

THE WOLF SPIDERS OF AUSTRALIA (ARANEAE: LYCOSIDAE): 6  
THE LEUCKARTII GROUP

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ABSTRACT

*Lycosa leuckartii* is redescribed with notes on the life history. *Lycosa christopherei* is a synonym of *Lycosa leuckartii*. *Lycosa gilberta* and *Lycosa molyneuxi* are morphologically similar species.

Thorell described *Lycosa leuckartii*, the first of the Australian wolf spiders, in 1870. His holotype female was redescribed by Koch in 1877. Hogg (1905) described *Lycosa gilberta* and *Lycosa molyneuxi*, two species of *Lycosa* that are morphologically similar to *L. leuckartii* and may prove to be synonyms. Simon in 1909 recorded *Lycosa leuckartii* from Western Australia and described *Lycosa christopherei*, here considered a junior synonym of *Lycosa leuckartii* that lacked the characteristic coloration of the ventral surface of the abdomen. Extensive collecting in Western Australia and an examination of specimens from other Australian Museums showed that *Lycosa leuckartii* may have the venter of the abdomen with a well developed median yellow-orange spot, a faint or much reduced yellow spot, or a completely black venter.

*Lycosa leuckartii* was placed into the genus *Scaptocosa* by Roewer (1954) but as *Scaptocosa* is a subjective-objective synonym of *Geolycosa* (Guy, 1966), all species referred to *Scaptocosa* are *Geolycosa*'s. Roewer's (1954) concept of *Scaptocosa* is closer to Guy's (1966) concept of *Schizocosa* and by using Guy's key such species would fall into *Schizocosa*. *Lycosa christopherei* was placed into the genus *Avicosa* by Roewer (1954), but as Guy (1966) treats that genus as a subgenus of *Schizocosa*, both *L. leuckartii* and *L. christopherei* were placed in the genus *Schizocosa* by McKay (1973). *Schizocosa* was proposed by Chamberlin (1904, p. 177) to include those species with the transverse guide of the epigynum double or divided. The epigynum of *Lycosa leuckartii* is quite unlike that of the species now contained within *Schizocosa* by American authors. Gertsch and Wallace (1937, p. 14) state 'With each addition it is becoming more and more evident that *Schizocosa*, like most of the genera of the Lycosidae will grade

gradually into *Lycosa* as this genus is used in the American sense'. I have placed *Lycosa leuckartii* into the genus *Lycosa* until a complete generic revision of the Australian Lycosinae is made.

Chamberlin (1904) wrote a classic paper on the difficulty of subdividing the family Lycosidae. His introductory remarks are even more pertinent today 'Scarcely any two men who have studied the Lycosidae have interpreted or defined the genera of the family wholly in the same way. The purely relative nature of the characters most frequently used in separating the species into genera leaves room for much diversity in opinion and usage; and, in consequence, it is not surprising to find that genera used without question by one arachnologist are by others unhesitatingly relegated to synonymy.

'Various genera that have been proposed in this family are clearly artificial, having been erected on single characters without reference to the existence or non-existence of correlated differences. That is, the species in such cases are grouped with a view to convenience rather than with the intent to express generic relationship. There can be little doubt, however, that some of the more commonly accepted genera represent in the main natural associations of species, the difficulty here being encountered in the choice of characters for definition and diagnosis.'

Part of the confusion in the choice of generic characters is undoubtedly due to the lack or complete neglect of a study of the individual and geographic variation encountered within species. Such studies are of paramount importance in the choice of specific and generic characters. The use of eye diameters and interspaces, relative proportions of leg segments, chaetotaxy, cheliceral teeth, coloration, and genitalic differences are clearly impor-

tant in a study of the Lycosinae, but all such characters are variable to some degree and in order to assess their worth as taxonomic characters, this variation should be studied more fully. In later papers in this series I propose to discuss the variation encountered in the characters most commonly employed in the systematics of the family Lycosidae. It is hoped that the initial papers will allow students of the Australian Lycosinae to correctly identify the Wolf Spiders now under review and act as an incentive to further collecting and research. Some of the problems outlined in the present paper may be clarified by a study of the reaction of mature males to the pheromone of mature unmated females of morphologically similar species. Such studies, including the mating of males and females, have been undertaken for some species by the author. These preliminary studies on courtship and behaviour, whilst in themselves not completely conclusive, have added another dimension to the systematic study of the Australian wolf spiders.

***Lycosa leuckartii* (Thorell, 1870)**  
(Figs. 1 A-E, 2 A-I, 3 E-F)

*Tarentula leuckartii* Thorell, 1870, p. 388.

*Lycosa leuckartii*: L. Koch, 1877, pp. 896-99, pl. 77, figs. 3, 3a (Peak Downs, Queensland); Simon, 1909, p. 182 (Wooroloo, Guildford, Fremantle, Donnybrook, Gooseberry Hill, York, Beverley, Western Australia); Rainbow, 1911, p. 269, Bonnet, 1957, p. 2649.

*Lycosa christopherei* Simon, 1909, p. 182 (Fremantle, Western Australia); Rainbow, 1911, p. 266; Bonnet, 1957, p. 2638; Rack, 1961, p. 37.

*Scaptocosa leuckartii*: Roewer, 1954, p. 291.

*Avicosa cristopheri* [sic]: Roewer, 1954, p. 236.

*Schizocosa leuckartii*: McKay, 1973, p. 381.

*Schizocosa christopherei*: McKay, 1973, p. 381.

**MATERIAL EXAMINED**

*Lycosa leuckartii*: Western Australia: BM. 92.6.12.4-20, three females from Darling Range, B. H. Woodward, examined by Dr Barbara Main; (WAM specimens) Broomhill, Hambg.S.W. Austral. Exp. 1905. 158, 24-25. viii, WAM 4299, dried and pinned; Aldersyde, Albany Highway at 76 mile peg, Albany Highway at 110 mile peg, Applecross, Arthur River, Armadale, Attadale, Bakers Hill, Balingup, Bayswater, Belmont, Bickley, Boya, Bridgetown, Broome Hill 29 km east, Bruce Rock at Nangeen Hill, Brunswick Junction, Bullsbrook East, Bullsbrook, Bunbury, Bunbury Highway 51 mile peg, Bungulla 14 km north, Burngup, Byford, Cannington, Cannington East, Churchmans Brook, Collie, Collie 43 km east, Collie 48 km east, Collie 67 km east at Hillman River, Congelin on abandoned railway, Coorow 14 km south-southwest, Corrigin, Crossman, Cunderin, Darkan, Darkan East, Darkan 11 km north,

Darkan 19 km east, Darlington, Dedari, Desperate Bay near Snag Island, Dulbelling, Dunsborough at beach, Fitzgerald River, Geraldton 16 km east, Gin Gin, Gooseberry Hill, Great Eastern Highway 59 mile peg, Great Northern Highway, 58 mile peg, 70 mile peg, 77 mile peg, 87 mile peg, 92 mile peg, Green Head at 170 mile peg, Guildford, Harvey, Hyden, Hyden 32 km east, Israelite Bay, Jandakot, Jarrahwood, Jennacubbine, Kalgarin, Kalgoorlie at 24 km west of Randells, Kelm-scott, Kojonup 27 km east, Kojonup 29 km east, Koorda, Lake Moore south end, Margaret River, Marvel Loch 16 km east-south-east, Merredin 32 km east, Merredin, Mingenew, Mogumber 29 km west at Moore River, Molpar, Moora 8 km south, Mount Helena, Mullalyup, Mundaring Weir, Murchison River at Gee Gee Camp, Narembeen, National Park, New Norcia 11 km north, New Norcia 13 km north-west, Northam, Northcliffe, Ongerup 3 km east, Ongerup 70 km east, Pingelly East, Pinjarra, Point Peron, Red Hill, Rossmoyne near Cannington River, Tammin, Toodyay, Wagin, Wagin West, Walyunga National Park, Wickepin, Woodanilling, Wubin 16 km northeast, Yellowdine 29 km south, Yellowdine 61 km south, Yorkrakine.

South Australia: Brown Hill Creek, i.1936, SAM; Claire, 7.xii.1952, BYM, WAM 68-844; Eucla, 96 km east, M. Archer, B. Muir, 2.xii.1969, WAM 71-467; Hammond, 21.iii.1949, V. H. Mincham, AM; Horrocks Pass near Port Augusta, 8.xii.1952, BYM, WAM 70-33; Moonarie Gap Wilpena Pound Range, 22.viii.1970, HB, W. D. L. Ride, WAM 71-209-10; Port Lincoln, 77 km west, 19.xii.1952, BYM, WAM 69-926; Quorn north, 8.xii.1952, BYM, WAM 68-839. (Note: Most specimens have a black venter).

Victoria: Cardross, 10.vi.1953, E. J. Dean, NM; Lake Hattah, ix.1928, NM; Nyah, 28.x.1913, C. French, NM; Oakleigh, 8.vi.1950, E. F. Murnane, NM; Red Cliffs, ii.1956, NM; Western District Mallee scrub, NM.

ACT: Canberra, 6.iv.1929, G. F. Hill, AM K58918; 14.iv.1929, G. F. Hill, AM K58904; ix.1968, J. T. Dare, WAM 70-170.

New South Wales: Bathurst, AM K26746; Broken Hill 140 km east, 21.x.1952, BYM, WAM 69-995-1001; Byrock 24 km west, 5.xi.1959, R. Mackay, AM; Cooma, 19.i.1953, N. Lambert, NM; Harden, 3.ii.1931, E. G. Larkin, AM K63625; Leeton, iv.1928, K. McKeown, AM K58304; McAlister, 28.iii.1939, O'Connolly, QM W293.

Queensland: BM. 1919. 9.18.526, a male from Peak Downs; Glenmorgan, 27.ii.1939, Mrs Doran, QM W1026; Goondiwindi, 7.i.1957, E. J. Lindsay, QM W3855.

*Lycosa christopherei*: Holotype female, Hamburg Zool. Mus. Inst. No. 488 labelled 'Sudwest-Australien. E. Simon publ. 1909', 'Fremantle, W. Australien. W. Wolting leg. 1907. H. Christoph ded. i.vii.1907'. The holotype has the abdomen rather extensively damaged, and only the anterior part of the venter remains; the epigynum is intact.

**DESCRIPTION (after L. Koch, 1877)**

Female, C.L. 12.0 mm (Holotype of the species). Carapace red-brown with yellow-brown hair and

with a white stripe on the lateral margin that gradually tapers anteriorly; a whitish median longitudinal band commences near the posterior margin and continues to the head; between the head and the thorax is a narrow white stripe edged posteriorly with black; three white lines edged in black radiate onto the lateral slope of the thorax; mandibles black with the upper half yellow-grey; maxillae and labium dark red brown; sternum red-brown with grey-brown hair. Abdomen yellow-brown above with white hair on the sides and numerous brown spots above; anteriorly on the dorsal surface is a darker longitudinal stripe, which is serrated and broader at the posterior corners with white spots on the tips of the serrations; behind this longitudinal spot is a black angular stripe with black spots on each end, followed by a curved stripe, and more posteriorly, two curved transverse black stripes with a white hind margin; venter black-brown with a large yellow-grey spot in the middle; spinnerets yellow-brown. Legs red-brown with grey-yellow hair.

Anterior row of eyes slightly procurved, the eyes equidistant by their radius; AM larger, a little more than their diameter from the clypeus, and not further from the PM than from the AL.

Chelicerae with two promarginal teeth and three retromarginal teeth.

Male C.L. 9.0 mm. Carapace red-brown, a narrow white marginal band, the remaining hair pale yellow; on either side of the head is an angular white spot; mandibles red-brown covered anteriorly with pale yellow hair; maxillae labium and sternum reddish-brown, the latter covered with white to yellow hair. Abdomen with the middle of the dorsal surface pale yellowish and the sides with light brown to yellow hair; the dorsal surface has at the anterior end two black spots surrounding a small yellowish-white spot, behind these in a longitudinal spot with black borders inside which is yellowish hair rounded at the posterior end, and on either side of its posterior end is a yellowish-white spot; on the posterior half of the dorsum is a row of yellowish-white spots bordered with black anteriorly, the sides and the posterior curve covered with white hair; the epigaster covered with yellow-brown hair, and at its posterior margin a brownish-yellow field surrounded by deep black hair; spinnerets yellow-brown. Palpi and legs reddish-brown with yellowish-white hair.

Anterior row of eyes slightly procurved and not as broad as the second; AM larger than AL and not quite a radius from the AL, the PM, and each other; PM very large, slightly less than their radius apart, and not quite a diameter from the PL.

Chelicerae with two promarginal teeth and three

retromarginal teeth.

**VARIATION:** Although mature males and females have a pale yellowish, brown, or buff coloured area in the middle of the ventral surface of the abdomen, some specimens, particularly those collected on sandy substrates, have the venter completely black, but may show the typical coloration after long preservation in alcohol. The holotype of *Lycosa christopherei* was described by Simon as having a completely black venter but a re-examination of this specimen shows the venter to have a light-coloured area in the middle as does *Lycosa leuckartii*. The epigynum of *Lycosa christopherei* agrees with that of *Lycosa leuckartii* and the two nominal species are synonymous.

Koch (1877) described a male from Peak Downs, Queensland. This male (BM. 1919.9.18.526 in the British Museum) has the coloration and pattern of the female and is quite unlike the illustration of the male of '*Lycosa leuckartii*' given by Koch (1877, pl. 81, figs. 1, 1a) which is undoubtedly of a different species. An illustration of a male *Lycosa leuckartii* is provided in Fig. 1, A-B. The undersurface of the anterior pairs of legs and the anterior surface of the paturon may be covered with bright orange-yellow to gold hairs.

The epigynum varies in the depth of the depression on each side of the median guide, and specimens from Canberra, A.C.T., and Victoria, have these depressions markedly deeper than those from Western Australia, New South Wales, and Queensland. In some examples the median guide may almost disappear anteriorly and resemble the epigyna of *Lycosa gilberta*. The few specimens from South Australia have the venter almost completely black and have a rather deep epigynum. Further collecting in South Australia and Victoria may establish that *Lycosa gilberta* is a junior synonym of *Lycosa leuckartii*. The male palpal organ is now figured (Fig. 1, C-E) and the variation in the shape of the epigynum and internal genitalia of the female is provided in Fig. 2, A-I.

The promarginal cheliceral teeth are 3+3 in all specimens listed above but some variation may occur in the size and spacing of these teeth as illustrated in Fig. 3E. The retromarginal teeth are equal in size and number 3+3.

The eye diameters and interspaces of 12 specimens are given as a percent of the total width of the first row of eyes (Table 1).

**SIZE RANGE:** Mature females C.L. 7.4 to 14.8 mm. Mature males C.L. 9.1 to 12.5 mm.

**DIAGNOSIS:** *Lycosa leuckartii* is one of a group of Australian species with a 'Union Jack' pattern of

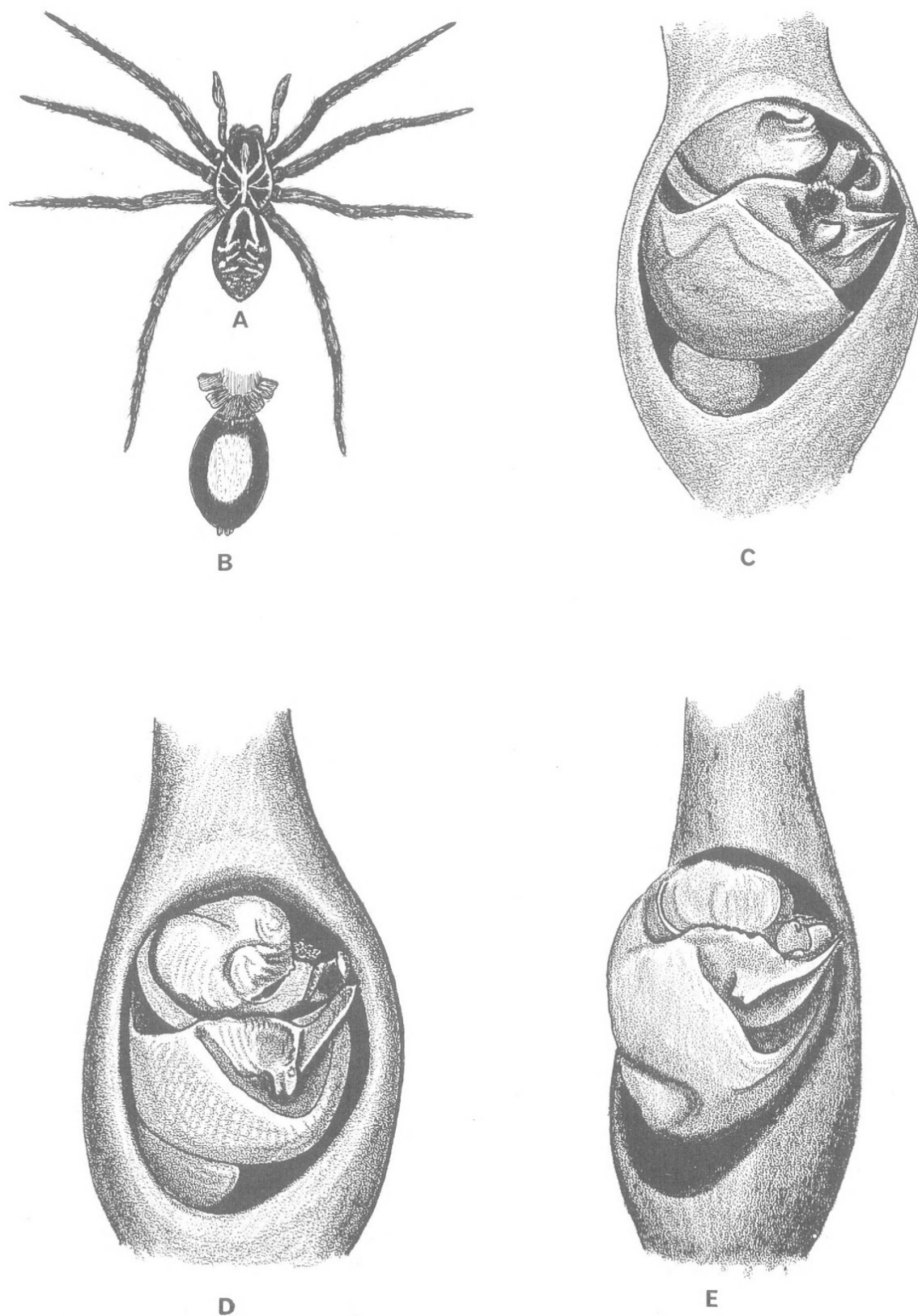


FIG. 1: A-E. *Lycosa leuckartii*. A, mature male from Western Australia; B, undersurface of abdomen; C-E, male palpal organs of WAM 71-1573-4, from Bullsbrook, Western Australia.



TABLE 1: EYE DIAMETERS AND INTERSPACES OF *L. leuckartii* CONVERTED TO PERCENT OF THE TOTAL WIDTH OF THE FIRST ROW OF EYES

Regd No.	Sex	C.L.	AM	AL	PM	PL	AM:AM	AM:AL	PM:PM	AM:PM
BM 1919.9.18.526	♂M	9.4	24	17	57	47	9	7	26	5
QM W3855	♀M	12.7	22	16	49	42	8	7	29	14
QM W293	♀M	11.0	22	15	51	43	8	6	29	12
QM W1206	♂M	10.7	22	17	52	39	9	4	28	11
SAM Brown Hill Ck	♀M	10.9	21	17	50	42	10	8	29	13
WAM 68.844	♀M	12.3	22	15	53	40	9	7	25	14
AM Northam W.A.	♀M	13.6	21	17	47	40	9	6	31	13
WAM 68.409	♀M	12.0	21	17	54	39	8	8	27	12
WAM 69.838	♀M	14.2	21	16	52	41	11	8	31	11
WAM 71.1236	♂M	8.3	21	15	49	41	10	7	30	11
WAM 71.1573	♂M	12.3	21	15	51	40	10	8	29	10
WAM 71.1574	♀M	11.9	22	16	50	39	10	8	32	14

radiating black-edged white lines on the carapace and a black mark on the anterior dorsal surface of the abdomen. The ventral surface of the abdomen is usually black with a pale yellowish-brown centre. The epigynum is of characteristic shape; the median guide is narrow with moderately deep to very deep lateral furrows, and a well developed transverse guide posteriorly. Specimens without a yellowish spot on the venter would key down to *Lycosa hasseltii* using Koch's (1877) key to species but the epigynum is of different shape (median guide of *L. hasseltii* is wider, and lateral furrows not markedly deep) and *L. hasseltii* has a pale longitudinal stripe on the carapace as wide as the distance between the PL eyes whereas in *L. leuckartii* this stripe is much narrower.

#### LIFE HISTORY

Mature females may be collected throughout the year but are most common from October to March. Mature males are uncommon during the winter months but are abundant from November to March. Females carrying egg cocoons have been taken from October to April. In Western Australia females bearing young are common during April but have been collected in February, May, and June. The young are released just prior to the early winter rains, and immature specimens are common throughout the winter months. Two females with young were collected in Victoria during February and April. At Goondiwindi in southeast Queensland one female was captured with young in January.

Mature males commence courtship in November and continue to court females throughout the summer months in Western Australia. The male commences courting behaviour immediately the female pheromone is sensed. A male from Wickepin, Western Australia was placed on filter paper

with a mature female from Kelmscott, some 160 km northwest, and the following response was observed: the male drummed the palps slowly on the surface of the paper then held the forelegs at an angle of 45° to 50° for approximately three minutes without moving the body. A short run towards the female ended with the forelegs held at 45° as if to ward off an attack; short cautious moves towards the female terminated in brief pauses, and then the male commenced to jerk the forelegs in an up and down fashion whilst approaching with rather jerky movements of the body. At no time did the male retreat from the female. The female did not allow the male to copulate, and would not copulate with mature males collected at Kelmscott.

One female from Jarrahwod C.L. 11.6 mm had a cocoon measuring 11.5 mm containing 376 ova of 1.2–1.3 mm, another female from Gingin, W.A., C.L. 9.0 mm had a cocoon measuring 11.2 × 13.5 mm containing 512 ova with a diameter of about 1.2–1.25 mm. Four females from Western Australia C.L. 9.3–11.6 mm were found to be carrying 292–511 young in April and June.

#### HABITAT

Lateric gravels, loam, or clay soils, especially on alluvial clay soils near swamps, streams, and on river banks. Stony clay soils in damp forested areas where the undercover of vegetation is sparse frequently supports a large population of *Lycosa leuckartii*. In less favourable habitats this species may be collected on stone ballasted railway lines, in suburban gardens, occasionally on loose sand substrates, and around the margins of sandy swamps. *Lycosa leuckartii* may be associated with *Lycosa godeffroyi*, but gives way to the latter species in the drier areas. Open areas free of dense vegetation appear to be preferred.

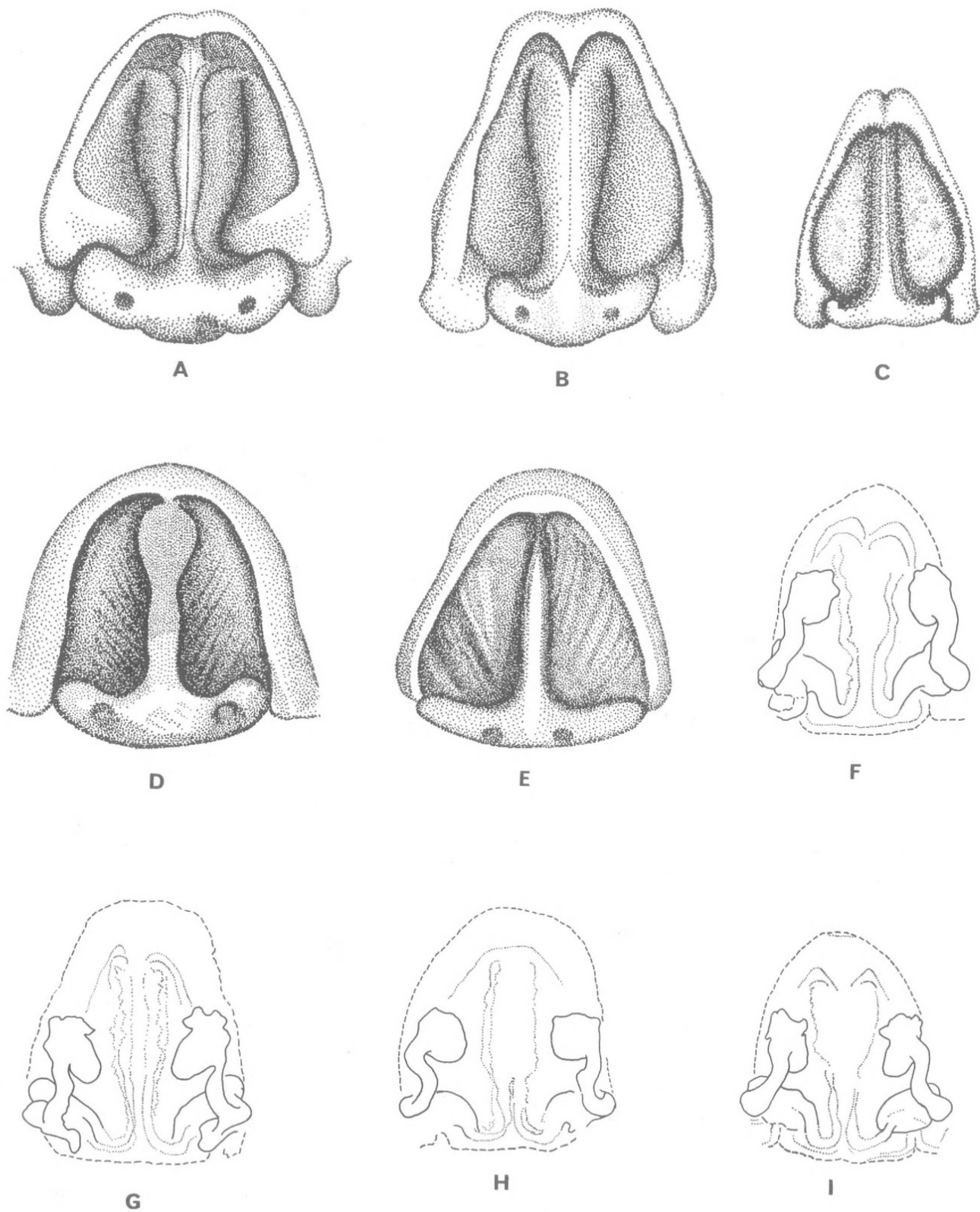


FIG. 2: A-I, *Lycosa leuckartii*. A-C, epigyna of three females from National Park, Western Australia, WAM 68-846-52; D, epigynum of female from Red Cliffs, Victoria; E, epigynum of female from Bathurst, AM K26746; F-I, internal genitalia of WAM 68-409, WAM 68-838, WAM 71-1573, WAM 71-552.

## BURROW

*Lycosa leuckartii* constructs an open burrow in clay loam soils. The burrow may be excavated adjacent to stones, granite boulders, or logs, and extend beneath such objects in a more or less horizontal fashion with one or two sinuous curves. Vertical burrows may have a large funnel-shaped opening that becomes constricted some 3–5 cm down the burrow, and then expands again into a terminal chamber some 15 cm down. The burrow entrance may have the surrounding grass, leaves, or twigs silk bound into a crude barricade. In areas of cracking clay soil this species may occupy the fissures and build a rough chamber-like retreat some distance down the crack. Some examples of typical burrows are given in Fig. 3F. The female normally enters the burrow entrance head first.

## DISTRIBUTION

Western Australia, South Australia, Victoria, New South Wales and southern Queensland within the region receiving more than 250 mm annual rainfall.

***Lycosa gilberta* Hogg 1905**  
(Figs. 3A–D)

*Lycosa gilberta* Hogg, 1905, pp. 582–4, fig. 86 (Gilbert River, Riverina, New South Wales); Rainbow, 1911, p. 268; Bonnet, 1957, p. 2643; McKay, 1973, p. 379.

*Venonia gilberta*: Roewer, 1954, p. 307.

*Hogna gilberti*: Roewer, 1960, p. 975.

*Hogna gilberta*: Roewer, 1961, p. 13.

## MATERIAL EXAMINED

SYNTYPES: 5, SAM, CL 12.8, 14.0, 11.2, 11.3, and 10.5 mm. The two large females are together in one tube labelled 'LYCOSA GILBERTA HOGG. GILBERT R. RIVERINA, S.A. MUS. COLL.' in ink, 'F 172' in pencil, '*Lycosa gilberta*–F 172. Type–Gilbert R. Riverina' in pencil, and a printed label 'PARATYPES'; the three smaller females are together in another tube labelled '*Lycosa gilberta* Hogg. A. Molineux. Gilbert R. Riverina ♀', in ink and '*Lycosa gilberta* H. R. Hogg, F. 174. Gilbert River, Molyneux, females (Small) types' in pencil and on the reverse side 'S.A. Mus. Coll.', and a small printed label 'paratypes'.

LECTOTYPE: As the 12.8 mm C.L. female has the abdomen attached (the 14.0 mm female has the abdomen detached and is in poor condition) I designate this specimen as lectotype, but have retained it in the tube with the 14.0 mm C.L. female as there are a number of detached legs in the tube; the remainder have been labelled paralectotypes.

OTHER MATERIAL: South Australia: Adelaide, 1937, 3 ♀ M, SAM; Hack's Bridge, Onkaparinga, xi.1896, Tepper, 2 ♀ M, 5 ♂ M, SAM; Stenhouse Bay, Rivers Head, Dr Pulleine, 1 ♀ M, SAM; Ceduna, 21.xii.1952, BYM, WAM 68-861.

Victoria: Baldwin, Mr Chapman, 1 ♀ M, NM: Mount

Duboulay, 5.iii.1883, 1 ♀ M, NM; North Carlton, 3.vi.1902, G. A. Kearnland, 1 ♀ M, NM; Victoria, no locality, W. Duboulay, 1 ♀ M, NM; Victoria, no locality, 19.vi.1911, A. S. Kenyon, 1 ♀ M, NM; Western District mallee scrub 2 ♀ M, 23.ii.1914, C. French, 1 ♀ M, NM.

New South Wales: Jerilderie, 29.iii.1959, Pinchen, 1 ♀ M, NM.

## DESCRIPTION (After Hogg, 1905)

Female. Cephalothorax brown with yellow-grey hair; a paler yellow-grey median, marginal, and four side-streaks on each side, the latter backed by darker brown; mandibles black-brown with thick yellow hair and long erect brown bristles; labium, maxillae, and sternum dark red-brown, with dark yellow-brown hair; coxae with rather browner hair. Abdomen yellow or grey-brown above and almost orange to paler yellow-brown on sides. Under-surface from base to spinnerets of a dull dingy brown, about the same colour as the coxae. Legs and palpi red-brown with pale yellow-grey hair somewhat darker below. Three retromarginal chelicerae teeth of equal size. Anterior row of eyes straight along the lower edge, the AM 1.5 times the AL, and a radius apart. PM<sub>2</sub> of their diameter apart. Clypeus as broad as an AM. Epigynum horseshoe-shaped, slightly broader than long; the median ridge broad at the base and tapers to a narrow ridge anteriorly.

Legs with two spines above on tibiae III and IV none on I and II.

VARIATION: The ratio of the eye diameters and their interspaces is given for three specimens from South Australia.

Adelaide, mature female C.L. 11.2 mm; ratio of eyes AM:AL:PM:PL = 9:7:19:15; distance AM:AM 4, AM:AL 2, AM:PM 6, AL:PM 4, PM:PM 12. Clypeus to AM 8. Width of first eye row 41, width of second eye row 48. Ocular quadrangle 50 × 62.

Adelaide, mature female C.L. 11.0 mm; ratio of eyes AM:AL:PM:PL = 9:7:19:16; distance AM:AM 4, AM:AL 2, AM:PM 6, AL:PM 4, PM:PM 11. Clypeus to AM 8. Width of first eye row 42, width of second eye row 49. Ocular quadrangle 49 × 63.

Onkaparinga, mature female C.L. 10.5 mm; ratio of eyes AM:AL:PM:PL = 9:7:19:14; distance AM:AM 4, AM:AL 1.5, AM:PM 6, AL:PM 4, PM:PM 11. Width of first eye row 40, width of second eye row 48. Ocular quadrangle 49 × 58.

The coloration of *Lycosa gilberta* appears indistinguishable from that of *Lycosa leuckartii*. No *L. gilberta* examined by me have a lighter brown or yellow spot on the ventral surface of the abdomen, however.

The epigynum is deeply recessed and may show little trace of the median guide. The epigynum of the lectotype is refigured (Fig. 3A) and the epigynum of a female misidentified by Hogg as *Lycosa obscura* from Hacks Bridge, Onkaparinga (Fig. 3, B). Two epigyna from specimens intermediate in form between *Lycosa leuckartii* and *Lycosa gilberta* are illustrated in Fig. 3C, D. A number of specimens collected in South Australia and identified by me as *Lycosa leuckartii* without a pale spot on the venter have epigyna very like *Lycosa gilberta* but grade imperceptibly into the typical *L. leuckartii* epigynum. The close similarity of both species would suggest that *Lycosa gilberta* is a synonym of *Lycosa leuckartii* or merely a local form of the latter. One typical *Lycosa leuckartii* was collected in association with *Lycosa gilberta* from the mallee scrub, Western District, Victoria (NM). A study of both forms from western Victoria would be necessary to resolve the identity of *Lycosa gilberta*.

SIZE RANGE: Mature females C.L. 7.4 to 13.30 mm. Mature males C.L. 9.0 to 11.3 mm.

#### LIFE HISTORY

Mature females have been collected during March, April and June in Victoria, and March in New South Wales.

#### DISCUSSION

Roewer (1954) placed *Lycosa gilberta* into the genus *Venonia* within the subfamily Hippasinae but later (1960, 1961) transferred this species to *Hogna* now considered to be a subgenus of *Lycosa* (Guy, 1966).

#### DISTRIBUTION

South Australia, Victoria, and New South Wales.

#### *Lycosa molyneuxi* Hogg 1905

*Lycosa molyneuxi* Hogg, 1905, pp. 575-7, fig. 82 (Gilbert River, Riverina, New South Wales); Rainbow, 1911, p. 270; Bonnet, 1957, p. 2653; McKay, 1973, p. 379.

*Allocosa molyneuxi*: Roewer, 1954, p. 206.

#### MATERIAL EXAMINED

The location of the holotype of *Lycosa molyneuxi* is unknown to me, and no additional material has been collected from the type locality.

#### DESCRIPTION (After Hogg, 1905)

Cephalothorax red-brown with pale to darker yellow-brown flattened hair intermixed with dark brown erect hair; a paler marginal and median stripe with side streaks the same; mandibles black-brown, with yellow-brown hair; labium, maxillae,

sternum and coxae reddish-brown with yellow-brown hair. Legs and palpi yellow-brown; the ventral surface of the femoral joints much paler than the dorsal surface.

Abdomen yellow-brown above with a small darker patch at the base and two pairs of darker spots near the middle; sides pale. Ventral surface bright rich brown anteriorly, with two broad stripes of the same curving inwards and joining in front of the spinnerets which are of the same colour; the space so enclosed is pale buff.

First row of eyes clearly procurved and shorter than the second row; AL not quite  $\frac{2}{3}$  the diameter of the AM; AM half a diameter apart, the same distance from the PM, and slightly less from the AL. The clypeus is broad, the distance to the root of the mandibles being twice the diameter of the AM, but a transverse edge marking runs across at more than half the distance away from the eyes. PM more than half their diameter apart. Labium less than half the length of the maxillae. Palpi longer than the cephalothorax.

'In colouring, pattern, and size this spider is very like *L. leuckartii* Thor. from Peak Downs, Queensland, as described by L. Koch, but differs in having the pattern of the under side of the abdomen bright brown instead of black-brown. The clypeus is much wider, instead of slightly only, than the front median eyes, which are rather wider apart than they are from the side eyes instead of equidistant. The palpi are longer instead of shorter than the cephalothorax, and the lip less instead of more than half the length of the maxillae. The epigynal ridge of *leuckartii* is drawn by L. Koch widest in the middle, while here it certainly widens from the middle anteriorly.' (Hogg, 1905, p. 576).

#### DISCUSSION

Many of the characters reported by Hogg to distinguish *L. molyneuxi* from *L. leuckartii* are clearly within the range of variation found in the latter species. In *L. leuckartii* the ventral surface of the abdomen varies from pale yellowish, buff, or brown, surrounded by light brown, dark brown or black, to a completely dark brown or black venter; the clypeus is frequently wider than the AM eyes, the variation encountered in 5 specimens was 5:9, 8:7, 9:8, 11:8, 12:8; the distance AM-AM is normally wider than AM-AL (Table 1); the lip may vary from about half length of maxillae to more than half, none had the labium less than half the length of the maxillae; the palpi are normally about equal to the length of the carapace; a few specimens have the median guide of the epigynum widening anteriorly.

The Gilbert River area is of special significance



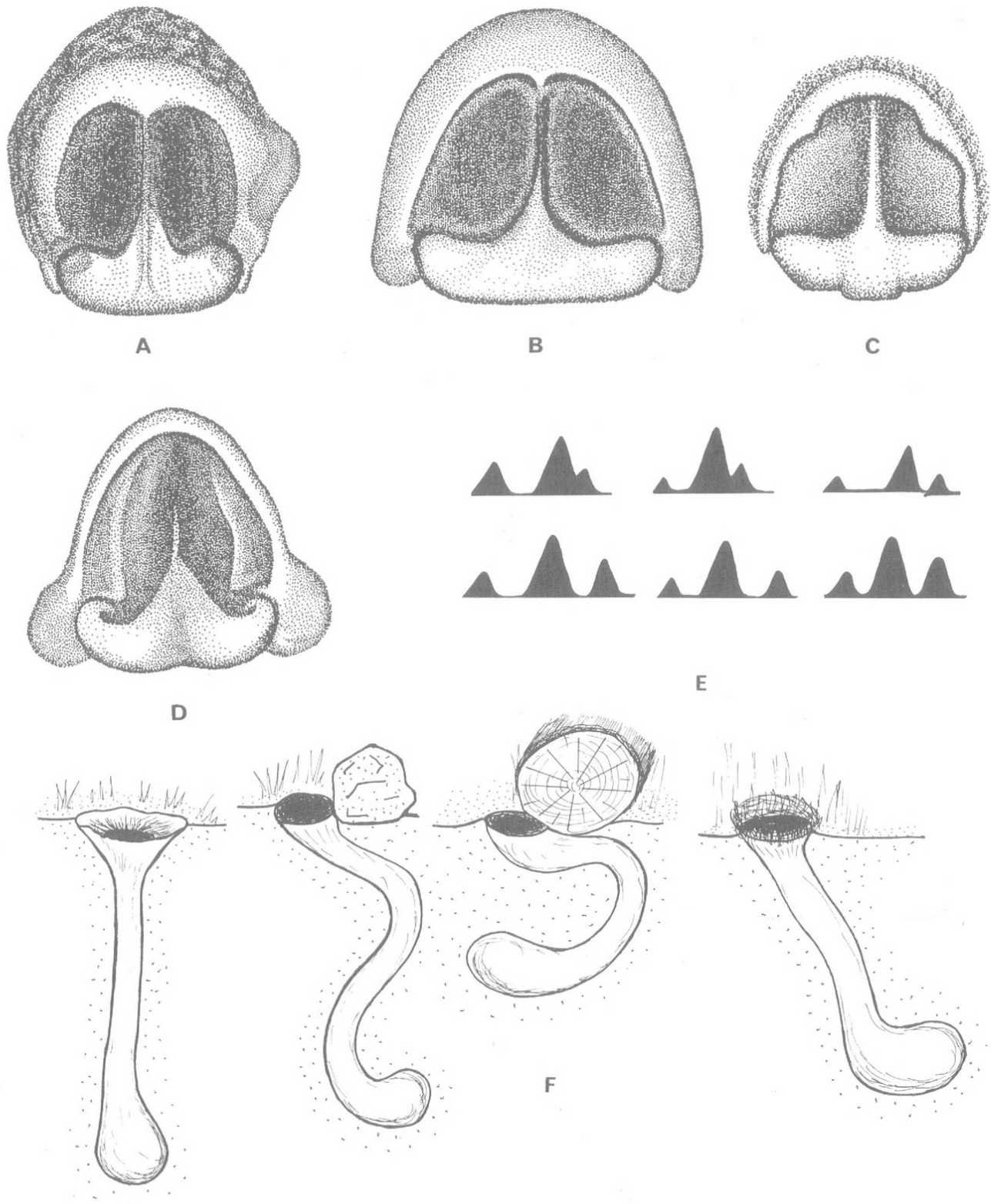


FIG. 3: A–D, *Lycosa gilberta*. A, epigynum of lectotype; B, epigynum of female from Onkaparinga, South Australia; C, epigynum of female from Mt. Douboulay, Victoria; D, epigynum of WAM 68-861, a female from Ceduna, South Australia.

E–F, *Lycosa leuckartii*. E, promarginal cheliceral teeth from the left side of six mature females from National Park, WAM 68-846–52; variation in the burrows of Western Australian specimens.

in the clarification of species within the 'leuckartii group' as both *L. gilberta* and *L. molyneuxi* were described from this locality; further collecting may show all three species to be synonymous.

#### DISTRIBUTION

Gilbert River, New South Wales.

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