyaline. Wings of female (Fig. 5F) strongly reduced, tegmina variably reduced, hindwings mere flaps; similar colour to rest of body.

Forecoxa (Fig. 11E–F) without spines; inner face with colour pale cream; outer face with anterior half similar to inner face, posterior half similar in colour to rest of body. Inner face of fore femur (Fig. 11E–F) mostly to partially dark brown to blackish, often with paler blotches, femoral brush somewhat raised; outer face body coloured, with central longitudinal ridge. Inner face of fore tibia similar in colour to inner face of fore femur. Fore tarsus dark with white banding.

Dpr of male genitalia (Fig. 18A, D) with narrow central process with blunt, shagreened tip, narrow dextral process with shagreened tip and broadly triangular sinistral process. Pa with single small anterior projection and without sclerotized region between it and ml. Ml squat, stout and shagreened.

Immature stages. Juveniles similar in appearance to adult female, ootheca (Fig. 14D) elongate, narrow and cream coloured.

Distribution and habits. Found across the northern half of Australia and extending into southern New Guinea and Timor (Beier, 1952). I have collected females of this species from the ground and on termite mounds. Males are often attracted to lights at night.

Remarks. This is a widespread species with some morphological variation across its range. Specimens from central Australia are relatively small and pale in colour. Females from the western parts of its range have the tegmina more strongly reduced than eastern populations. Males show little variation in genitalic morphology, however. This somatic variation, perhaps combined with the small amount of material to study, has led previous authors to erect several species names, mostly based on minor morphological differences, which are here regarded as synonyms of *P. conspersa*. Another confusing factor was the erroneous association of a female of *Glabromantis* with the type species of *Phthersigena* (described from a male) by Giglio-Tos (1913). This led Hinton (1939) to synonymise the two genera. Subsequently Beier (1965) described *P. insularis* as a distinct species primarily on the basis of the female having reduced wings. Sjöstedt (1918) distinguished *P. minor* only on the basis of its smaller size and it is here considered a synonym of *P. conspersa*. Giglio-Tos' (1915) description of *P. centralis* is very brief and gives only minor morphological differences to the type species. Tindale (1923) described *P. insularis* from a female as a species of *Paraoxyphilus*, despite noting that the forecoxae were unarmed. He made no mention of the reduced but distinct wings of this specimen. Beier (1925) notes only minor differences between *P. timorensis* and other species in the genus.

Glabromantis Sjöstedt, 1918

Glabromantis Sjöstedt 1918: 12. Type species
Glabromantis nebulosa Sjöstedt, 1918 by
monotypy.

Diagnosis. Members of this genus can be distinguished from other members of the Paraoxyphilini, by having the anterior margin of the forecoxa unarmed, by lacking a distinct spine at the corner of the pronotum and by the females having only slightly reduced wings.

Description. Body rather small, colour some shade of brown or grey.

Head wider than high, with a pair of prominent apophyses on the vertex beside each eye, otherwise smooth; frontal shield wider than high, with pronounced sub antennal ridge. Antennae fine and filamentous, twice as long as prothorax in female, about five times as long as prothorax in male.

Pronotum short and broad, distinct supracoxal expansion without spine at each corner (or very small one in some females), surface relatively glabrous with a few ridges and bumps, margins smooth, median carina without prominent projections.

Forecoxae longer than pronotum, anterior margin unarmed, inner face smooth, outer face dived by strong longitudinal ridge. Fore femur slightly expanded dorsally, inner face with or without contrasting markings, outer face with central longitudinal ridge; claw groove at midpoint, deep and pronounced; ventrally with three discoidal spines, in length from longest to shortest 2 1 3, outer row of five small spines, inner row of five spines and double row of small tubercles between spines one and two; area between inner and outer spines tuberculate, often with several low sclerotized ridges and with central longitudinal depression in which the tibia rests. Fore tibia without spines but with inner row of small tubercles near claw corresponding to similar row on femur; outer face slightly concave, inner face marked with or without contrasting colours.

Male with wings longer than abdomen, forewings translucent to semi opaque, hindwings mostly hyaline; female slightly brachypterous, wings reaching to base of supra-anal plate. Mesonotum and metanotum without projections on carina.

Mid and hind legs slender, unmodified, often with pale banding.

Abdomen of male elongate, narrow, lateral margins slightly expanded; abdomen of female with lateral margins slightly expanded, otherwise unmodified; supra-anal plate of male shorter than subgenital plate, that of female elongate, covering ovipositor, carinate with blunt pointed tip. Cerci short, about the same length as supra-anal plate in male, about half the length of supra-anal plate in female. Female genitalia with apical lobe of gonapophysis 8 prominent and spatulate. Male with relatively short styli.

Remarks. As mentioned previously, the genus *Glabromantis* has been confused with *Phthersigena* by previous authors primarily due to the erroneous association of a female *Glabromantis* with the male of the type species of *Phthersigena* by Giglio-Tos (1913). It is here regarded as a separate genus.

Glabromantis nebulosa Sjöstedt, 1918

Figs. 2C–D; 5A–B; 12A–F; 18B,E; 22A

Glabromantis nebulosa Sjöstedt, 1918: 13.

Glabromantis melania Tindale, 1923: 431–432, **syn. nov.**

Type material. Not examined but Sjöstedt, 1918 gives a full description of this species.

Material examined. Queensland. 1♀, Bernborough Downs, near Winton, 25 Nov 1973, R. Patterson. 1♂, 6km SE of Chillagoe, 17°12'S 144°33'E, 26 Nov 1981, J. Balderson. 1♀, Cloncurry, 22 Apr 1962, K.H.L. Key & E.L. Corby. 1♂, 16km SE of Glenormiston H.S., W of Boulia, 22°56'S 138°57'E, 10 May 1975, Balderson & Freeman. 1♀, 33km W of Karmona O.S., Cooper's Creek area, 30 Apr 1968, R.C. Lewis. 1♂, 8km ESE of Musselbrook Mining Camp, 18°38'S 138°11'E, 11 May 1995, T.A. Weir (w). 1♂, 18km NE of Thargomindah, 15 Mar 1964, L.J. Chinnick (all ANIC). New South Wales. 1♂, Clifton Downs, 31 Oct 1949, S.J. Paramonov (ANIC).

Northern Territory. 1♂, 32km SE of Alice Springs, 23°59'S 133°56'E, 23 Sep 1978, M.S. Upton. 1♂, 39km E of Alice Springs, 23°41'S 134°15'E, 25–26 Sep 1978, D.C.F. Rentz. 1♂, 56km SE of Alice Springs, 24°11'S 134°01'E, 3 Oct 1978, M.S. Upton. 1♂, 15km SW of Alroy Downs H.S., 19°24'S 135°58'E, 10 Apr 1976, Key, Balderson et al. 1♂, 2km WSW of Andado H.S., 25°25'S 135°16'E, 26 Sep 1972, K.H.L. Key et al. 1♂, Brunette Downs, near Frewena, 15 Aug 1982, R. Patterson. 1♀, Eight Mile Waterhole, 25km NE of McArthur R. H.S., 3 Jun 1978, M. King. 1♂, 62km SSW of Sandy Blight Junction, 31 Mar 1963, L.J. Chinnick. 1♂, 27km ENE of Tennant Creek, 21 Oct 1965, Blackith & Mesa. 1♂, Tindal, 13km ESE of Katherine, 14°31'S 132°22'E, 5 Dec 1967, W.J.M. Vestjens (w) (all ANIC). South Australia. 2♂, Coopers Creek, 13km NNE of Atadunna H.S., 28°38'S 138°42'E, 16 Sep 1972, K.H.L. Key et al. 1♂, Leigh Creek, 29 Sep 1965, G.C. Gregory. 1♂, same data except 3 Mar 1967. 2♂, 33km SSE of Oodnadatta, 27°47'S 135°39'E, 23 Sep 1972, K.H.L. Key et al. (all ANIC). Western Australia. 1♂, Ashburton R., 38km S of Onslow, 30 Aug 1964, P.B. & L.C. Carne. 1♀, 60km E of Balgo Hills, M. Golding. 1♂, Brogo Hill, 160km S of Halls Creek, 15 Sep 1985, M. Golding. 1♂, 145km ESE of Broome, 18°55'S 123°27'E, 6 Aug 1976, I.F.B. Common. 1♂, same data except 7 Aug 1976. 1♂, 101km ESE of Broome, 18°27'S 123°03'E, 20 Aug 1976, I.F.B. Common. 1♀, Kimberley Region, road to Lake Argyle, 2km N of campground, 16°06'18"S 128°44'50"E, 9 Jun 1999, G. Milledge (w) (AM). 1♂, 14km SE of Kalumburu Mission, 14°25'S 126°40'E, 3–6 Jun 1988, T.A. Weir (w). 1♂, 10km NW of Kununurra, 15°46'S 128°38'S, 8 May 1983, D.C.F. Rentz & J. Balderson. 1♂, 8km N of Learmonth, 22°09'S 114°05'E, 9 Oct 1995, D.C.F. Rentz & L. Lowe (w). 2♂, 13km WNW of Lyndon H.S., NE of Carnarvon, Jul 1950, G. Thomas. 1♂, 5km SE of Millstream H.S., 21°37'E 117°06'E, 12 Apr 1971, Upton & Mitchell. 2♂, 20km S of Minderoo H.S., 22°10'S 115°02'E, 17 Oct 1970, M.S. Upton & J.E. Feehan. 1♂, 40km ESE of Wittenoom, 24 Apr 1963, L.J. Chinnick. 1♀, Wyndham, 15 Feb 1930, T.G. Campbell (all ANIC).

Diagnosis. Can be distinguished from *G. unicornis* by the lack of a projection on the subantennal ridge.

Description. Body colour dark brown to pale mottled brown, peppered with darker spots.

Head Fig. 12A–B with vertical apophyses low, pointed or blunt and lightly tuberculate; par-ocular spines absent; ocelli without associated projections.

Prozone of thorax (Fig. 12C–D) with low diagonal ridge either side of carina; metazone with single pair of low bumps posterior to saddle groove, barely apparent in male; median carina not prominent and without projections; pronotal margin smooth, expanded slightly above coxal insertions, but usually lacking pointed projection (a very small one present in some female specimens); prosternum blackish, pre-acetabular spine absent.

Wings of male (Fig. 5A) with tegmina translucent, peppered with darker and lighter blotches; hindwings with tip similar colour to tegmina, remainder hyaline. Wings of

female (Fig. 5B) slightly reduced, tegmina similar to male, hindwings with costal area brownish, tip similar in colour to tegmina, remainder essentially hyaline but with faint brownish tinge.

Forecoxa (Fig. 12E–F) without spines; inner face with colour uniform pale cream; outer face with anterior half similar to inner face, posterior half similar in colour to rest of body. Inner face of fore femur (Fig. 12E–F) usually similar to in colour to inner face of forecoxa, but mottled brown or almost entirely black-brown in some specimens, femoral brush somewhat raised; outer face body coloured, with central longitudinal ridge. Inner face of fore tibia similar in colour to inner face of fore femur. Fore tarsus similar in colour to hind legs.

Dpr of male genitalia (Fig. 18B, E) with broad triangular central process with blunt tip and sometimes with shallow notch on left margin, narrow dextral process with shagreened tip which curves dorsally. Pa with single small, low anterior projection and narrow sclerotized region between it and ml. Ml squat, stout and shagreened.

Immature stages. Juvenile stages unknown.

Distribution and habits. Found across the northern half of Australia (Fig. 22A). Habits not known, but likely to be similar to *G. unicornis*.

Remarks. This species is very close to *G. unicornis* and may be conspecific with it. However, all specimens currently available for study can be placed in one species or the other based on the presence/absence of the projection on the subantennal ridge. The male genitalia also display distinct differences. Tindale separated *G. melania* based on its dark colouration and small morphological differences. It is here considered a synonym of *G. nebulosa*. The type male of *G. melania* has the tip of the abdomen missing.

Glabromantis unicornis Tindale, 1923

Figs. 5D–E; 13A–E; 18C, F; 22B

Glabromantis unicornis Tindale, 1923: 431.

Glabromantis unicornis pallidifemur Tindale, 1923: 432.

Glabromantis pallidifemur Tindale, 1930: 344, **syn. nov.**

Type material. Not examined but good images of type specimens seen. Registration numbers I.14046 and I.14048.

Material examined. Queensland. 1♀, Charleville, 17 Mar–3 Apr 1989, P. Johnson (w). 1♂, 15km SW of Charleville, 26°32'S 146°12'E, 21 Oct 1975, M.S. Upton. 1♂, 2km NE of Noccundra, 28 Jan 1966, L.J. Chinnick (all ANIC).

New South Wales. 4♂, Deriah Aboriginal Area, 23km E of Narrabri, 30.345°S 150.014°E, 10 Nov 2009, D. Britton & J. Rescei (w), K269849. 1♂, Lakeside Caravan Park, Broken Hill, 31°57'S 141°27'E, 16 Feb 2007, G. Milledge & H. Smith (w). 1♂, Lower Murray Darling region, Coombah Station, 33°03'07" S, 141°34'28"E, 11–15 Oct 1999, M. LeBreton (w). 1♂, Lower Murray Darling region, Willotia Station, 32°53'14" S, 142°14'10"E, 14–18 Feb 2010, M. LeBreton (w). 2♀, Paroo-Darling NP, 9.8km N of turnoff to Peery H.S., 30°43'34"S 143°28'46"E, 27 Oct–25 Nov 2010, G. Milledge & H. Smith (w). 1♂, Travelling Stock Reserve, 46.8km NE of Narrabri, 30.003°S 150.053°E, 13 Nov 2009, D. Britton & J. Rescei (w) (all AM). 1♂, Brewarrina, W.S. Froggatt. 1♂, Fowlers Gap Research Stn., 31°05'S 141°42'E, 8–9 Dec 1982, J.C. Cardale (w). 2♂, Homestead Gorge, Mootwingee NP, 31°17'S 142°18'E, 7–13 Oct 1988, E.D. Edwards (w). 1♀, Kinchega NP, 32°30'S 140°20'E, Nov 1986, K. Henle. 2♂, Narawarre Stn., 55km SE of Louth, 12–15 Dec 1952, A.Halsey (all ANIC).

Northern Territory. 1♂, Alice Springs, 23°41'S 133°52'E, 6–8 Nov 1988, D.C.F. Rentz (w). 1♂, 30km WNW of Alice Springs, 23°32'S 133°38'E, 7

Oct 1978, M.S. Upton. 5♂, 32km WNW of Alice Springs, 23°36'S 133°35'E, 8 Oct 1978, M.S. Upton. 1♂, 1♀, 39km E of Alice Springs, 23°41'S 134°15'E, 25–26 Sep 1978, D.C.F. Rentz (w). 2♂, same data except 26 Sep 1978, M.S. Upton. 1♂, 41km SE of Alice Springs, 4 Oct 1978, M.S. Upton. 2♂, 56km SE of Alice Springs, 24°11'S 134°01'E, 24 Sep 1978, M.S. Upton. 2♂, Hull R., 33km ESE of Docker River, 24°58'S 129°23'E, 17 Nov 1977, M.S. Upton & J.E. Feehan. 1♂, Junction Waterhole, Todd River, 9km NE of Alice Springs, 23°38'S 133°53'E, 10 Oct 1978, M.S. Upton. 1♂, same data except 28 Sep 1978. 3♂, 8km N of Kulgera, 25°46'S 133°17'E, 21 Sep 1978, M.S. Upton. 1♂, Reedy Rockhole, Amadeus Basin, 24°20'S 131°35'E, 26 Sep 1962, P. Ranford. 1♂, Stuart Hwy, 65km SSW of Alice Springs, 24°11'S 133°31'E, 27 Oct 1988, D.C.F. Rentz. 1♂, Uluru Motel, Ayers Rock, 25°21'S 131°03'E, 4 Nov 1980, K.H.L. Key. 1♂, Wigley Waterhole, 8km N of Alice Springs, 16 Feb 1966, Britton, Upton & McInnes (all ANIC). South Australia. 3♂, 25km NW of Amata, Musgrave Ranges, 26°08'S 130°54'E, 19 Jan 1982, D.C.F. Rentz et al. 1♂, 3.5km ESE of Arkaroola Village, 30°20'S 139°22'E, 24 Oct 1993, Edwards & E.S. Nielsen (w) 1♂, 3km WNW of Arkaroola Village, 30°18'S 139°19'E, 23 Oct 1993, Edwards & E.S. Nielsen (w). 1♂, 100km NNW of Cooper Pedy, 14 Oct 1966, A & R Mesa. 2♂, 8km SSW of Granite Downs H.S., 8–10 Oct 1955, L.J. Chinnick. 1♀, Hamilton Ck., 26°44'S 134°59'E, 22 Aug 1992, P.R. Birks. 1♂, 10km SE of Murdarinna W.H., NW of Oodnadatta, 9 Oct 1969, White & Marginson. 4♂, 1.7km ESE of Ooldea, 3 Oct 1968, Key, Upton & Balderson. 1♂, 1.6km N of Sundown H.S., 31 Mar 1958, Chinnick & Walker. 1♂, 41km NW of Welbourn Hill, 27°18'S 133°41'E, 21 Nov 1977, M.S. Upton & J.E. Feehan. (all ANIC). Victoria. 1♂, 6.6km N of Pyramid Hill, 3 Feb 1956, I.F.B. Common (ANIC). Western Australia. 1♂, 29km S of Billabong Roadhouse, 27°04'S 114°38'E, 26 Oct 1992, Edwards & E.S. Nielsen (w). 1♂, 32km S of Cardawan H.S., SSW of Mundiwindi, 27 Apr 1963, L.J. Chinnick. 2♂, 32km WSW of Carnamah, 16 Apr 1968, I.F.B. Common & M.S. Upton. 3♂, 13km NE of Carnarvon, 24°49'S 113°46'E, 19 Oct 1992, E.D. Edwards & E.S. Nielsen (w). 2♂, 25km SSE of Carnarvon, 25°04'S 113°49'E, 16 Oct 1970, M.S. Upton & J.E. Feehan. 1♂, 29km ESE of Coolgardie, 31°07'S 121°24'E, 5 May 1983, Edwards & E.S. Nielsen (w). 2♂, Deeba Rockhole, 34km NNE of Laverton, 28°22'S 122°37'E, 12 Nov 1977, M.S. Upton & J.E. Feehan. 2♂, Dundas Rock, S of Norseman, 32°24'S 121°46'E, 12 Jan 1993, Edwards & E.S. Nielsen (w). 2♂, 20km N of Galena, near Northampton, 19 Apr 1968, I.F.B. Common & M.S. Upton. 1♂, 11km N of Geraldton, 6 Dec 1972, N. McFarland. 1♂, Kalbarri, 21 Nov 1978, M.S. & B.J. Moulds. 1♂, Kalgoorlie, 1 Dec 1985, M.S. & B.J. Moulds. 1♂, Loop Rd., 14km ENE of Kalbarri, Kalbarri N.P., 27°39'S 114°17'E, 20 Oct 1984, D.C.F. Rentz. 2♂, 5km W of Moorine Rock, near Southern Cross, 2 Dec 1985, M.S. & B.J. Moulds. 2♂, near New Beach, 40km SSE of Carnarvon, 25°11'S 113°50'E, 21 Oct 1984, D.C.F. Rentz. 1♂, 20km E of Norseman, 12–13 Jan 1986, C. Reid. 1♂, 62km SSW of Norseman, 32°38'S 121°29'E, 17 Nov 1969, Key & Upton. 1♂, Twelve Mile Well, 17km SSW of Meekatharra, 26°44'S 118°26'E, 15 Oct 1984, D.C.F. Rentz (w). 1♂, 66km NE of Warburton, 26°03'S 127°14'E, 15 Nov 1977, M.S. Upton & J.E. Feehan. 1♂, Yellari Sandalwood Res., 22km ESE of Coolgardie, 31°05'S 121°21'E, 7 May 1984, E.S. Nielsen & E.D. Edwards (all ANIC).

Diagnosis. Can be distinguished from *G. nebulosa* by the possession of a projection on the subantennal ridge (Fig. 13D).

Description. Body colour mottled brown, peppered with darker spots.

Head (Fig. 13A–B) with vertical apophyses low, pointed or blunt and lightly tuberculate; par-ocular spines absent; ocelli without associated projections.

Prozone of thorax (Fig. 13C–D) with low diagonal ridge either side of carina; metazone with single pair of low bumps posterior to saddle groove, barely apparent in male; median carina not prominent and without projections; pronotal margin smooth, expanded slightly above coxal insertions, but usually lacking pointed projection (a very small one present in some female specimens); prosternum blackish, pre-acetabular spine absent.

Wings of male (Fig. 5D) with tegmina translucent, peppered with darker and lighter blotches; hindwings with tip similar colour to tegmina, remainder hyaline. Wings of female (Fig. 5E) slightly reduced, tegmina similar to male,

hindwings with costal area brownish, tip similar in colour to tegmina, remainder essentially hyaline but with faint brownish tinge.

Forecoxa (Fig. 13E) without spines; inner face with colour uniform pale cream; outer face with anterior half similar to inner face, posterior half similar in colour to rest of body. Inner face of fore femur (Fig. 13E) usually similar to in colour to inner face of forecoxa, but mottled brown or almost entirely black-brown in some specimens, femoral brush somewhat raised; outer face body coloured, with central longitudinal ridge. Inner face of fore tibia similar in colour to inner face of fore femur. Fore tarsus similar in colour to hind legs.

Dpr of male genitalia (Fig. 18C, F) with broad triangular central process with blunt tip and somewhat irregular margins, narrow dextral process with shagreened tip which curves dorsally. Pa with single spinose, knob-like anterior projection and narrow sclerotized region between it and ml. Ml squat, stout and shagreened.

Immature stages. Juvenile stages unknown.

Distribution and habits. Found across the more arid parts of southern and central Australia (Fig. 22B). I have collected a couple of specimens of this species from the stems of woody shrubs. Males are attracted to lights at night.

Remarks. See remarks for *G. nebulosa* regarding relationships with that species. The subspecies *G. unicornis pallidifemur* was separated by Tindale based on small, but ill defined, dimensional differences in the head and pronotum plus the fact that females had pale anterior femora and tibiae. He later elevated this subspecies to species level (Tindale, 1930). Tindale only examined specimens from 8 localities. I have examined specimens from 59 localities and conclude that the variations mentioned by Tindale do not warrant the description of more than a single species.

ACKNOWLEDGEMENTS. I would like to thank D. Smith (AM) and You Ning Su (ANIC) for allowing me to examine specimens in their care. Photographs of live specimens by Lorenzo Bertola, Helen Smith and Dave Rentz were used with permission. All other photographs of live specimens were downloaded from iNaturalist and are used under the terms of the Creative Commons licence; <https://creativecommons.org/licenses/by-nc/4.0/legalcode>

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Figure 1. Live photographs of representative species of *Paraoxyphilus*. A. *P. tasmaniensis*, male (Helen Smith). B. *P. tasmaniensis*, female (Thomas Mesaglio). C. *P. verreauxii*, female (Ged Tranter). D. *P. verreauxii*, male (Dave Rentz). E. *P. verreauxii*, female, showing colour pattern on inner face of foreleg (Jessa Thurman). F. *P. kimberleyensis*, male (Colin Trainor). G. *P. kimberleyensis*, female (Glenda Walter).

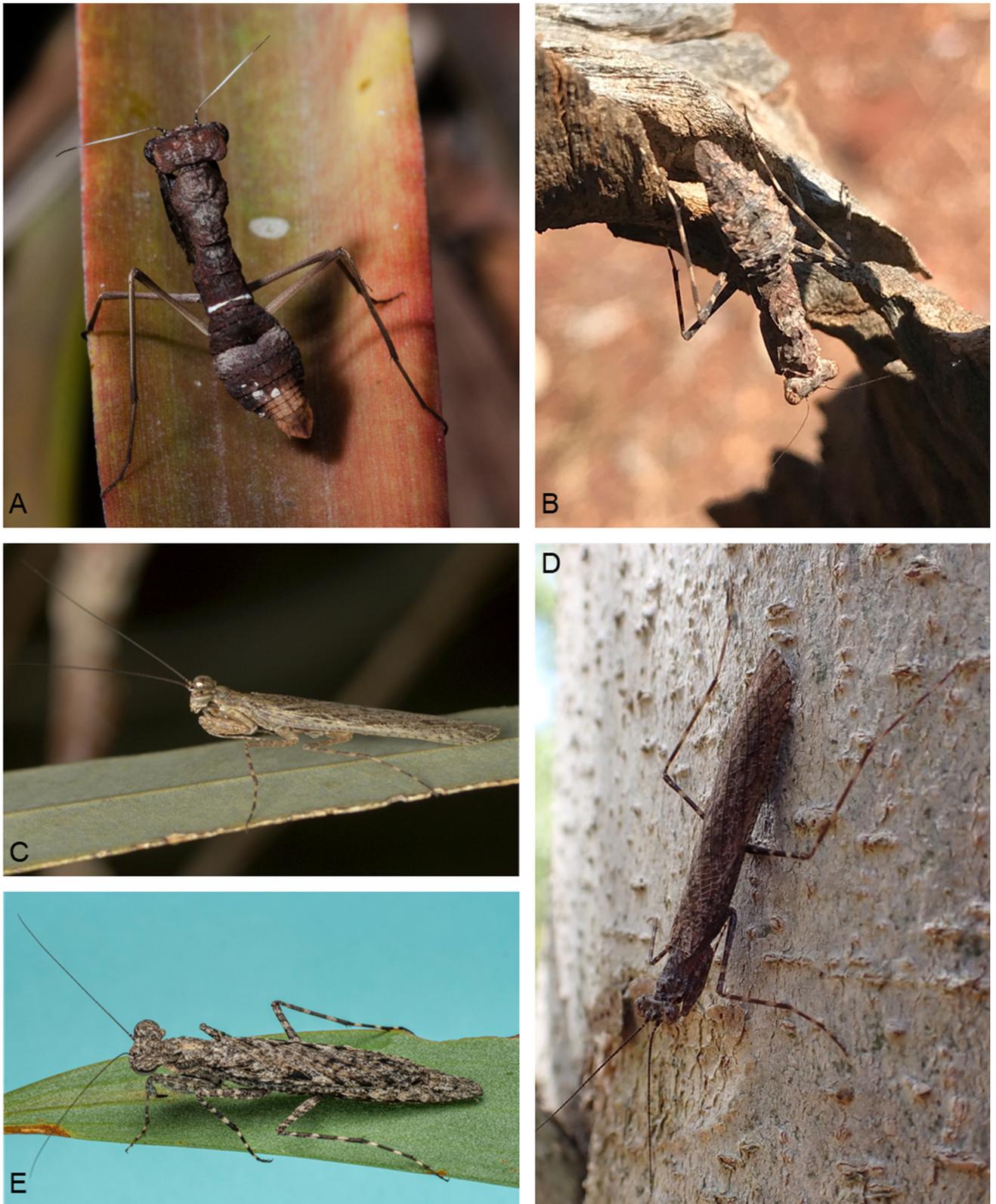


Figure 2. Live photographs *Paraoxyphilus*, *Phthersigena* and *Glabromantis* species. A. *Paraoxyphilus atra*, female (Lorenzo Bertola). B. *Phthersigena conspersa*, female (Aaron Bean). C. *Glabromantis nebulosa*, male (Tony Eales). D. *Ph. conspersa*, male (Simon Ong). E. *G. nebulosa*, female (Gunter Maywald).

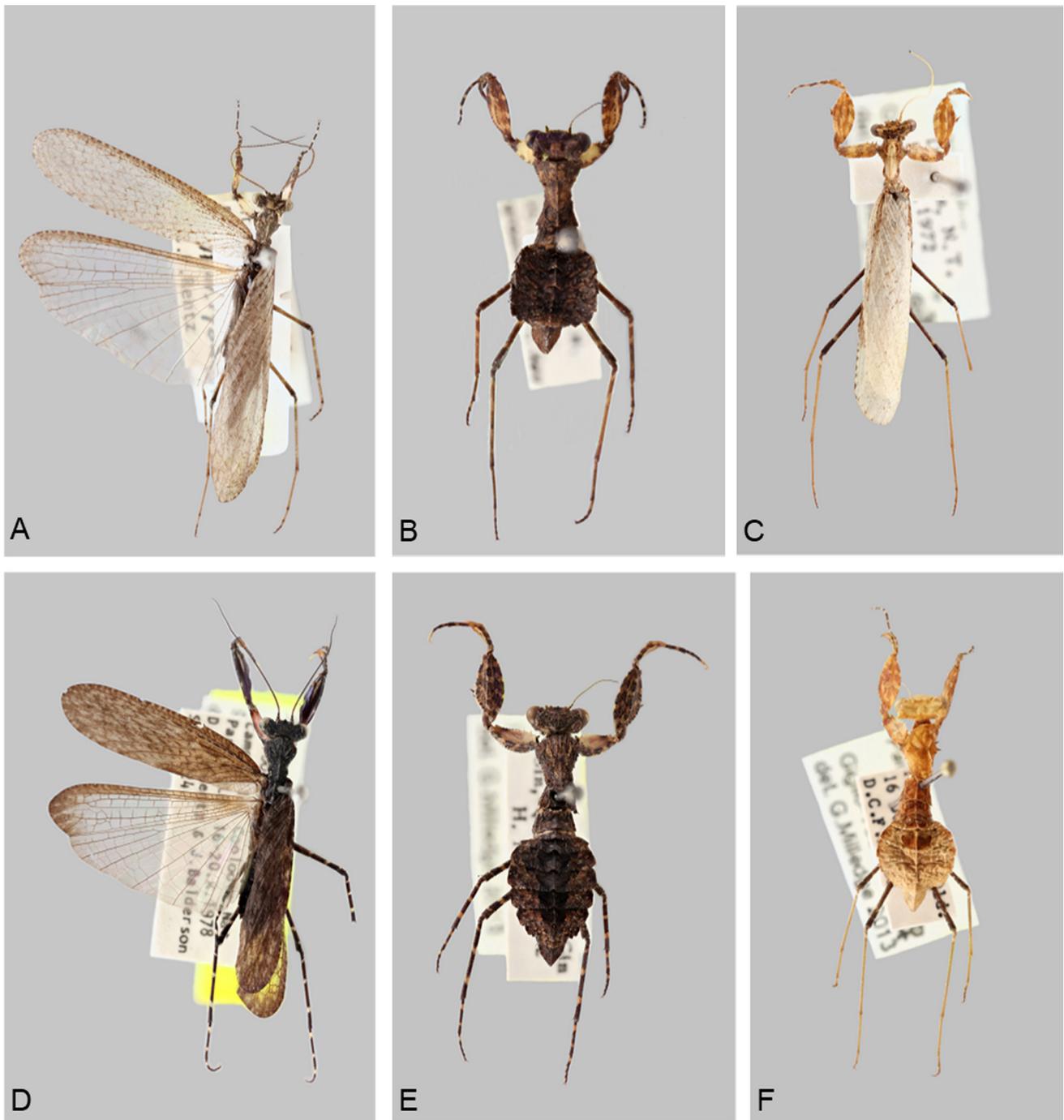


Figure 3. Preserved specimens of *Paraoxyphilus* species. *P. tasmaniensis*, A. male, B. female. *P. armatus*, C. male, F. female. *P. verreauxii*, D. male, E. female.

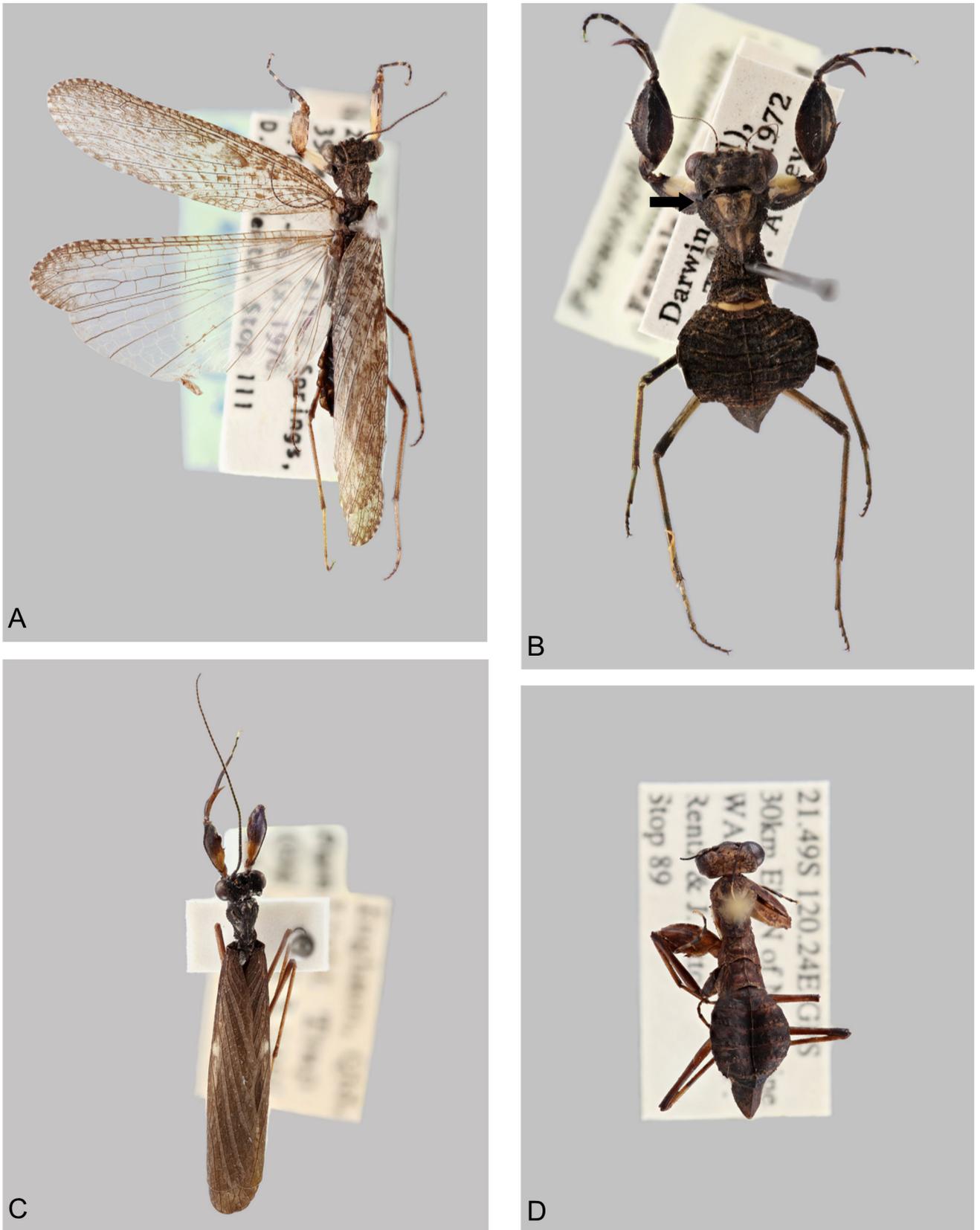


Figure 4. Preserved specimens of *Paraoxyphilus* species. *P. kimberleyensis*, A. male, B. female (arrow indicates pronotal marginal spine). *P. atra*, C. male, D. female.

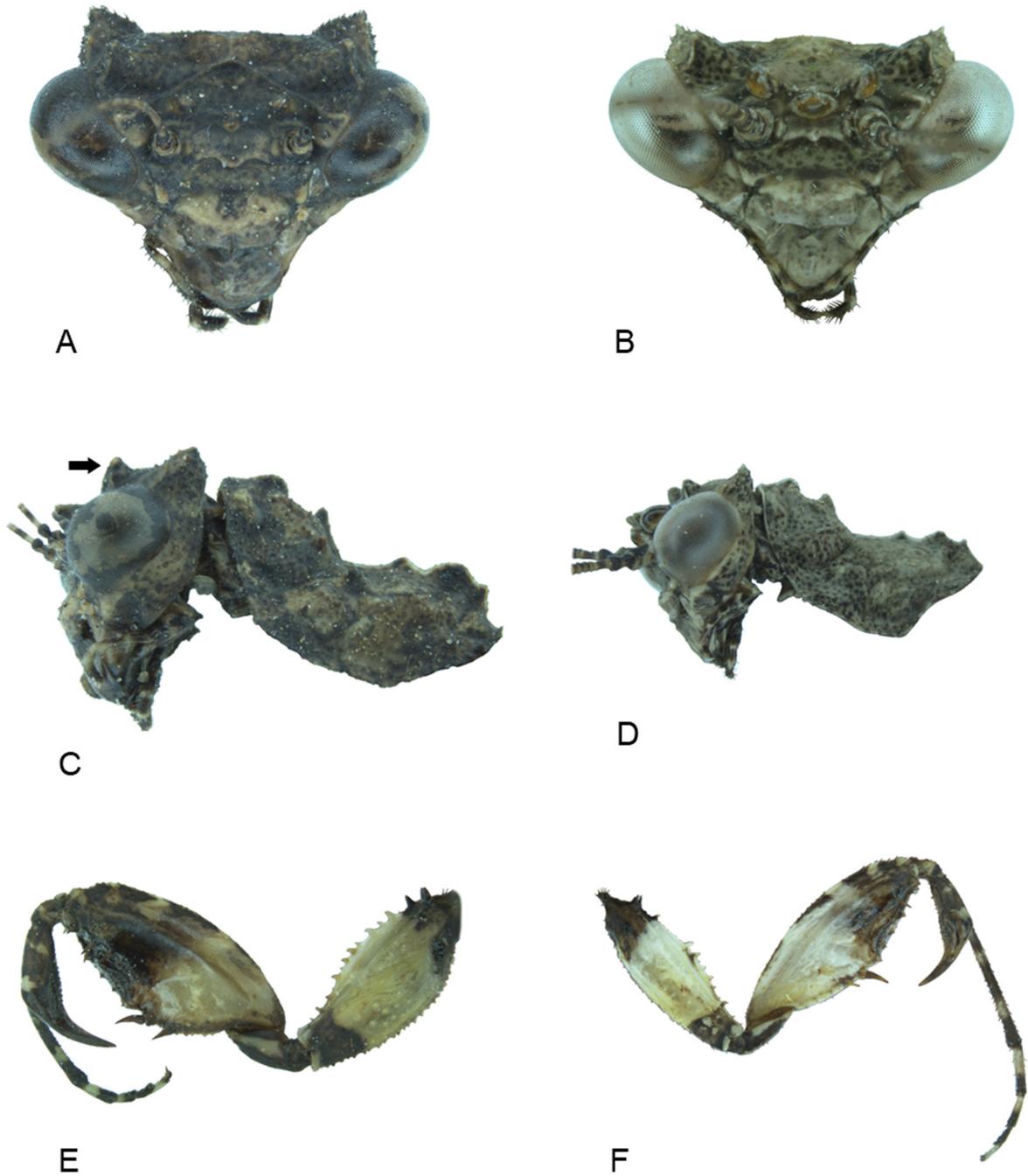


Figure 6. *Paraoxyphilus tasmaniensis*, frontal view of head, A. female, B. male, lateral view of head and pronotum, C. female (arrow indicates par-ocular spine), D. male, internal face of foreleg, E. female, F. male.

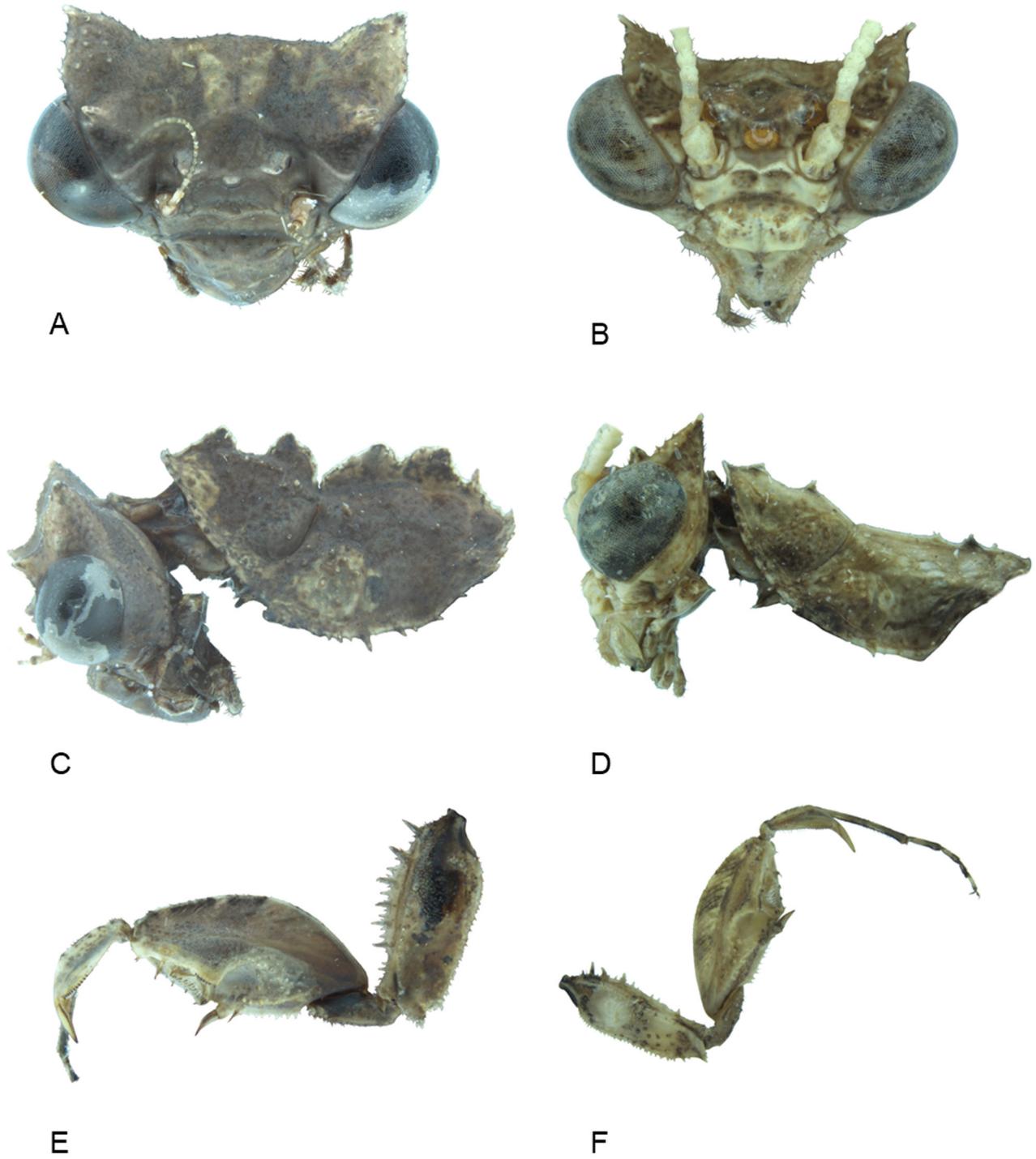


Figure 7. *Paraoxyphilus armatus*, frontal view of head, A. female, B. male, lateral view of head and pronotum, C. female, D. male, internal face of foreleg, E. female, F. male.

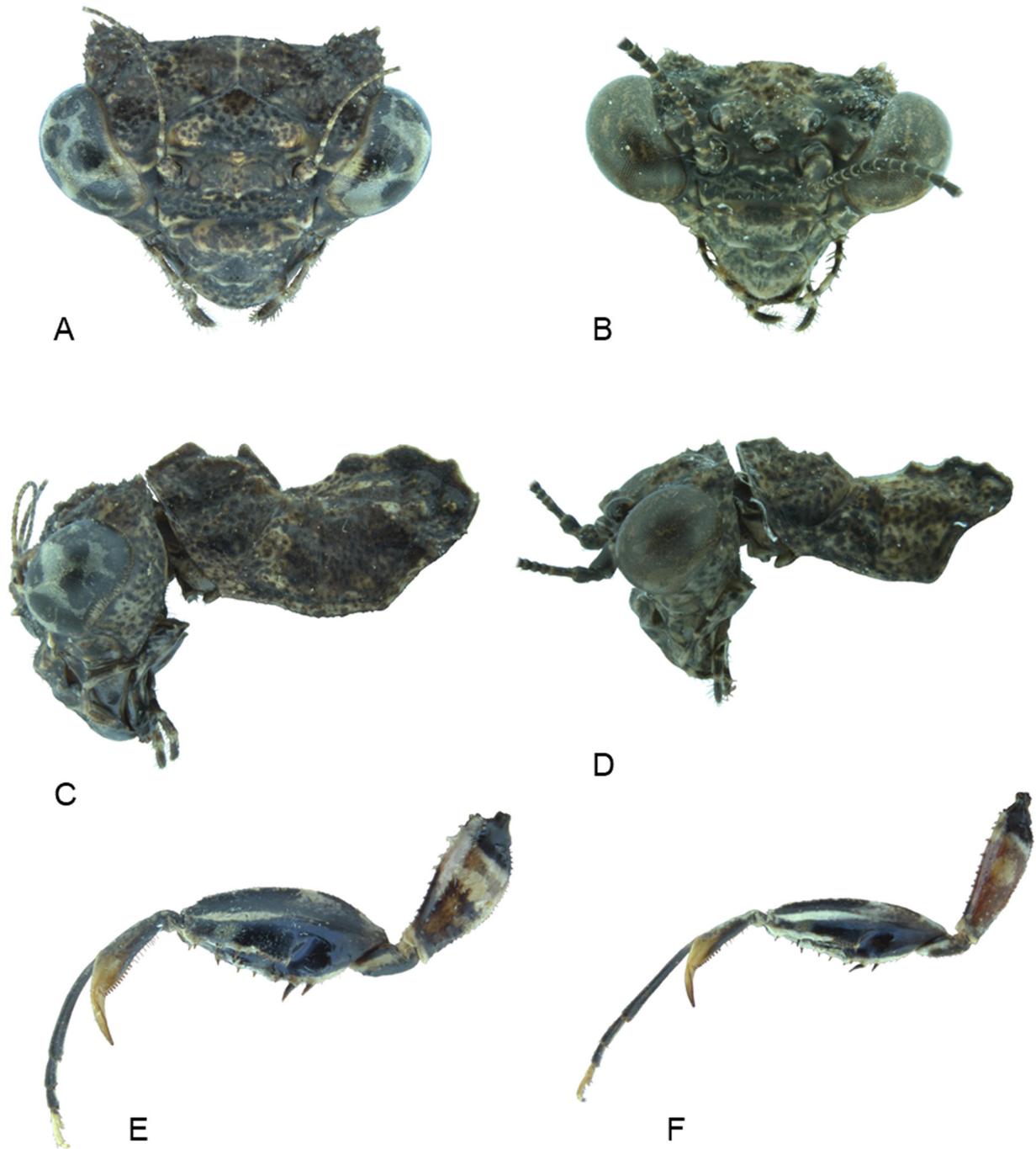


Figure 8. *Paraoxyphilus verreauxii*, frontal view of head, A. female, B. male, lateral view of head and pronotum, C. female, D. male, internal face of foreleg, E. female, F. male.

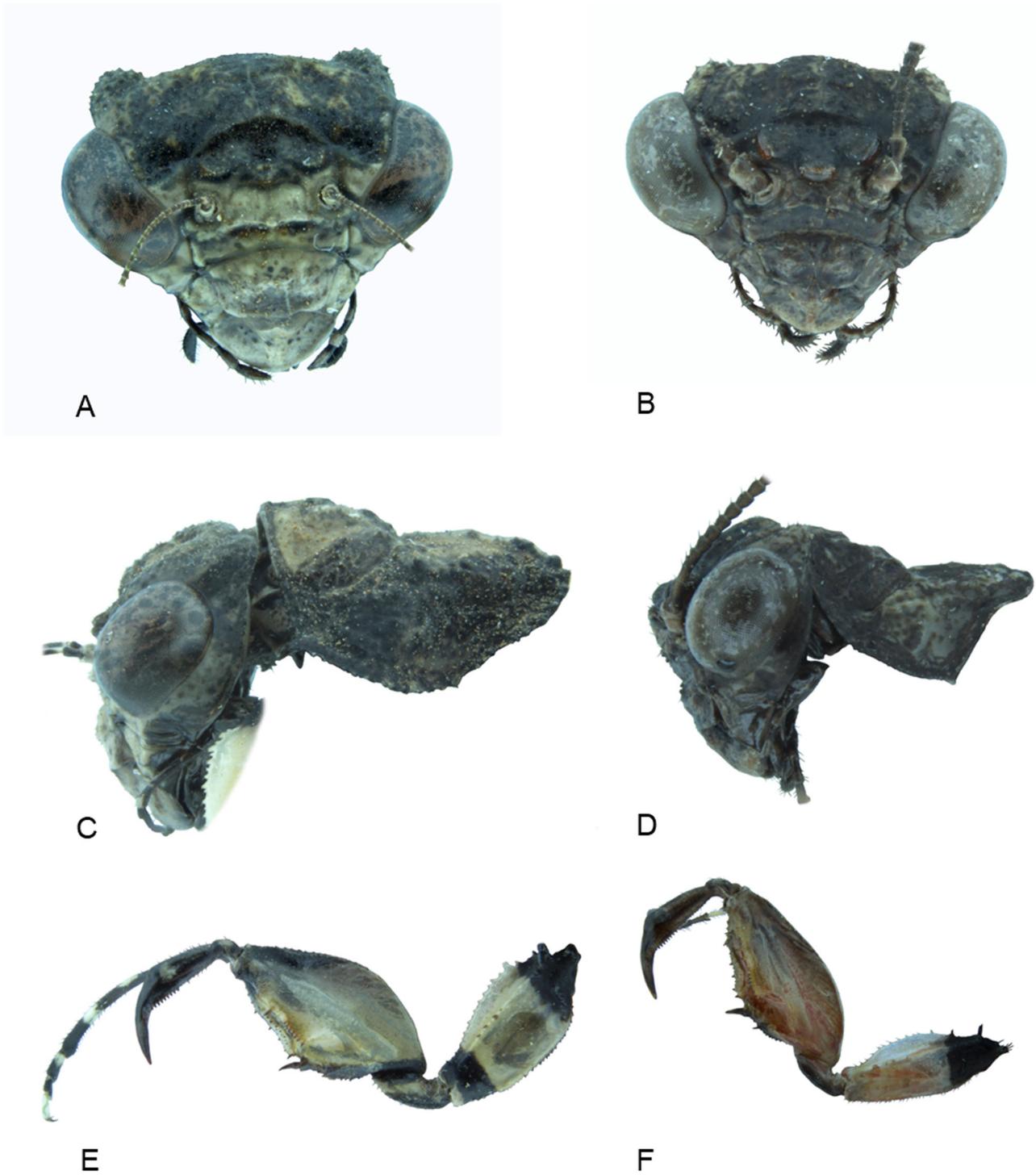


Figure 9. *Paraoxypilus kimberleyensis*, frontal view of head, A. female, B. male, lateral view of head and pronotum, C. female, D. male, internal face of foreleg, E. female, F. male.

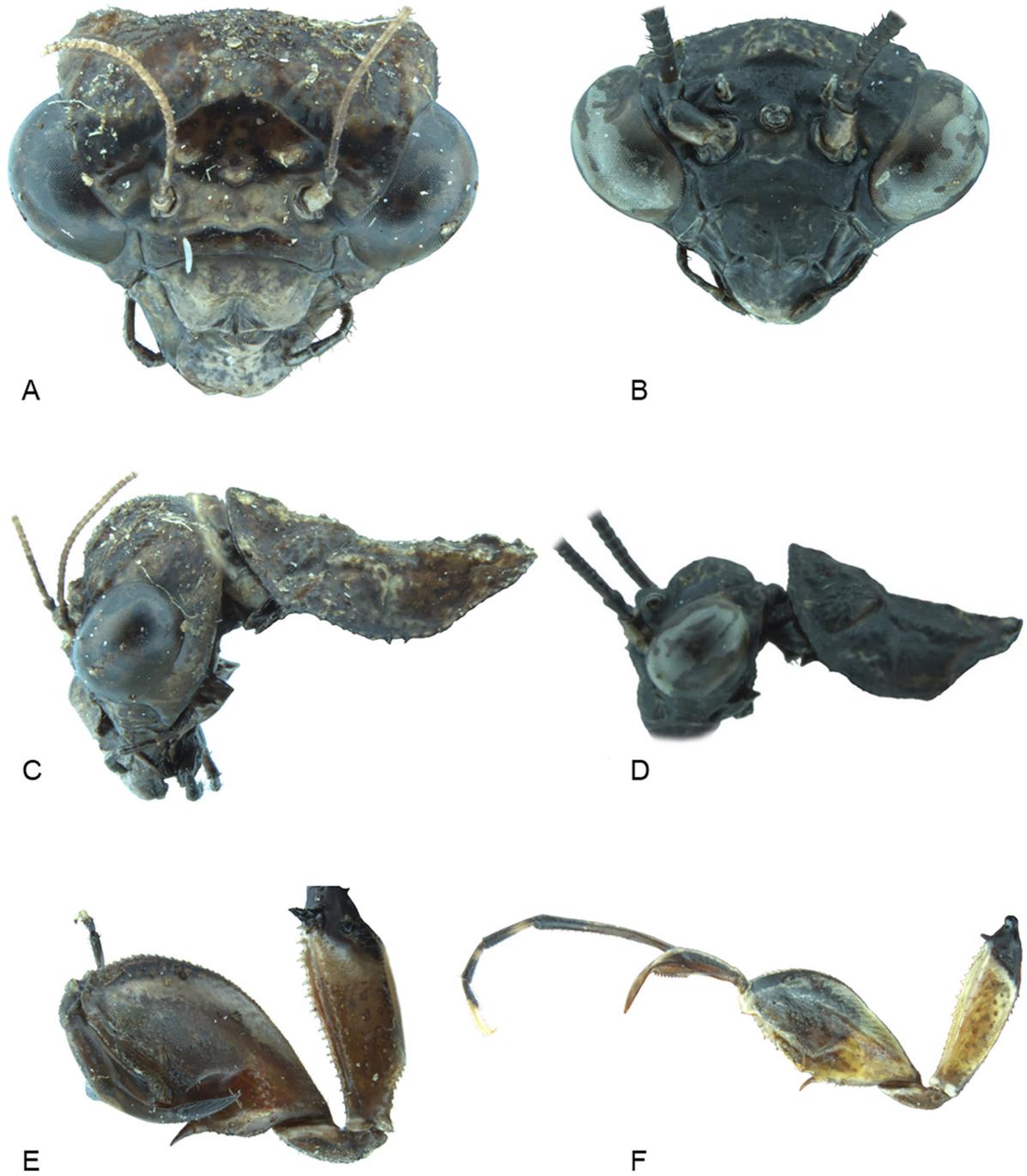


Figure 10. *Paraoxyphilus atra*, frontal view of head, A. female, B. male, lateral view of head and pronotum, C. female, D. male, internal face of foreleg, E. female, F. male.

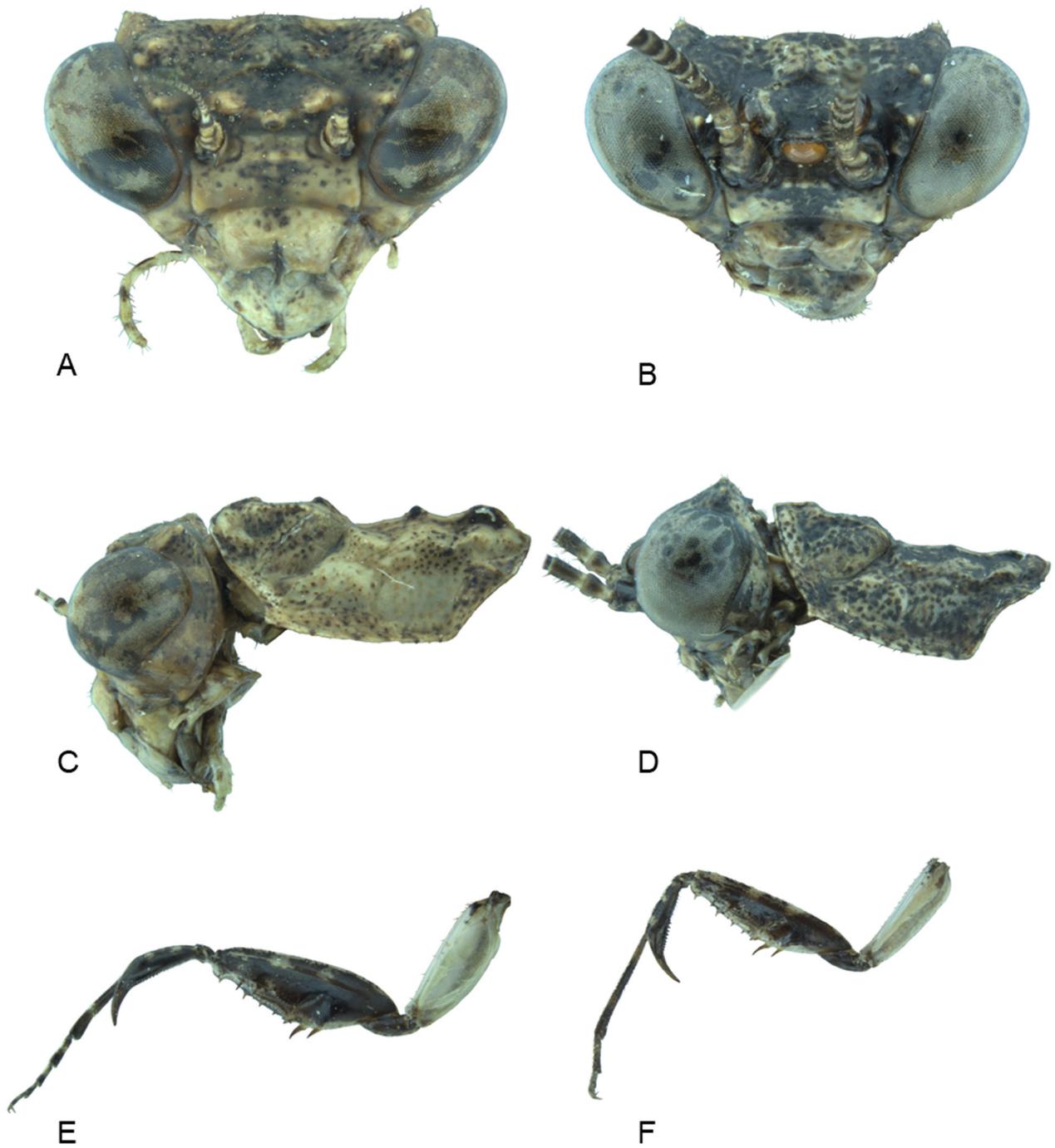


Figure 11. *Phthersigena conspersa*, frontal view of head, A. female, B. male, lateral view of head and pronotum, C. female, D. male, internal face of foreleg, E. female, F. male.

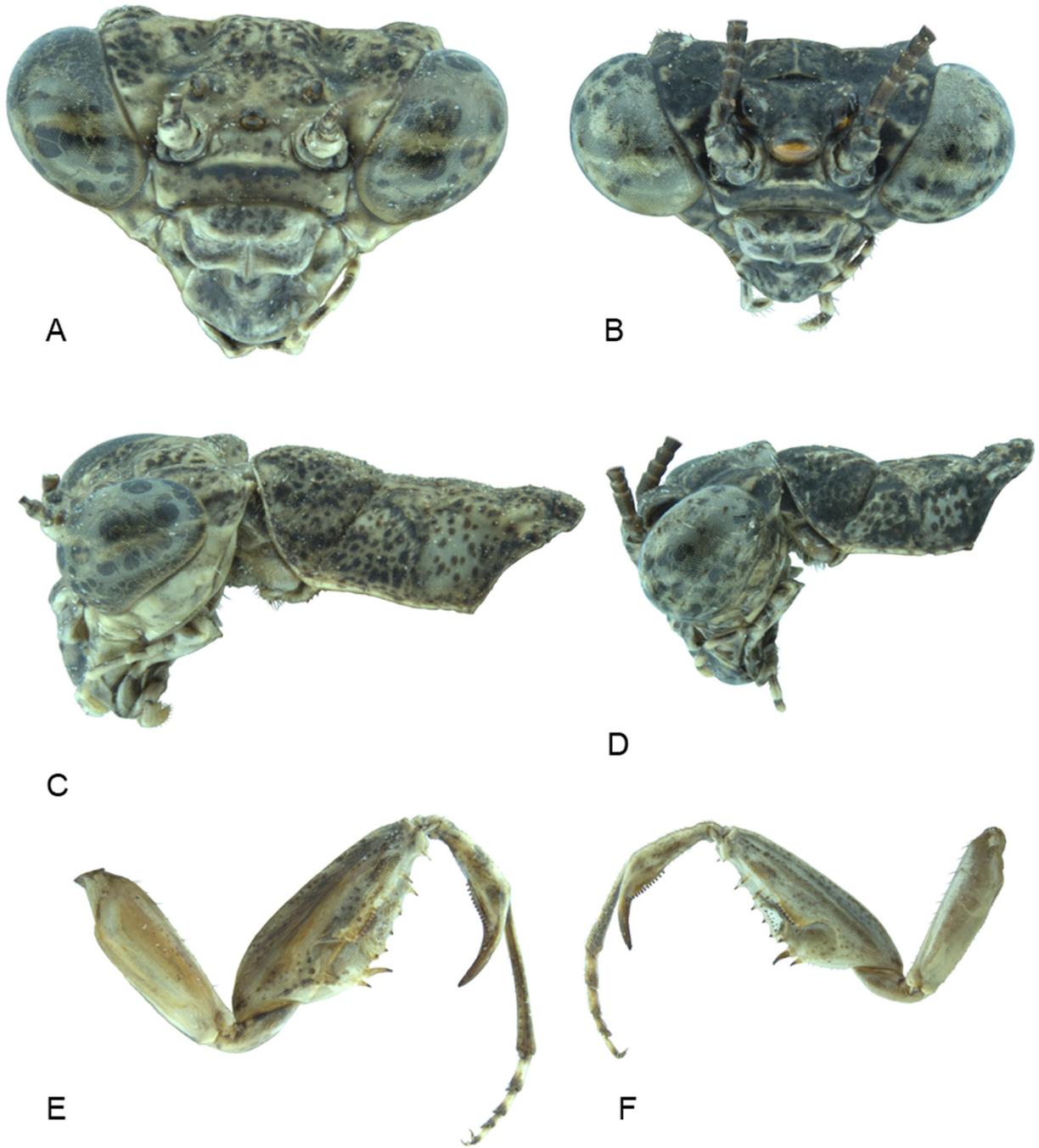


Figure 12. *Glabromantis nebulosa*, frontal view of head, A. female, B. male, lateral view of head and pronotum, A. female, D. male, internal face of foreleg, E. female, F. male.

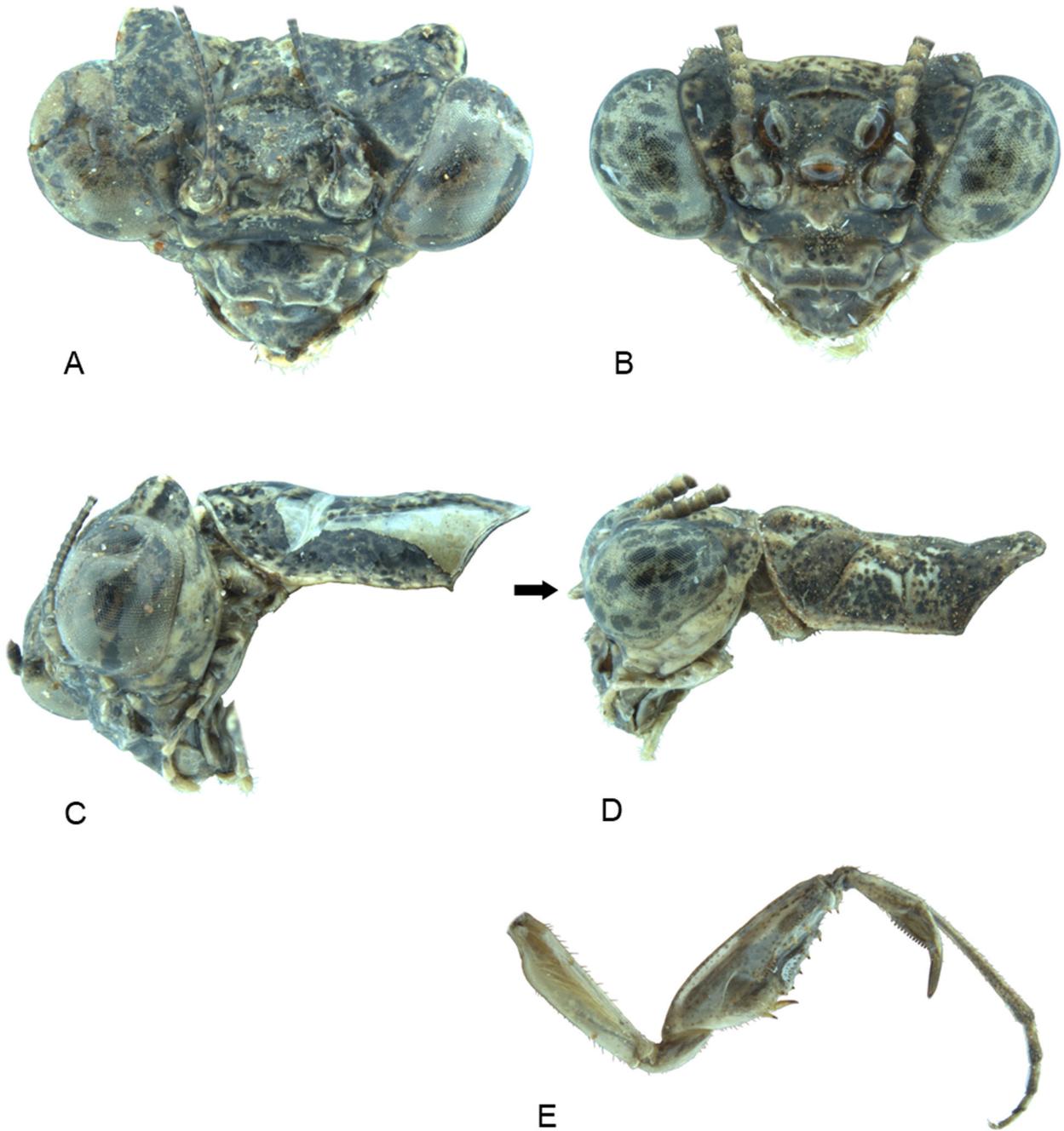


Figure 13. *Glabromantis unicornis*, frontal view of head, A. female, B. male, lateral view of head and pronotum, C. female, D. male (arrow indicates projection on subantennal ridge), internal face of foreleg, E. male.

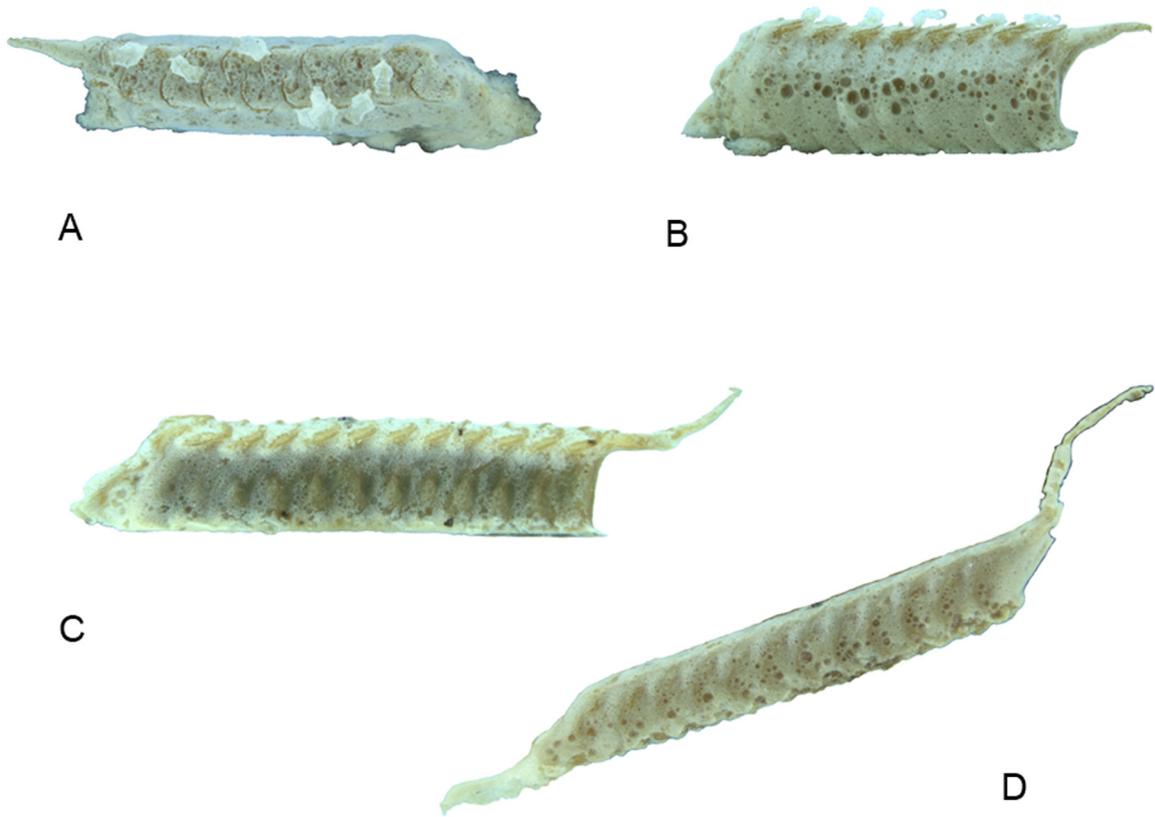


Figure 14. Oothecae of *Paraoxyphilus* and *Phthersigena* species. *P. tasmaniensis*, A. dorsal view, B. lateral view. *P. verreauxii*, C. lateral view. *Ph. conspersa*, D. lateral view.

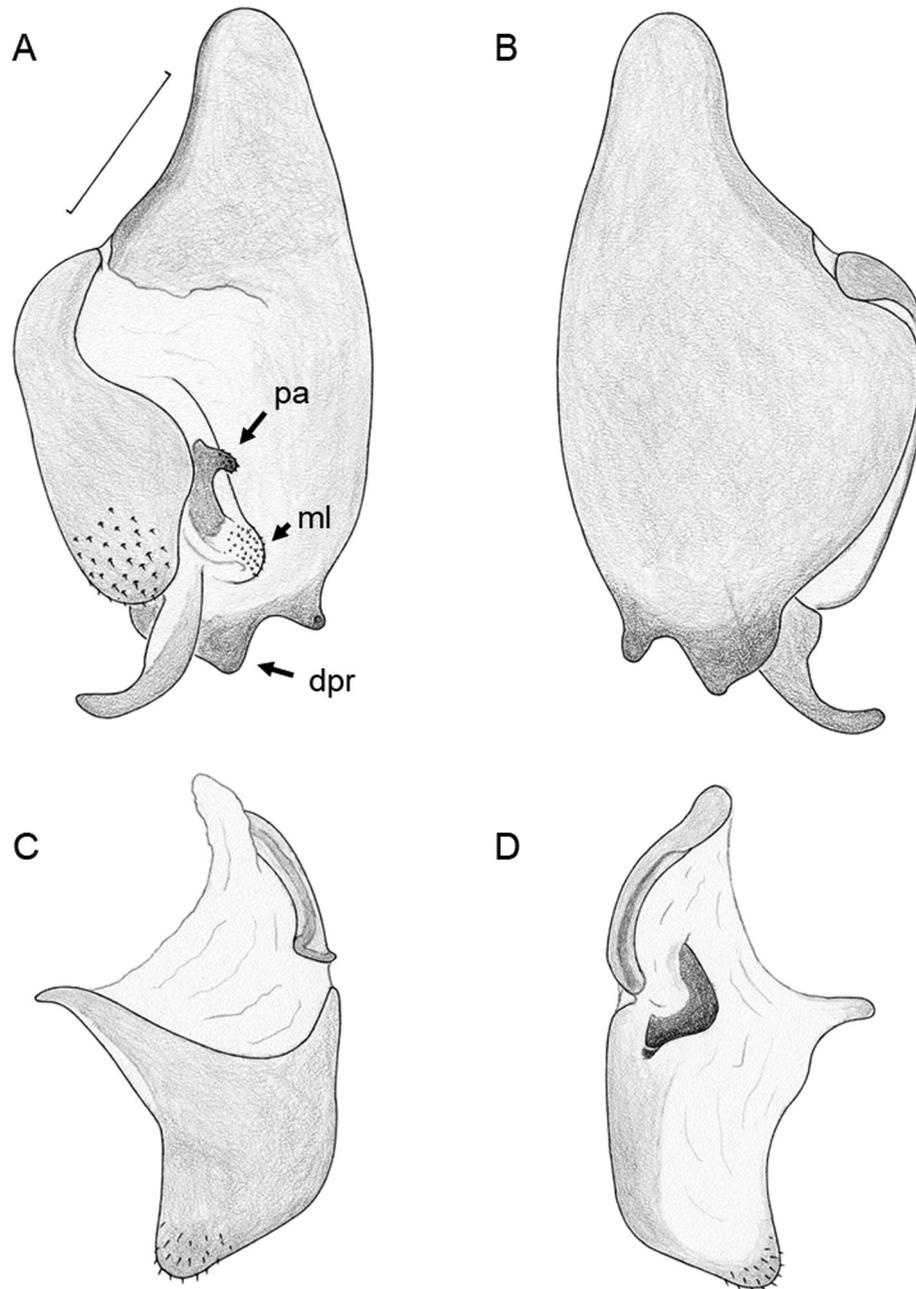


Figure 15. Male genitalia of *P. tasmaniensis*, A. dorsal view of left dorsal and ventral phallomeres (pa = phalloid apophysis, ml = median lobe, dpr = distal process), B. ventral view of same, C. dorsal view of right dorsal phallomere, D. ventral view of same. Scale bars = 0.5mm.

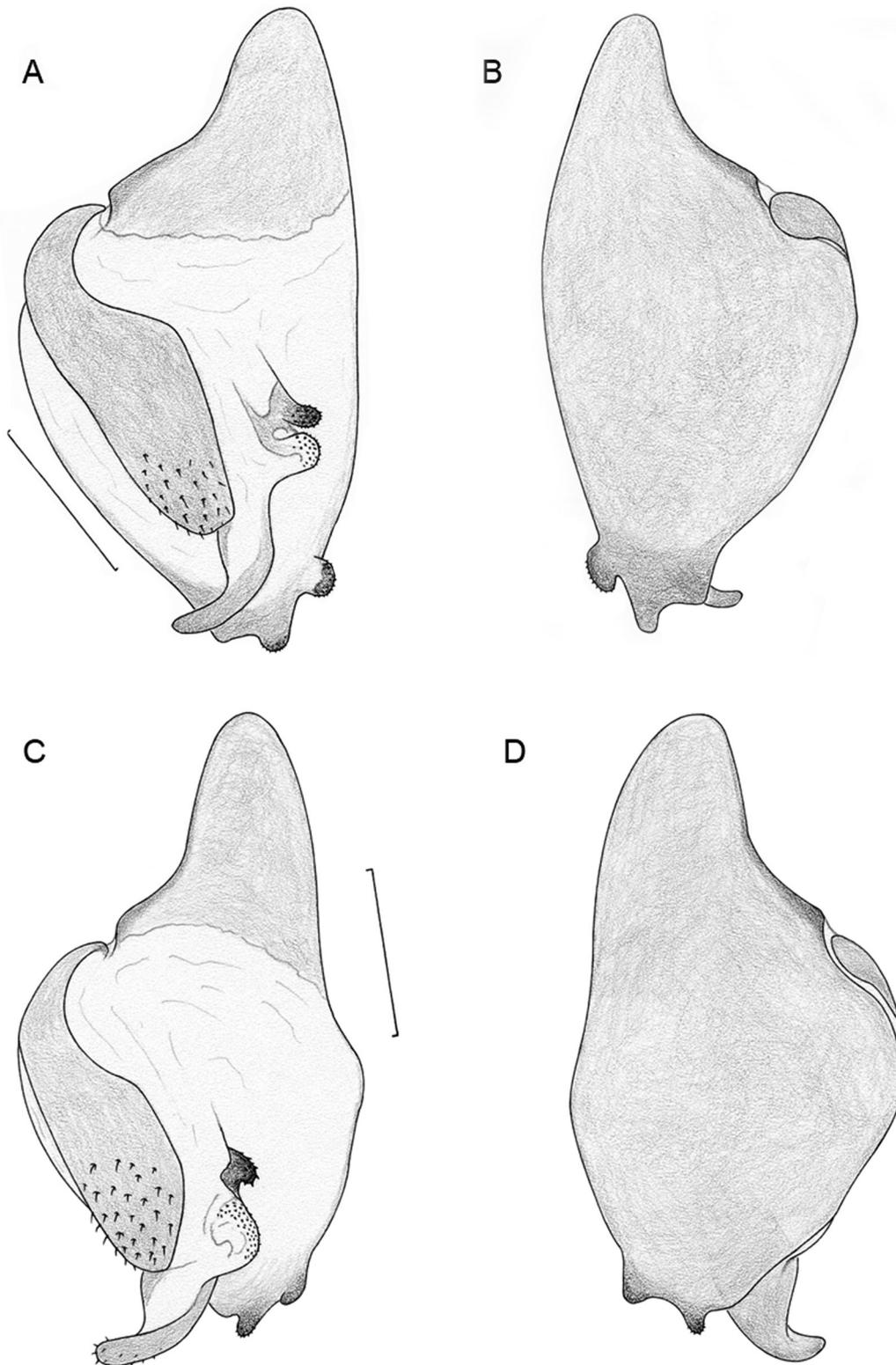


Figure 16. Male genitalia of *Paraoxyphilus* species, left dorsal and ventral phallomeres. *P. armatus*, A. dorsal view, B. ventral view. *P. verreauxii*, C. dorsal view, D. ventral view. Scale bars = 0.5mm.

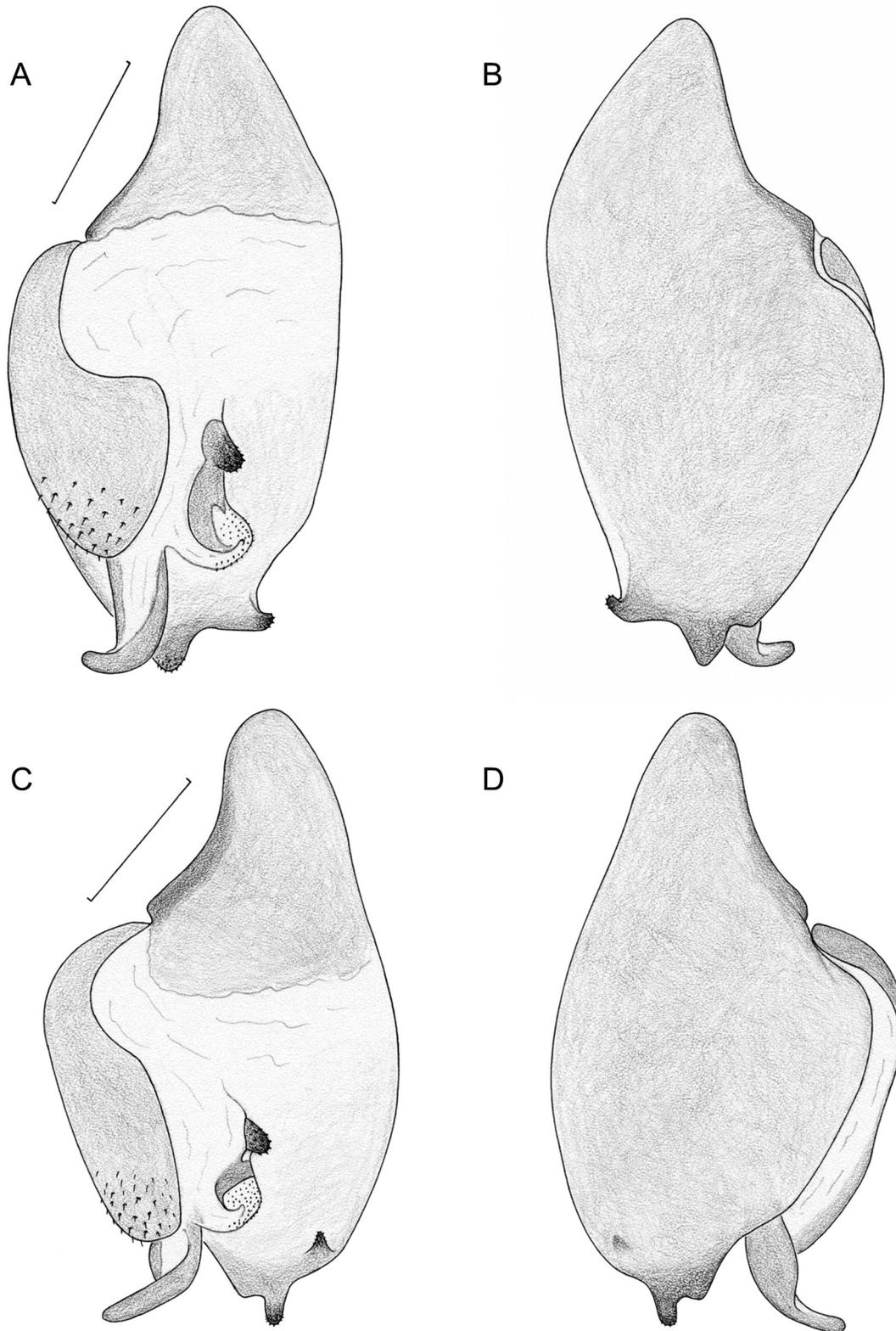


Figure 17. Male genitalia of *Paraoxyphilus* species, left dorsal and ventral phallomeres. *P. kimberleyensis*, A. dorsal view, B. ventral view. *P. atra*, C. dorsal view, D. ventral view. Scale bars = 0.5mm.

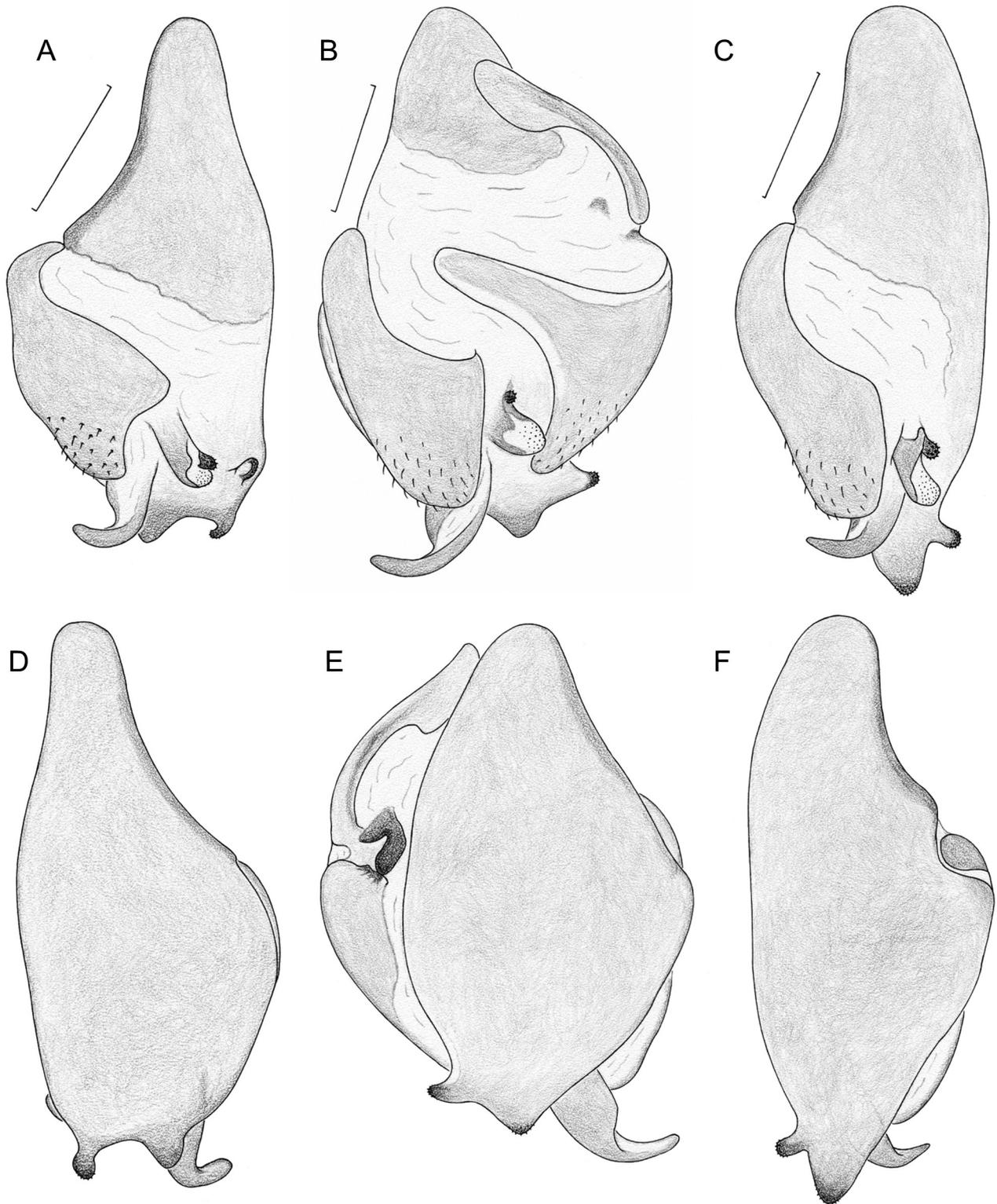


Figure 18. Male genitalia of *Phthersigena* and *Glabromantis* species. *Ph. conspersa*, left dorsal and ventral phallomeres, A. dorsal view, D. ventral view. *G. nebulosa* left and right dorsal and ventral phallomeres, B. dorsal view, E. ventral view. *G. unicornis*, left dorsal and ventral phallomeres, C. dorsal view, F. ventral view. Scale bars = 0.5mm.

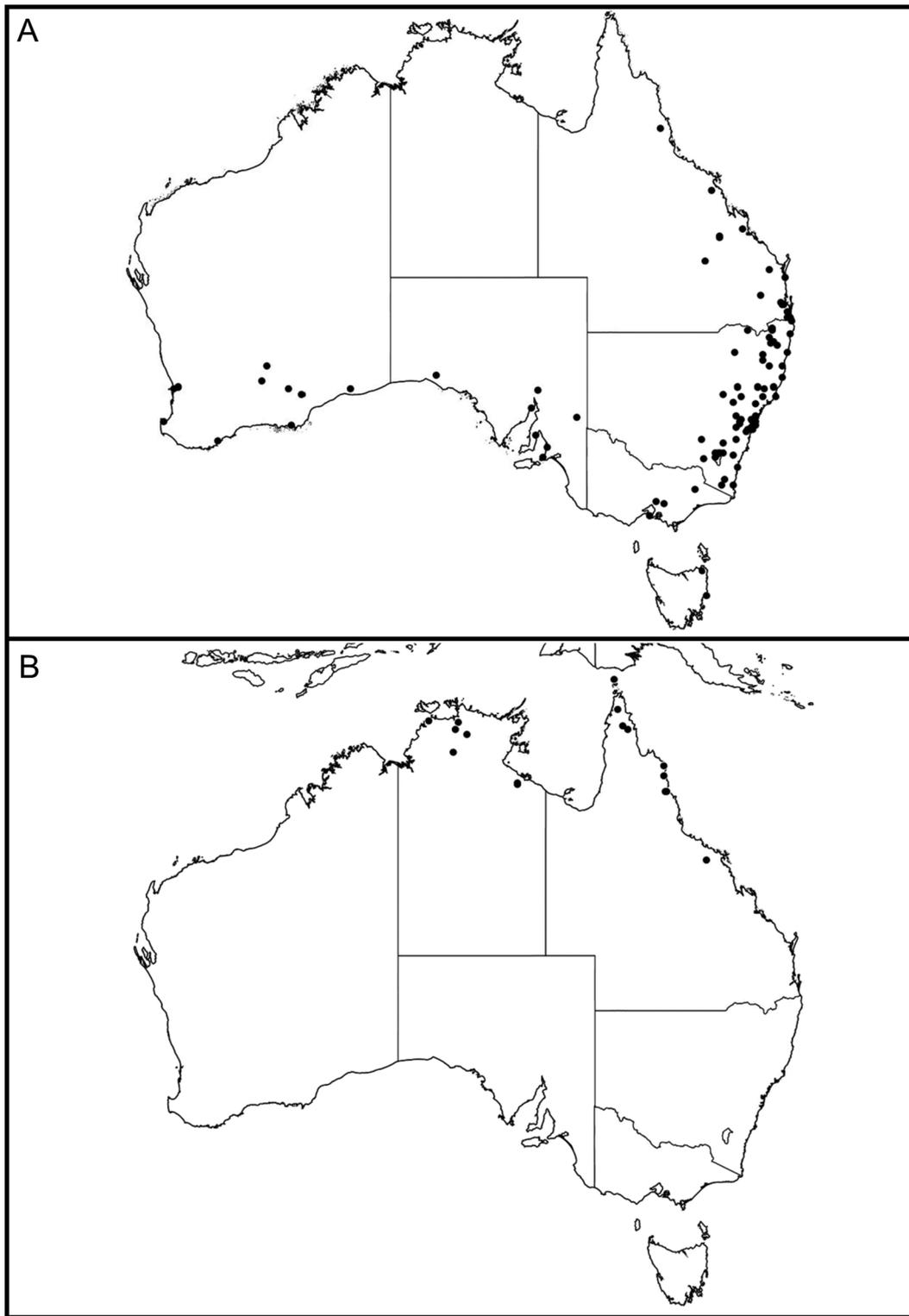


Figure 19. Distribution maps for *Paraoxyphilus* species, A. *P. tasmaniensis*, B. *P. armatus*.

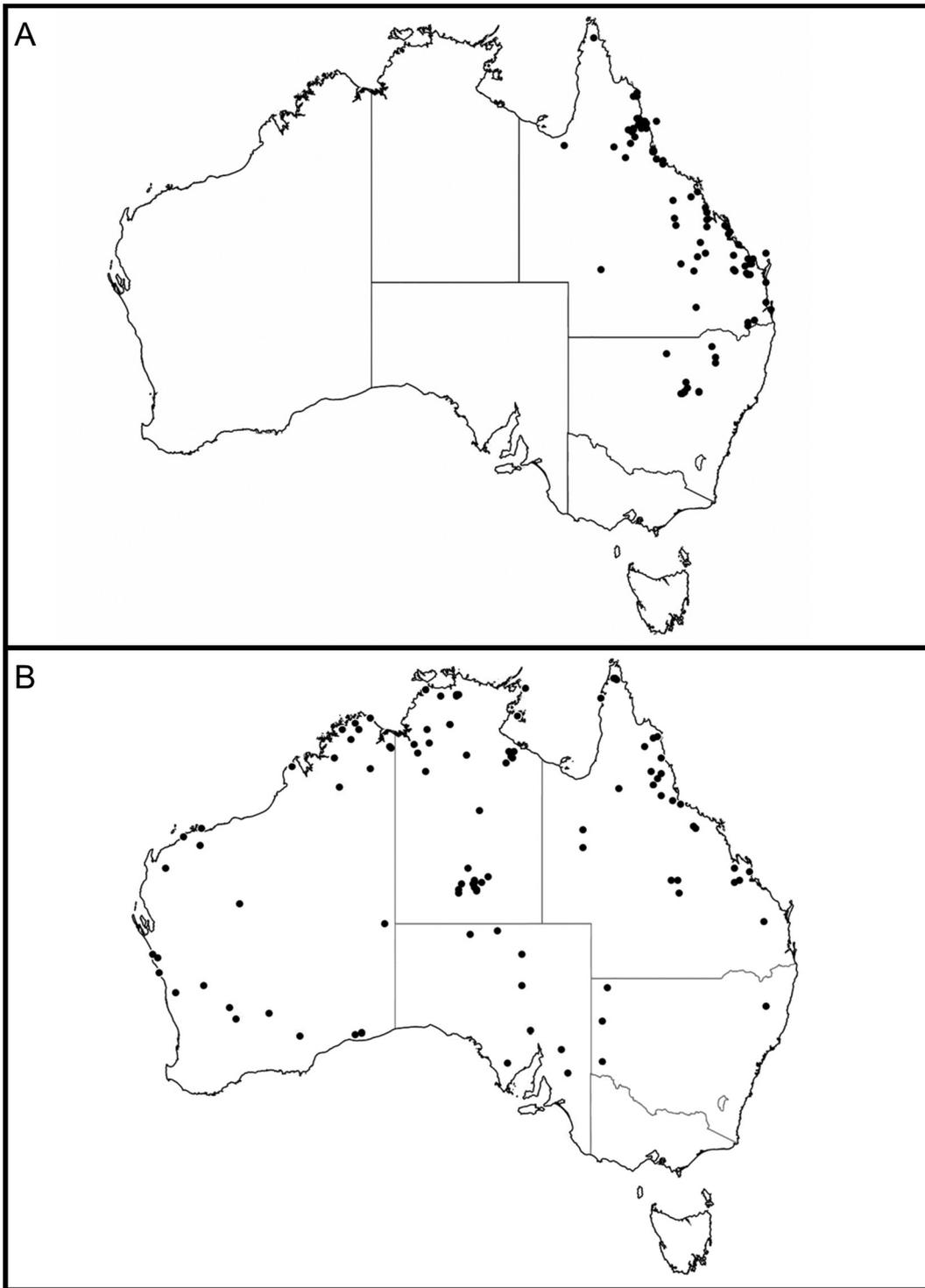


Figure 20. Distribution maps for *Paraoxyphilus* species, A. *P. verreauxii*, B. *P. kimberleyensis*.

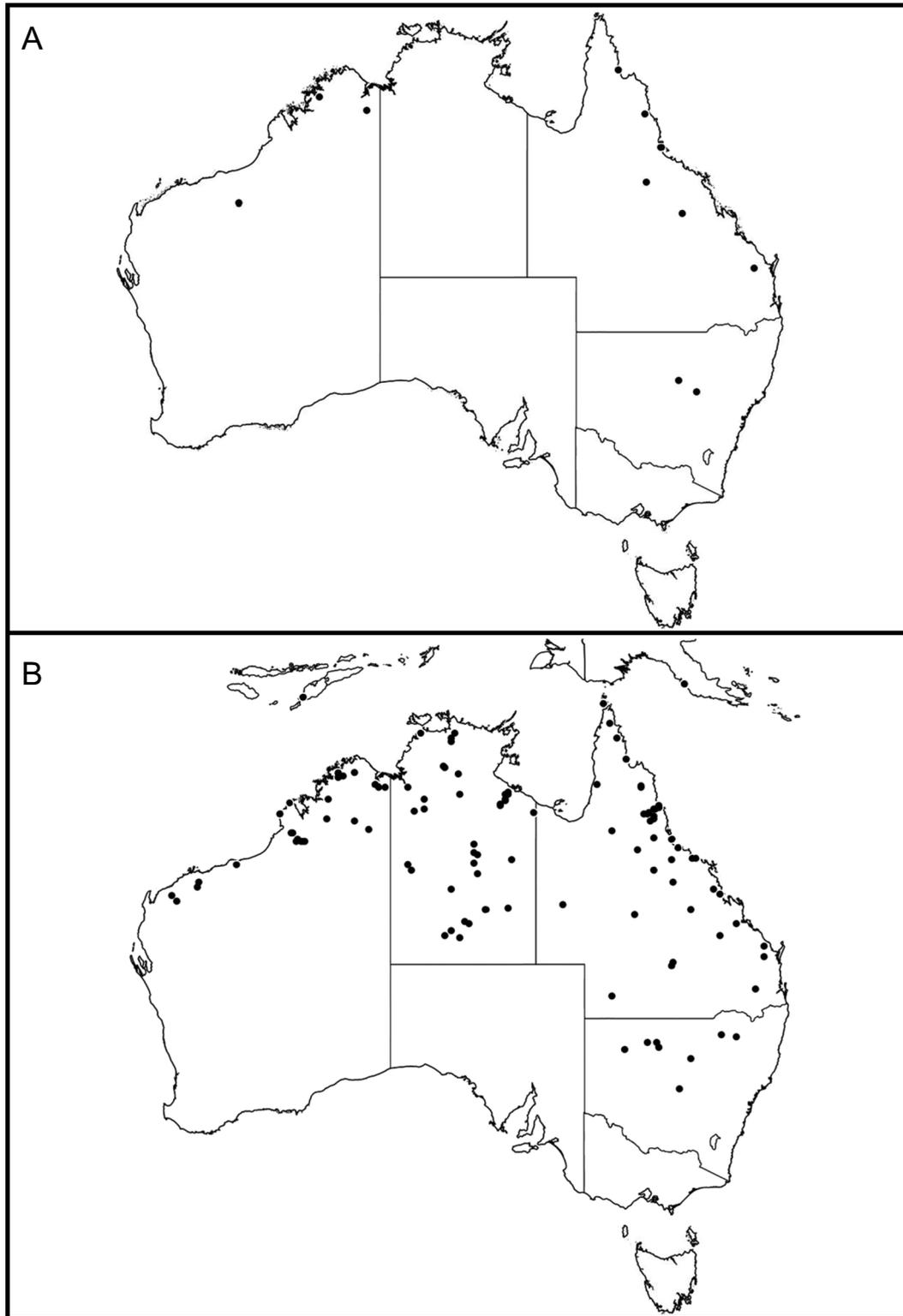


Figure 21. Distribution maps for *Paraoxyphilus* and *Phthersigena* species, A. *P. atra*, B. *Ph. conspersa*.

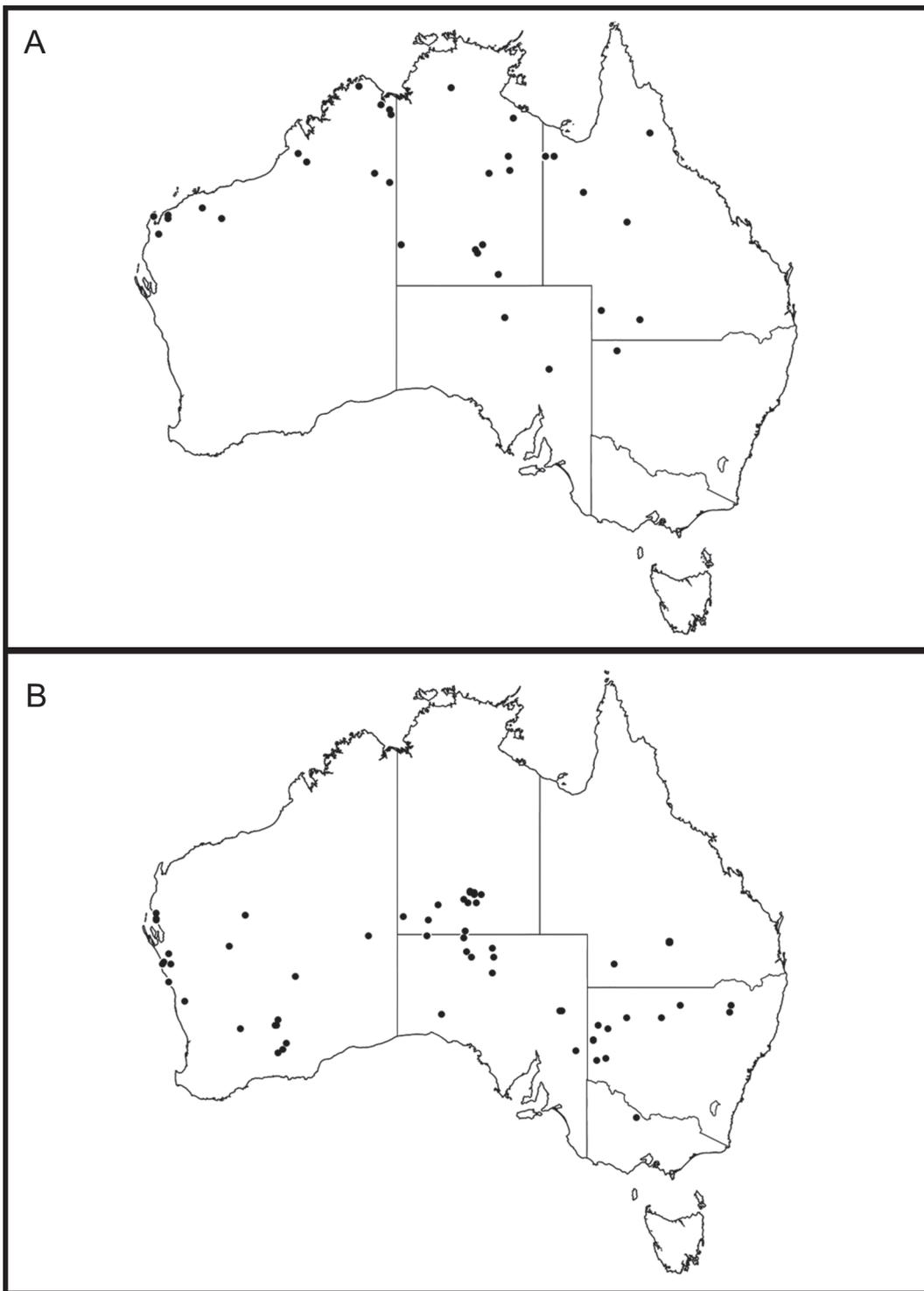


Figure 22. Distribution maps for *Glabromantis* species, A. *G. nebulosa*, B. *G. unicornis*.