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THE WOLF SPIDERS OF AUSTRALIA (ARANEAE: LYCOSIDAE): 3. A CORAL SHINGLE INHABITING SPECIES FROM WESTERN AUSTRALIA

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ABSTRACT

A new species of Wolf Spider *Lycosa corallina* inhabiting the coral shingle on offshore islands of Western Australia is described.

McKay (1973) has provided an introduction to the present study of the Wolf Spiders of Australia. A number of undescribed species have been collected and these will be reported upon as the study progresses. Keys to the identification of the spiders of this family will be provided at a later date when the Australian species are more fully known.

Many species of Lycosid spiders are confined to a particular habitat and may be restricted to small local areas of suitable substrate despite their wide distribution. This contribution to the series of papers devoted to the systematic revision of the family describes one such species.

Lycosa corallina sp. nov.
(Figure 1a–h)

MATERIAL EXAMINED

HOLOTYPE: Western Australian Museum WAM 71-1645, ♀ M, C.L. 13·0 mm, Wooded Island, Houtman Abrolhos, W.A., collected by R. J. McKay, July 10, 1971. In spirit.

PARATYPES: Abrolhos Islands, W.A.; Basile Island, 22.viii.1970, N. Sammy, 1 ♂ M, WAM 71-502, 24.viii.1970, B. Green, 1 ♀ P, WAM 71-503, 2 ♀ M, WAM 71-504–5, 8.vii.1971, RJM, 4 ♀ M, 1 ♂ M, 4 ♀ P, 2 ♂ P, 1J, WAM 71-1631–40; Beacon Island, 11.vii.1971, RJM, L. Baird, 4 ♀ M, 4 ♀ P, 8J, WAM 71-1649–65, 1 ♂ P, WAM 71-1989; Post Office Island, 9.i.1968, A. Slerkowski, 1 ♀ M, WAM 71-506, 8.vii.1971, RJM, L. Baird, 3 ♀ M, 3 ♀ P, 5 ♂ M, 2 ♂ P, 8J, WAM 71-1609–30, 4 ♀ M, 1 ♂ M, 1 ♂ P, 1J, WAM 71-1793–9, 1J, WAM 71-1990; Wooded Island, 10.vii.1971, RJM, 1 ♀ M, 2 ♀ P, 1 ♂ M, WAM 71-1641–4, 1 ♂ M, 2J, WAM 71-1646–8, 1 ♀ M, WAM 71-1800; Rosemary Island, Dampier Archipelago, W.A., 27–28.x.1971, RJM, 4 ♀ M, 2 ♀ P, 8J, WAM 71-1976–88.

DESCRIPTION

Based on the holotype.

Carapace dark brown, covered with fine grey-brown hair becoming green-brown around ocular quadrangle; some faint radiating darker markings visible in alcohol but barely visible in life; paturon dark brown to black below with ash-grey to grey-brown hairs above on the anterior and anterolateral surfaces; lateral condyle dark red-brown,

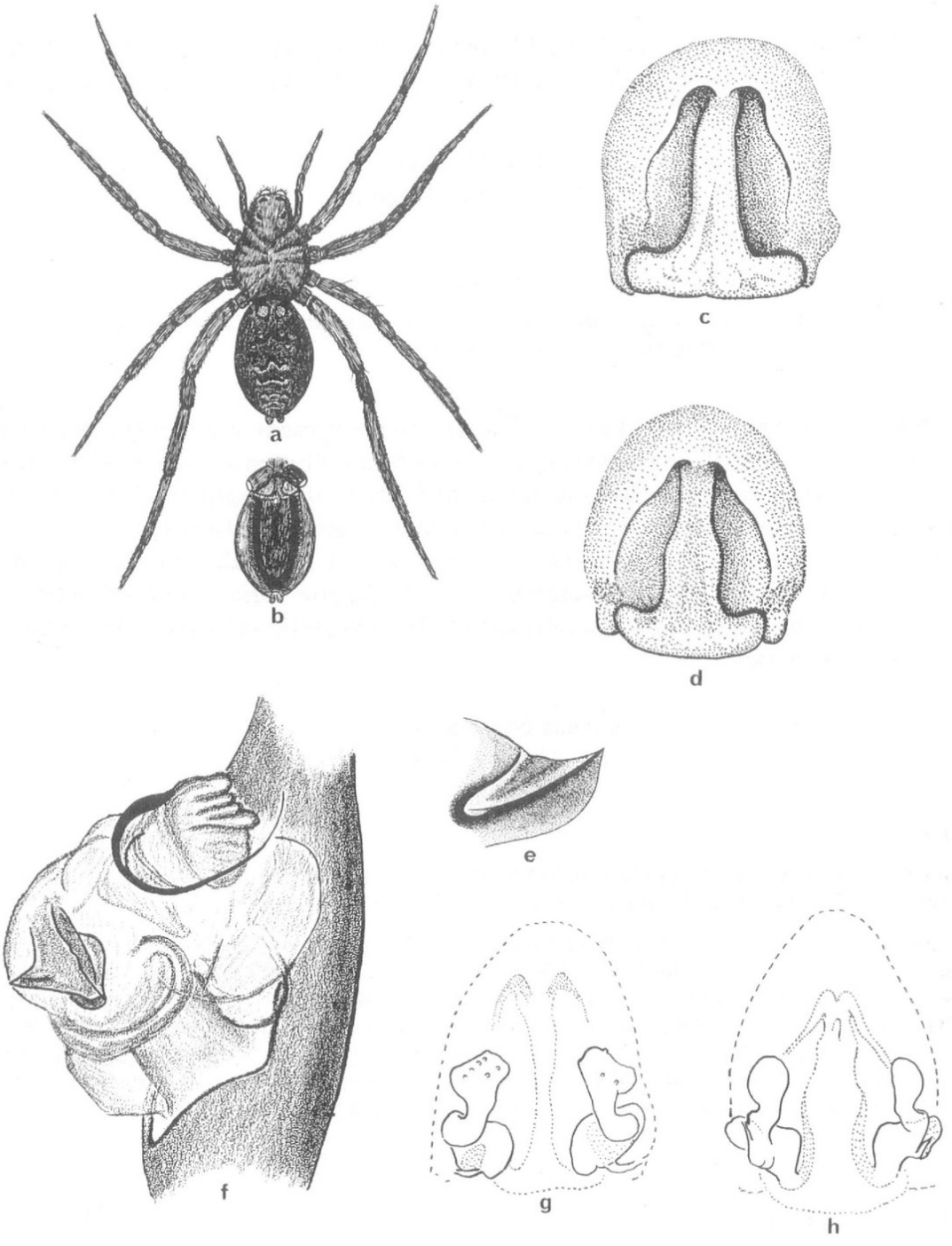

FIG. 1: *Lycosa corallina*. a, holotype, b, ventral surface of abdomen; c, epigynum of holotype; d, epigynum of WAM 71-1663; e, median apophysis of male palpal organ; f, male palpal organ of WAM 71-1643; g–h, internal genitalia of WAM 71-1797 and WAM 71-1663.

edged in black; fangs black; labium and maxillae dark brown; sternum and lower surface of coxae dark brown to blackish. Abdomen ash-grey to grey-brown above and on sides; anterior slope black with two black stripes extending on to the anterior dorsal surface to almost enclose a round light grey area on each side dorsally; more posteriorly are a pair of very small but distinct pale grey spots followed closely by a black inverted V-shaped chevron; two additional black-brown chevrons each followed by a thin pale grey line that expands somewhat at the lateral ends, are situated posteriorly, followed again by two tent shaped black spots narrowly joined by a thin dark brown line, and two thin, short, transverse black-brown chevrons just before the pale grey spinnerets; fine black spots are scattered all over the dorsal and lateral surfaces of the abdomen; venter with a dark brown to black-brown field with a super-imposed black triangular field out-lined by vague paler brown spots, both fields reaching the base of the spinnerets; lung book covers dark brown. Legs ash-grey to olive brown, becoming ash-grey after preservation in alcohol; the sides of the femora may become rubbed clear of hair and appear brownish; ventral surface of metatarsi and tarsi brownish; the ventral surface of the femora-patella joints are black; palpi grey brown.

Anterior row of eyes procurved, AM larger than AL, PM more than three times the diameter of the AM and almost 2/3 of their diameter apart. Ratio of eyes AM:AL:PM:PL = 10:8:36:27; distance AM:AM 8, AM:AL 7, AM:PM 7, AL:PM 5, PM:PM 22. Quadrangle of posterior eyes, length 81, width 115. Clypeus to AM 11. Length of first eye row 59, length of second eye row 90.

Chelicerae with three promarginal teeth, the middle one largest; three retromarginal teeth, the inner one slightly larger than the remaining two. Labium longer than wide.

TABLE 1: MEASUREMENTS OF LEG SEGMENTS IN MM

Leg	Femur	Patella	Tibia	Metatarsus	Tarsus
1	9·0	5·1	7·6	7·2	3·9
2	8·3	4·9	6·9	7·1	3·7
3	7·8	4·4	6·3	7·4	3·6
4	10·0	4·8	8·4	11·1	4·6
Palp	4·4	2·4	2·8	—	3·2

Epigynum with a well developed median guide terminating in a somewhat flat transverse guide (Fig. 1c).

VARIATION: Juveniles may be slightly lighter in colour than the adults, and vary from a light ash-grey on bleached coral rubble to a dark green-brown on masses of decaying seaweed on the shore. The venter of adults may be a light grey colour with two distinct longitudinal black lines or heavy bars converging to meet just before the spinnerets; a median dark grey to black bar may be present. One adult male has the two wide black converging bars superimposed with a row of fine white spots, whereas in other specimens, the black bars have the row of fine white or pale grey spots on the lateral edge of the bar. Females from Dampier Archipelago have the venter as described above, or pale brown

with indistinct markings. One female has a black venter with a large pale brown spot in the centre. Juveniles may have a dark grey venter with two converging rows of pale grey spots between which is an indistinct median darker grey longitudinal bar. The dorsal surface of the abdomen may be a dark grey to brown-grey with two rows of paler grey or pale brown spots converging towards the spinnerets where they may fuse to form a pale area. The carapace is with or without vague radiating dark stripes sometimes with adjacent paler stripes, or on occasions with a Union Jack-like pattern of radiating dark and ash-grey markings, no median longitudinal bar is present, and the carapace may become a polished dark brown if the hair is worn thin or removed. Specimens from Dampier Archipelago are more variable in coloration and may have a paler marginal stripe on the posterior part of the carapace; many mature females have the legs banded or blotched with fawn and dark brown rings. The eye diameters and interspaces vary slightly; 13 specimens are recorded in Table 2 below.

TABLE 2: EYE DIAMETERS AND INTERSPACES OF *Lycosa corallina* 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
HOLOTYPE	♀ M	13·0	20	14	61	46	14	12	37	12
WAM 71-504	♀ M	13·5	22	15	64	51	10	9	34	12
WAM 71-505	♀ M	11·8	22	15	63	50	9	9	34	11
WAM 71-506	♀ M	14·9	22	16	61	48	13	9	36	11
WAM 71-1621	♀ M	11·9	20	15	62	47	12	8	36	8
WAM 71-1634	♀ M	12·3	21	16	62	52	11	11	36	8
WAM 71-1642	♀ M	11·7	20	16	63	47	10	10	39	12
WAM 71-1643	♀ P	10·6	20	14	66	49	12	10	35	10
WAM 71-1644	♂ M	11·4	22	16	68	49	12	10	39	10
WAM 71-1655	♀ P	9·3	20	16	68	50	14	9	36	9
WAM 71-1976	♀ M	10·5	22	16	60	45	11	8	35	12
WAM 71-1977	♀ M	12·5	22	15	60	51	10	7	37	10
WAM 71-1978	♀ M	16·6	23	17	62	48	8	8	33	10

Variation in the internal genitalia is shown in Figure 1g, h, with the external surface of the epigynum of the holotype and WAM 71-1663 illustrated in Figure 1c, d.

Mature males are similar to females in coloration. The male palp is shown in a fully expanded condition in Figure 1f; the median apophysis is large and is illustrated in Figure 1e.

SIZE RANGE: Mature females C.L. 10·4 to 14·9 mm. Mature males C.L. 10·5 to 11·6 mm.

DIAGNOSIS: *Lycosa corallina* is similar in coloration to *Lycosa lapidosa* but the epigynum is quite different in shape, and mature males lack a tubercle on the anterior edge of the fang.

Life History

Mature females have been collected in January and July and are therefore possibly present throughout the year. Mature males are present in July and August, and mating was observed at the Abrolhos Islands in July. Juveniles of all sizes, and penultimate males and females were collected in July, and it is possible that this species has an extended breeding season throughout the winter and spring months at the Abrolhos Islands. One female WAM 71-504, C.L. 11·8, had an egg cocoon 15·5 by 14·1 mm containing 515 ova, 1·5 mm in diameter. At night, this species was common on areas of coral shingle, and remained in a perched position on the tips of coral fragments. They were found to be most numerous near the shoreline where they ventured out on to masses of seaweed. In some areas near fishermen's huts they were rather more abundant, and although not observed feeding, they may prey on cockroaches and flies associated with the lobster bait stored nearby. Small specimens may prey on flies, maggots, or amphipods within the masses of stranded decomposing seaweed.

A few large specimens were liberated onto the surface of a slightly choppy sea near North Island, Abrolhos. The spiders had no difficulty in remaining afloat and were carried rapidly along the surface by the wind. One specimen was followed for over ten minutes before it was lost from sight. A large female that had been transported rapidly across the surface of the sea by a brisk wind was noticed on three occasions to remain motionless until it fell to leeward of a mass of semi-submerged floating seaweed, and then to swim vigorously up wind to the seaweed where it clambered onto the highest area, and was only dislodged with some difficulty. It is therefore possible that this species has a wide distribution.

Habitat

At the Abrolhos Islands and Rosemary Island, Dampier Archipelago, *Lycosa corallina* was found to inhabit the extensive ridges and swales of coral shingle and to a lesser extent the deposits of seaweed washed ashore on coral shingle beaches. Some islands of the Abrolhos Group are composed entirely of coral shingle, and on such islands (Post Office, Basile, etc.) *Lycosa corallina* was abundant all over the island. On other islands with beach ridges of coral shingle on the periphery or in isolated areas, this lycosid was found to inhabit the shingle areas only. On islands without coral shingle *Lycosa corallina* was not collected despite a careful search of beaches, sand dune, limestone rubble and other habitats. On the mainland near Geraldton, coral shingle is not present, and this species was not collected.

Teichert (1947, p. 155) describes the coral shingle habitat as consisting of 'unsorted material. The coral fragments are arranged in all directions so that they form a densely packed and firmly interlocked mass which is not likely to undergo any further compaction when, in the later stage of its development, it is removed from the influence of the waves. Mixed with the coral fragments is a certain amount of more or less abraded gastropod and pelecypod shells, generally heavy shells of the rough water type such as *Turbo, Trochus, Chama, Tridacna,* etc. To these are added occasional echinoid tests, sponges, bryozoan skeletons, foraminiferal tests, etc., but such material is very subordinate'. Teichert describes

the progressive darkening of the coral fragments from the freshly thrown up white coral fragments to the very dark grey colour of the oldest fragments. *Lycosa corallina* inhabits white coral shingle but is more abundant in the darker grey weathered coral shingle.

Burrow

This species was observed to lie motionless on the tops of exposed pieces of *Acropora* coral fragments, and move head-first into the interstices of the coral shingle when disturbed at night. They are difficult to capture and move down into the coral shingle when approached; once within the coral mass small specimens move with great agility between the coral fragments; large specimens may be found sheltering some 10 to 20 cm below the surface in slightly webbed irregular burrows, but most specimens appear to lack any kind of well webbed burrow and are found sheltering in crevaces or irregular spaces below the surface. Although abundant at night, their presence was unknown to many fishermen resident on the islands for many years.

Discussion

This new species falls into the subgenera *Allocosa* (AM–AL shorter than AM–AM) and *Hogna* (AM–AL = AM–AM) of the genus *Lycosa* using the key to the subgenera provided by Guy (1966, p. 51). The limitation of the use of eye diameters and interspaces as characters of generic importance can be seen when a number of specimens are examined. A later paper in this series will attempt a more natural regrouping of the Australian species of the subfamily Lycosinae.

Distribution

On coral shingle and beach ridges of the Abrolhos Islands, and Rosemary Island, Dampier Archipelago, Western Australia.

Derivation

Named in reference to the coral shingle habitat selected by this species.

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