1999. The Journal of Arachnology 27:25–36

CARBINEA, A NEW SPIDER GENUS FROM NORTH QUEENSLAND, AUSTRALIA (ARANEAE, AMAUROBIOIDEA, KABABININAE)

Valerie Todd Davies: Queensland Museum, P.O. Box 3300, South Brisbane, Australia

ABSTRACT. The distribution of four species of *Carbinea* new genus in the Wet Tropics region of northern Queensland documents the species' richness and local endemism. The new species are *C. longiscapa*, *C. breviscapa*, *C. wunderlichi* and *C. robertsi*. They are placed in the sub-family Kababininae which is removed from the Amphinectidae (Davies 1995) as there is evidence that it does not belong there. The placement of this clade remains problematical.

Amaurobioid spiders abound in Australia. In rainforest surveys (Monteith & Davies 1984) they were usually found to have the highest number of species after 'theridiids' and salticids. From the number of identifiable species in these surveys it was estimated that probably less than 20% of the Australian spiders are described. At present about 40 amaurobioid genera are known; however, their placement in families is unresolved. In describing *Kababina* (Davies 1995) I said that it belonged in a group of undescribed genera. One of these genera is ecribellate and is described here.

METHODS

Spiders were collected from rainforests in the Wet Tropics region of North Queensland between latitudes 16°l6′S, 17°06′S. All material is deposited in the Queensland Museum (QM Brisbane, Australia). Measurements are in millimeters. Coordinates are given in square brackets when these were not included in the original label data. Lengths of epigynal scape, cymbium and tibial apophysis were measured by linear micrometer on a dissecting microscope and converted to millimeters. Length of the epigynal scape was measured from the posterior edge of the fossa. Notation of spines follows Platnick & Shadab (1975). Illustrations were drawn with the aid of a camera lucida. The left male palp is illustrated.

Collection methods include litter-sieving followed by heat extraction in funnels, pit-fall (PF) collection, pyrethrum (PY) spraying of tree-trunks and fallen logs, hand collecting from under logs in daylight and night collecting. Most spiders were collected by G.B. Monteith (GBM) and fellow collectors D. Cook (DC), D. Yeates (DY), G. Thompson (GT), H. Janetzki (HJ), L. Roberts (LR) and the Australian New Zealand Scientific Exploration Society (ANZSES). Table 1 lists anatomical abbreviations used in Table 3 and the text; abbreviations on illustrations are explained in the legends to figures.

SYSTEMATICS

Subfamily Kababininae

Diagnosis.—Three-clawed spiders. Coloration of the abdomen varies from pale to dark grey-black with pattern of light spots in vague chevron pattern. Carapace highest in foveal region (Fig. 1); eyes directed forwards (Fig. 2). Posterior eye row straight or slightly recurved, anterior row straight (Fig. 3); AME reduced. Two retromarginal and two promarginal cheliceral teeth (Fig. 5); prolateral filamentous seta at base of fang longer than other setae. Labium about as long as wide; sternum slightly longer than wide, pointed posteriorly (Fig. 6). Legs 1423/4123. Feathery hairs on legs (Fig. 24). Tarsal trichobothria increasing in length distally; bothrium collariform (Fig. 25). Tarsal organ slit-like, broadening distally. Epigynum with medial

Table 1.—List of anatomical abbreviations.

AL	abdomen length
ALE	anterior lateral eyes
ALS	anterior lateral spinnerets
AME	anterior median eyes
APOPH	apophysis
AW	abdomen width
CB	cymbium
CH	cheliceral
CL	carapace length
CR	cribellum
CW	carapace width
E	embolic
EPIG	epigynal
MAP	major ampullate spigots
MT	metatarsal
PCR	paracribellar spigots
PLE	posterior lateral eyes
PME	posterior median eyes
PLS	posterior lateral spinnerets
PMS	posterior median spinnerets
RTA	retrolateral tibial apophysis
TRICH	trichobothria

fossa wider than long (Fig. 8); spermathecae posterior (Fig. 9) or lateral to fossa. Male palp with rounded tegulum (Fig. 16); course of sperm duct showing clearly. Membranous conductor; embolus with or without proximal embolic apophyses; without median apophysis. Tibial apophysis with ventral and dorsoretrolateral branches (Fig. 17). Cribellum (two fields) present or absent in females, absent in males; proximal calamistrum with one row of setae. Large broad colulus (Figs. 4, 41) when cribellum is absent. Anterior spinnerets largest with short conical terminal segment; two major ampullate spigots on female ALS; one and a nubbin on male ALS. Posterior spinnerets with long slender terminal segment.

Carbinea new genus

Type species.—*Carbinea longiscapa*

Etymology.—The generic name is from the Carbine Tableland, north Queensland, the geographic area where three species have been collected.

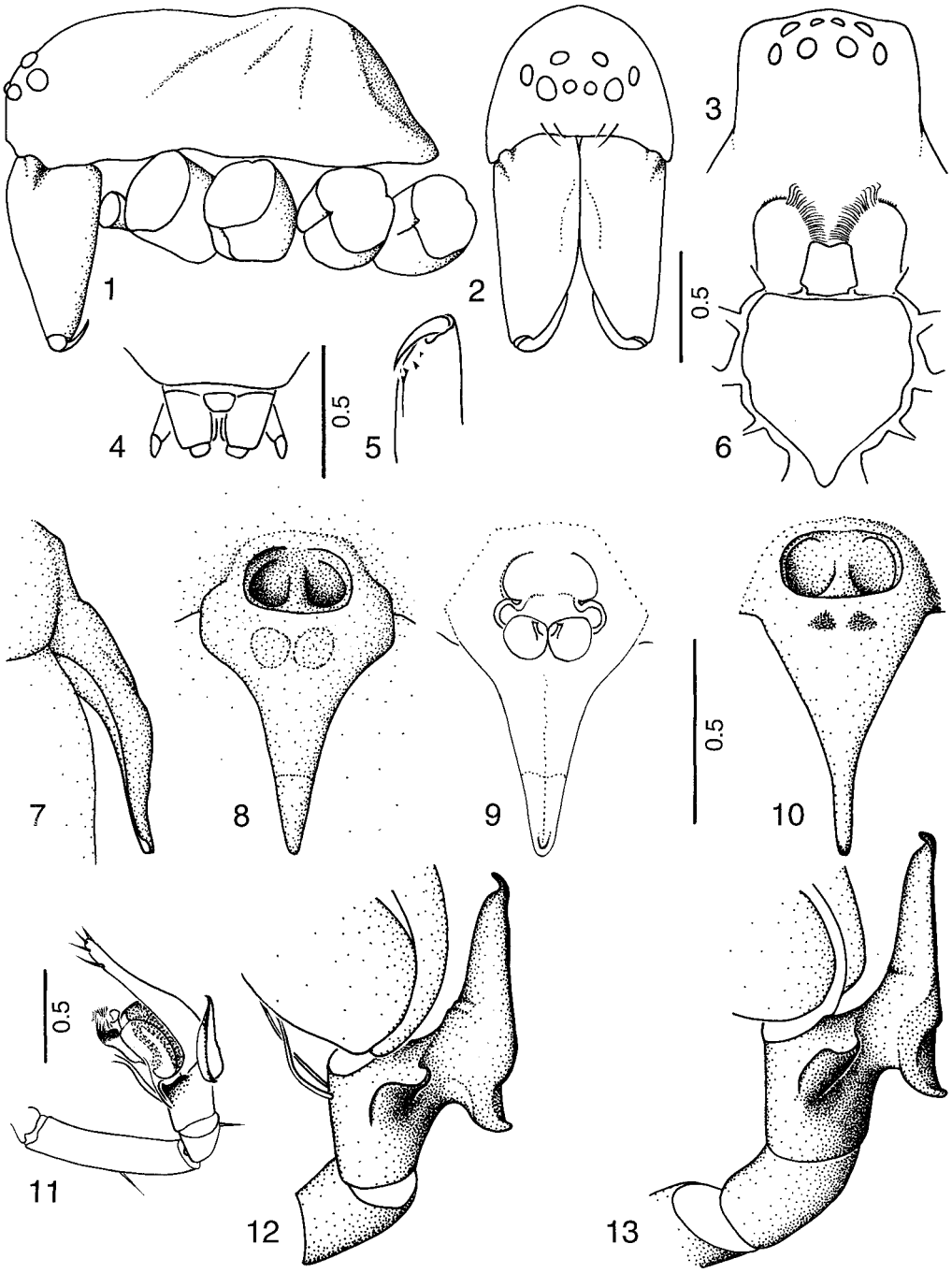
Diagnosis.—Ecribellate (cf. *Kababina*) spider. The epigynum has a long, medium or short posterior scape. The embolus and conductor arise antero-ventrally on the tegulum; the embolus has two elaborate brush-like apophyses (cf. *Kababina*) proximally.

KEY TO *CARBINEA* SPP.

1. Posterior epigynal scape medium to long, 0.4–0.7; ♂ tibial apophysis half or more than half the length of cymbium 2
   Posterior epigynal scape short, 0.3–0.4; ♂ tibial apophysis a third or less the length of cymbium 3
2. Epigynal scape very long, 0.6–0.7. Tibial apophysis more than half the length of the cymbium . . . . . *longiscapa*
   Epigynal scape medium length (0.4). Tibial apophysis about half the length of the cymbium . . . . . *robertsi*
3. Epigynal scape short (0.3). Tibial apophysis short, thick without heel . . . *breviscapa*
   Epigynal scape medium (0.4). Tibial apophysis with heel . . . . . *wunderlichi*

Carbinea longiscapa new species
(Figs. 1-13, 22, 23, 42, 43. Tables 2, 4)

Types.—Australia: *North Queensland*. Holotype ♀, Stewart Ck., 4 km NNE Mt. Spurgeon, Carbine Tableland, Camp 1, 16°24′S, 145°13′E, 1250–1300 m, 15–20 October 1991, GBM, HJ, DC, LR (QM S30283). Paratypes: ♂, same data as holotype (S30284); 4♂, PF (S30285); ♀, ♂ (S30286); ♂ (S30287); 4♂, PF (S30288); 2♀, 7 km N Mt. Spurgeon, Camp 2, 16°22′, 145°13′, 1200–1250 m, 17–19 October 1991; GBM, HJ, DC, LR (S30289); ♀, ♂, PF, (S30290); 2♀, ♂, PF, (S30291); ♀ (S30292); 2♀, Upper Whyanbeel Ck, 16°23′, 145°17′, 150 m, PY, 5 September 1992, GBM (S35247); ♀, Black Mtn., 4.5 km N Mt. Spurgeon, 16°24′, 145°12′, 1240 m, PY, 17 October 1991, GBM, HJ (S35223); 2♂, Karnak-Devils Thumb, 16°24′, 145°18′, 8–12 km NW Mossman, 1120 m, PF, 26 December 1989–15 January 1990, ANZSES (S35231); 2♂, 16°23′, 145°17′, 1080 m, PF (S35232); ♀, ♂, Stony Ck., 2.5 km NE Mt. Spurgeon, 16°25′, 145°13′, 1200 m, 15–21 October 1991, PF, GBM, HJ, DC, LR (S30294); ♂, Head of Roots Ck., 12 km WNW Mossman 16°24′, 145°15′, 1200 m, PF, 28 December 1989–11 January 1990, ANZSES (S35230); ♀, Upper Cow Ck., 1.5 km NE Mt. Spurgeon, 16°26′, 145°13′, 1180 m, 15–21 October 1991, PF, GBM, HJ, DC, LR (S30293); ♀, 2♂, Pauls Luck, 16°26′, 145°15′, 1100 m, PF, 28–30 November 1990, GBM, HJ, DC (S35224); ♀, 2 km SE Mt. Spurgeon via Mt. Carbine 16°27′, 145°12′, 1100 m, 20 December 1988, PY, GBM, GT (S30295); ♀, 20 De-

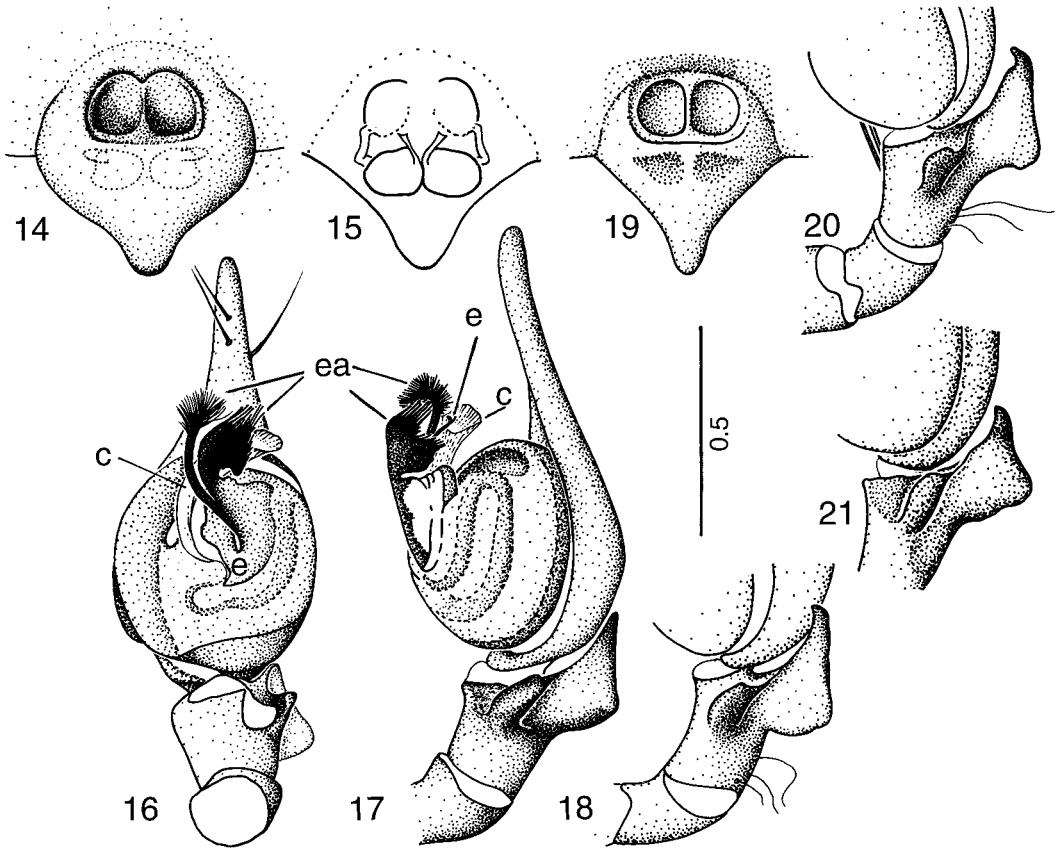


Figures 1–13.—*Carbinea longiscapa* new species. 1–10, Female. 1, Cephalothorax, lateral view; 2, Eyes, chelicerae, frontal view; 3, Eyes, dorsal view; 4, Colulus, spinnerets; 5, Chelicera; 6, Endites, labium, sternum; 7–9, Epigynum, lateral, ventral, dorsal views; 10, Epigynum (Mossman Bluff); 11–13, Male. 11, Palp; 12, Tibial apophysis; 13, Tibial apophysis (Mossman Bluff).

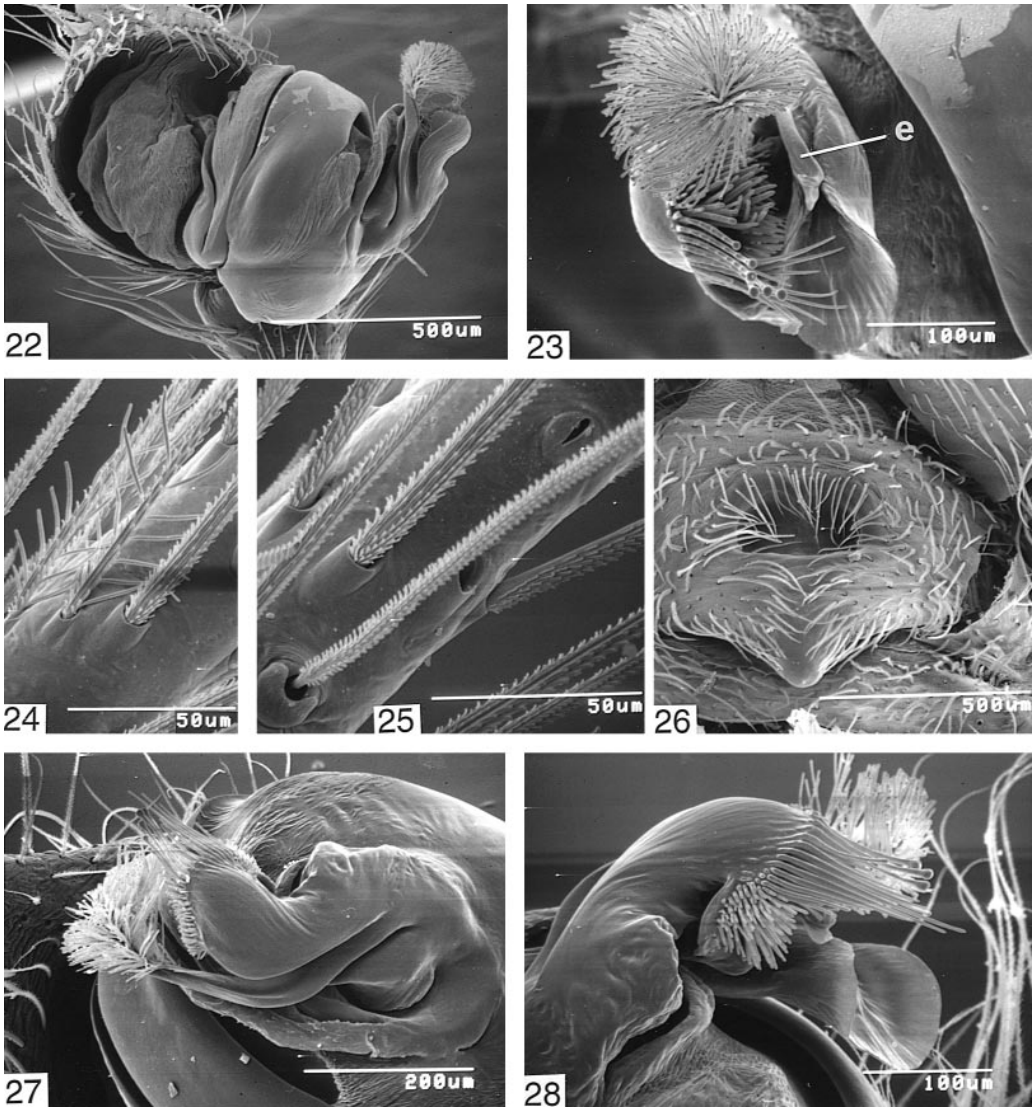
Table 2.—Leg lengths of ♀(♂) ***Carbinea longiscapa*** new species.

	Leg I	Leg II	Leg III	Leg IV
Femur	2.1 (2.3)	1.7 (1.8)	1.5 (1.7)	2.0 (2.2)
Patella	0.6 (0.6)	0.6 (0.6)	0.5 (0.5)	0.6 (0.6)
Tibia	2.1 (2.2)	1.4 (1.5)	1.3 (1.2)	2.0 (2.1)
Metatarsus	2.0 (2.4)	1.5 (1.7)	1.5 (1.6)	2.1 (2.4)
Tarsus	1.3 (1.3)	1.0 (1.0)	0.9 (0.9)	1.2 (1.2)
Total	8.1 (8.8)	6.2 (6.6)	5.7 (5.9)	7.9 (8.5)

cember 1988–4 January 1989, GBM, GT, ANZSES (S35222); ;2fe, ♂, 9 km W. Mossman, 16°28′, 145°l6′, 1000 m, PY, 22 December 1989, GBM, ANZSES (S35229); ♀, 10 km W Mossman, 1100–1300 m, 17–18 December 1988, GBM, GT (S16540); 2♀, Mossman Bluff Camp, 16°28′, 145°l7′, 1000 m, PF, 30 November 1990, GBM, HJ (S35226); ♂, Mossman Bluff Track, 5–10 km W Mossman, 1180 m, PF, 1–17 January 1989, GBM, GT, ANZSES (S27724); ♂, 17–31 December 1988, (S35227); ♂, 10 km W Mossman, 1200 m, PY, 17 December 1988, GBM, GT (S35228); ♀, ♂, Mt. Demi summit, 16°30′, 145°l9′, 1000 m, PY, 16–17 December 1995, GBM (S35225); ♀, Upper



Figures 14–2l.—*Carbinea breviscapa* new species. 14–15, Epigynum, ventral, dorsal 16–17, Male palp, ventral, retrolateral; 18, Tibial apophysis; 19–20, from Black Mountain; 19, Epigynum; 20, Tibial apophysis; 21, Tibial apophysis from Windsor Tableland. e = embolus, ea = embolic apophysis, c = conductor.



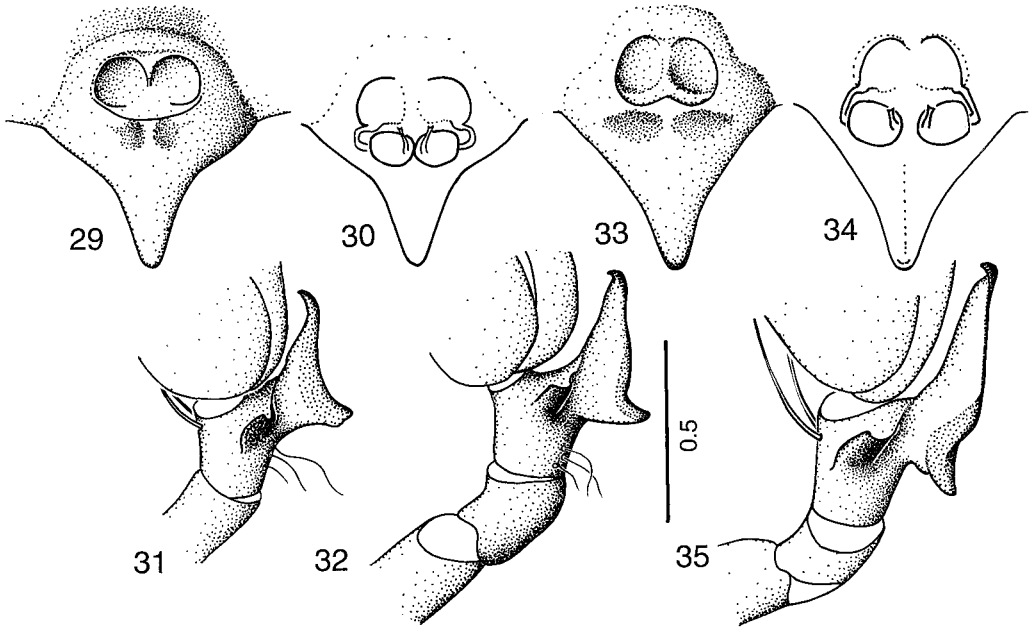
Figures 22–28.—22–23, *Carbinea longiscapa* new species. 22, Expanded palp, prolateral; 23, Embolic region, anterior. 24–28, *Carbinea breviscapa* new species. 24, Feathery hair, leg I; 25, Trichobothrium, tarsal organ on tarsus I; 26, Epigynum; 27, 28, Embolic region male palp; 27, Prolateral view; 28, Embolic apophyses, embolus, conductor, retrolateral view. e = embolus.

Leichhardt, Mt. Lewis, 16°35′, 145°l6′, 840 m, stick brushing, 18 November 1997, GBM (S39197).

Etymology.—The specific epithet is from the Latin, ''longus'', long and ''scapus'', stem in reference to the long posterior epigynal scape.

Diagnosis.—Epigynum with very long (0.6–0.7) posterior scape (Figs. 7–10). Tibial apophysis of male palp more than half the length of the cymbium (Figs. 11–13).

Female: CL 1.8, CW 1.3, AL 2.0, AW 1.3. Straw-colored carapace with two dark longitudinal bands; deep foveal groove. Viewed from the top, eye rows slightly recurved. Ratio of AME:ALE:PME:PLE is 6:11:11:11. Legs 1423 (Table 2) with dark pigmented bands. Notation of leg spines. Femora: I,



Figures 29–35.—*Carbinea* spp. 29– 32, *C. wunderlichi* new species. 29–30, Epigynum, ventral, dorsal; 31–32, Tibial apophysis. 31, From Lambs Head; 32, From Mt. Williams. 33–35, *C. robertsi* new species. 33–34, Epigynum, ventral, dorsal; 35, Tibial apophysis.

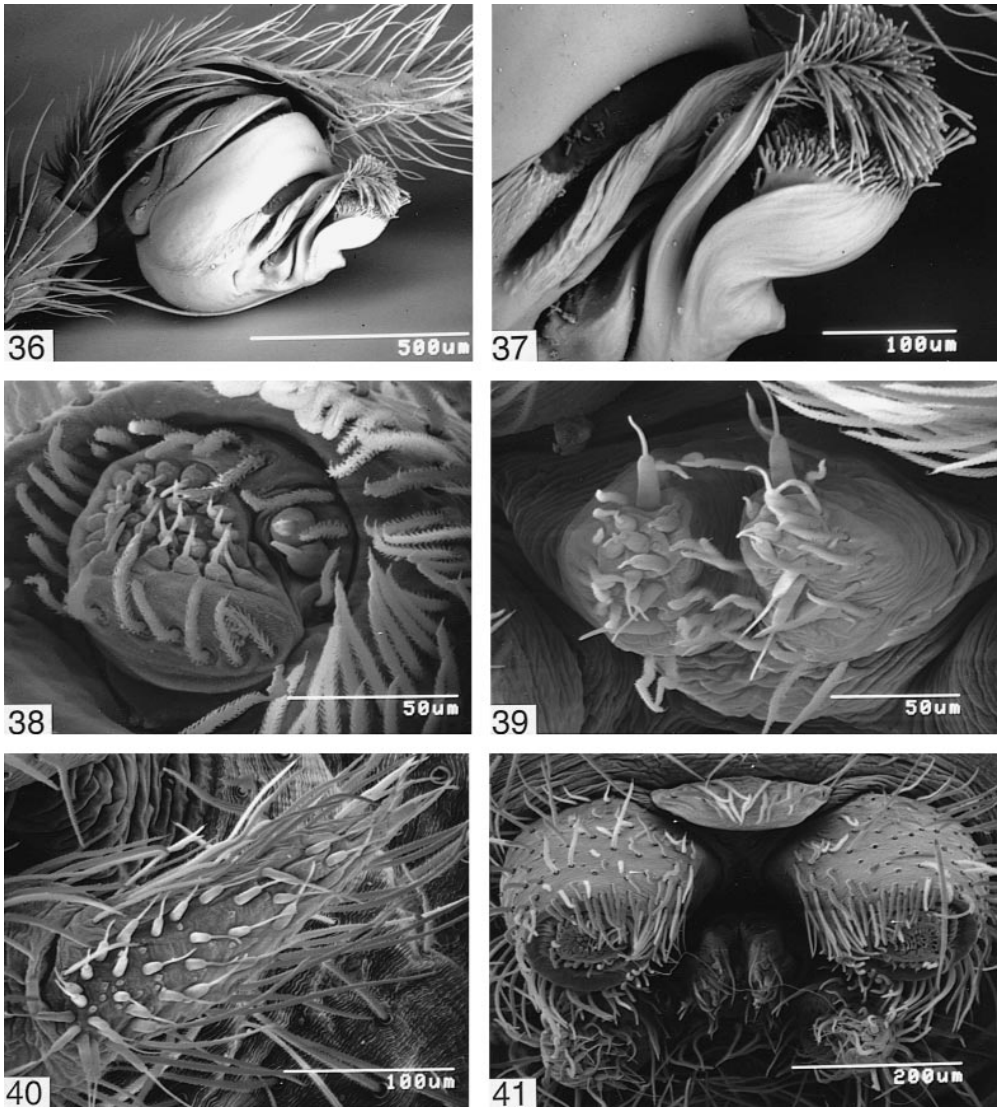
D110, P011, R001; II, D110, P011, R001; III, D110, P011, R001; IV, D110, P001, R001. Patellae: I, D101; II, D101; III, D101; IV, 001. Tibiae: I, V020; II, V020; III,D001, P101; V111, R011; IV, D001, P111, V111, R101. Metatarsi spined with whorl 4–5 distally. Epigynum with semi-divided fossa; long scape, short insemination ducts to spermathecae. Spinnerets: ALS with two major ampullate spigots, the anterior larger, and about 25 piriform spigots; PMS with a large anterior spigot(minor ampullate) and about 10 other spigots, two of which (cylindricals) have thicker shafts than the rest (aciniforms). PLS with about 25 (aciniform) spigots. Length 3.5–4.0. Females collected from Mossman Bluff (Fig. 10), Pauls Luck and Mt. Demi showed a longer, more attenuated scape.

Male: CL 1.8, CW 1.3, AL 1.9, AW 1.3. Coloration and eyes like female. Legs 1423 (Table 2). Notation of spines. Femora: I, D110, P001, R001; II, D110, P011, R011; III, D110, P011,R011; IV, D110, P001, R001. Patellae: I, D001; II, 001; III, 001; IV, 001. Tibiae: I, D100, P011, V221, R011; II, D101, P010, V221, R011; III, D101, P011, V112, R011; IV, D001, P011, V112, R011. Metatarsi spined with distal whorl 4–5. Palp: short broad tibia; ratio of length to width is 1:0.86. Tegulum with anterior tegular groove. Sperm duct looping over retrolateral tegulum before entering base of embolus. Elaborate embolic apophyses with brushes of plain and ''knobbed'' setae (Figs. 22–23). RTA more than half as long as cymbium with short blunt retroventral flange. Spinnerets: ALS with one major ampullate spigot and a nubbin. PMS with one large anterior spigot (minor ampullate) and about 10 aciniform spigots; PLS with about 17 aciniform. spigots. Length 3.5–4.1.

Distribution.—*Carbinea longiscapa* has been collected only on the Carbine Tableland (Fig. 42).

Carbinea breviscapa new species
(Figs. 14–21, 24–28, 41–43; Table 4)

Types.—Australia: *North Queensland*. Holotype ♀, Stewart Ck., 4 km NNE Mt. Spurgeon, Carbine Tableland, Camp 1, 16°24′S, 145°l3′E, 1250–1300 m, PF, 15–20 October 1991, GBM, DC, LR (QM S35235).Paratypes: ♂, 7 km N Mt. Spurgeon,



Figures 36–41.—*Carbinea* spp. 36– 37, *C. wunderlichi* new species from Mt. Williams. 36, Male palp, prolateral; 37, Conductor, base of embolus, embolic apophyses. 38–40, *C. robertsi* new species, female spinnerets. 38, ALS; 39, PMS; 40, PLS. 41, *C. breviscapa* new species, male spinnerets and colulus.

16°22′, 145°l3′, 1200–1250 m, PF, 17–19 October 1991, GBM, DC, LR (S35236); ♀, same data (S35237); ♀, same data as holotype (S35251); ♂, Whypalla State Forest, Windsor Tableland, 16°l6′, 145°02′, 1060 m, PF, summer 1992–3, Scott Burnett (S33163); 2♀, Windsor Tableland, 1.2 km past barracks, 16°l5′, 145°02′, 1060 m, stick brushing, 24 November 1997, GBM (S39201); ♂, Mt. Lewis Rd., 11 km from Hwy. 16°35′, 145°l7′, 1000 m, PF, 18 December 1989–13 January 1990, GBM, GT, ANZSES (S35239); ♀,♂, Black Mtn., 17 km ESE Julatten, 16°39′, 145°29′, 1000 m, sieved litter and moss, 29 April 1982, GBM, DY, DC (S35240); ♀, 800–1000 m, PY, 29–30 April 1982 (S35241); ♀, Mt. Formartine South, 10 km N Kuranda 16°43′, 145°43′, 700 m, PF, 23–24 November 1990, GBM, GT (S35242); ♂, sieved litter (S35243).

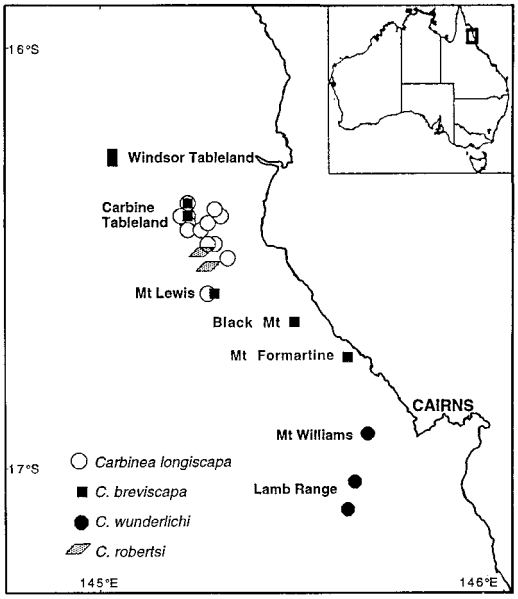


Figure 42.—Map showing distribution of *Carbinea* species.

Etymology.—The specific epithet is from the Latin ''brevis'', short and ''scapus'' stem referring to the very short epigynal scape.

Diagnosis.—Epigynum with short scape (0.3); ♂ tibial apophysis about a quarter the length of the cymbium. Both characters distinguish this species from *C. longiscapa*.

Female: CL 1.8, CW 1.3, AL 2.1, AW 1.6. Coloration and pattern are similar to *C. longiscapa*. Ratio of AME: ALE: PME: PLE is 6:11:11:11. Legs, I, 7.2; II, 5.7; III, 5.3; IV, 7.1. Notation of spines. Femora: I, D110, P001, R001; II, D110, P001, R001; III, D110, P001; IV, D110, P001, R001. Patellae: III, D001; IV, D001. Tibiae: I, V020; II, P001, V020; III, D101, P011, V111, R011; IV, D101, P011, V111, R011. Metatarsi spined with whorl 4–5 distally. Epigynum (Figs. 14, 15, 26). Spinnerets: arrangement of spigots similar to ♀ *C. longiscapa*. Length 3.3–3.9.

Male: (from same locality as ♀, lacking legs II, IV). CL 1.7, CW 1.4, AL 1.8, AW 1.3. Coloration, pattern and eyes are similar to ♀. Legs (Black Mt. specimen) I, 8.1; II, 6.3; III, 5.7; IV, 7.7. Notation of leg spines. Femora: I, D110(l), P00(1)1; II, D110, P011, R011; III, D111, P011, R011; IV, D100. Patellae: I, D001; II, D001; III, D0(1)01; IV, D001. Tibiae: I, D100, P011, V221, R001; II, D001, P001, V221, R011; III, D101, P011, V111, R011; IV, D101, P011, V012, R011. Metatarsi spined with distal whorl 4–5. Male palp (Figs. 16–18, 27, 28). Tegulum, conductor, embolus, brush-like apophyses and course of sperm duct similar to *C. longiscapa*. RTA about quarter length of cymbium. Spinnerets: arrangement of spigots similar to ♂ *C. longiscapa*. Length 3.1–3.5. Males and females from Black Mountain (Figs. 18, 19), Mt. Formartine and the Windsor Tableland (Fig. 21) are considered to belong in this species.

Distribution.—Most specimens were from the Carbine Tableland (Fig. 42). *Carbinea breviscapa* was also found south of there in the Black Mountain region (Note: not the more northern Black Mountain near Mt. Spurgeon).

Carbinea wunderlichi new species
(Figs. 29–32, 36, 37, 42, 43; Table 4)

Types.—**Australia**: *North Queensland*. Holotype ♀, Lambs Head via Mareeba, 17°02′S, 145°38′E, July 1992, J. Wunderlich (QM S35245). Paratypes: ♀, ♂, same data as holotype (S35273); ♂, Lambs Head, 10 km W Edmonton, 1200 m, PF, 10 December 1989–8 January 1990, GBM, JT, HJ (S35244); ♀, Emerald Ck, Lamb Ra, 17°06′, 145°37′, 950 m, sieved litter, 11 October 1982, GBM, DY, GT (S35246); ♂, Mt. Williams, 16°55′, 145°40′, 1000 m, sieved litter and moss, 3 December 1993, GBM, HJ (S35234).

Etymology.—The specific name is a patronym in honor of Dr. Jorg Wunderlich who collected the holotype.

Diagnosis.—The epigynal scape is of medium (0.4) length. Tibial apophysis about a third length of cymbium (cf. *C. longiscapa*) with a posterior heel (cf. *C. breviscapa*).

Female: CL 1.7, CW 1.5, AL 2.0, AW 1.6. Coloration, eye measurements, notation of spines similar to *C. longiscapa*. Legs, I, 7.5; II, 5.9; III, 5.3; IV, 7.3. Epigynum (Figs. 29, 30). Length 2.8–3.5.

Male: CL 1.4, CW 1.1, AL 1.4, AW 0.8. Coloration, eyes, notation of spines similar to *C. longiscapa*. Legs, I, 6.8; II, 5.2; III, 4.9; IV, 6.5. Male palp (Figs. 31, 32, 36, 37). Tegulum, conductor and embolus similar to *C.*

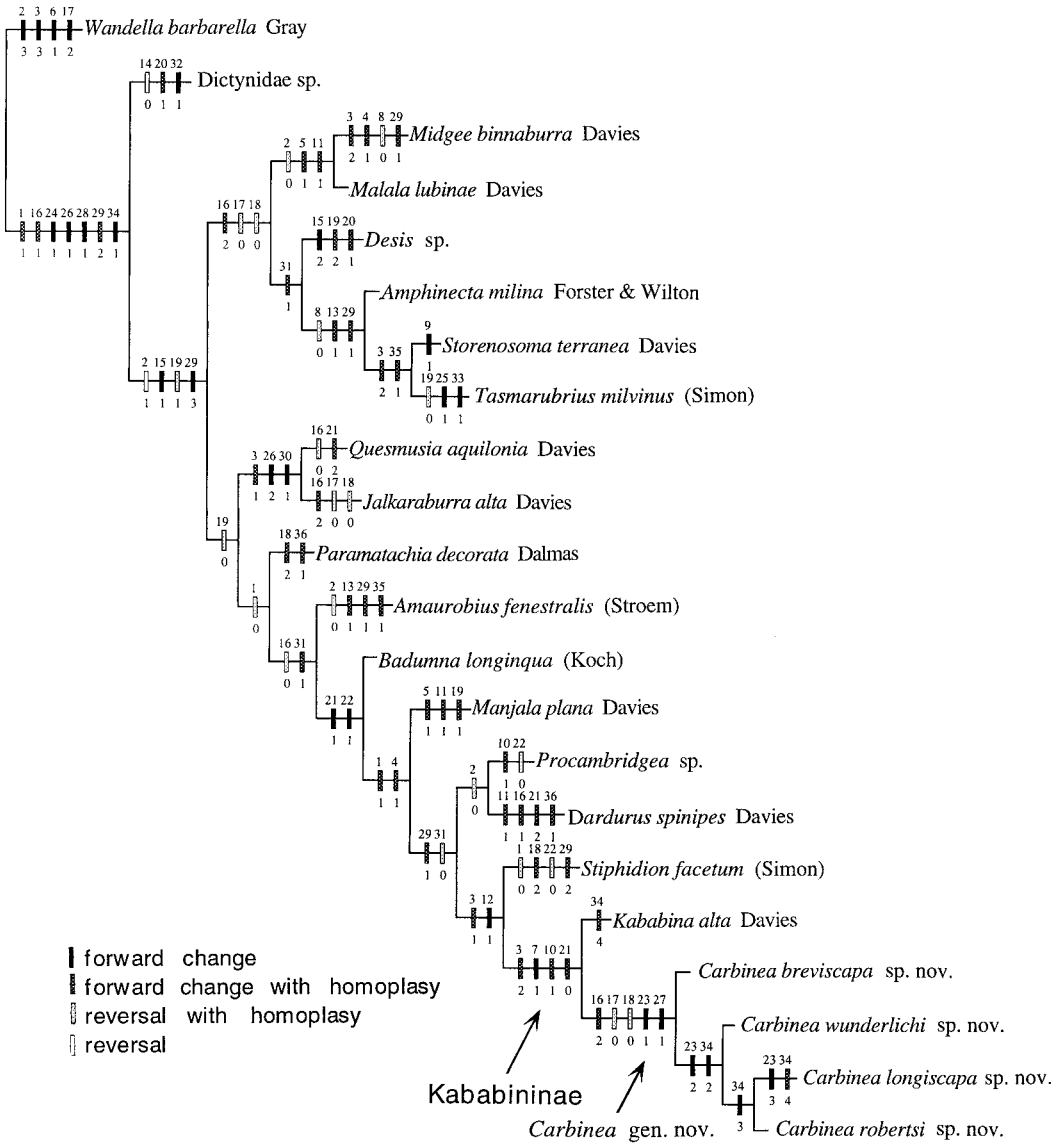


Figure 43.—The single most parsimonious tree showing the cladistic relationships of the Amaurobioidea.

longiscapa. RTA about one-third length of cymbium. Length 2.8–3.5.

Distribution.—From the Lamb Range, SW Cairns (Fig. 42).

Carbinea robertsi new species
(Figs. 33–35, 38–40, 42, 43; Table 4)

Types.—Australia: *North Queensland*. Holotype ♀, Mt. Lewis, [16°29′S, 145°15′E], 7 November 1975, V.E. Davies (QM S35233). Paratypes: 2♀, ♂, same data as holotype (S35272); ♀, Mt. Lewis Rd. (Hut) 16°31′, 146°16′, 1200 m, PY trees, 14 July 1996, GBM (39198).

Etymology.—The specific epithet is a patronym in honor of Lewis Roberts, a noted collector from Shiptons Flat, North Queensland.

Diagnosis.—Epigynal scape of medium

Table 3.—Characters and character states, with states in parentheses. Multistate (*) character treated as unordered.

No.	Character
1	AME: as large or larger than ALE (0); smaller than ALE (1)
2	Retromarginal CH teeth: 2+ (0); 2 (1); 1 (2); 0 (3)
3	Promarginal CH teeth: 3+ (0); 3 (1); 2 (2); 0 (3)
4	Long prolateral seta at base of fang: absent (0); present (1)
5	Large frontal CH seta: absent (0); present (1)
6	CH lamina: absent (0); present (1)
7	Foveal area highest: absent (0); present (1)
8	♀ leg I: shorter than leg IV (0); equal to or longer than leg IV (1)
9	Stridulatory ridges on ♂ coxa I: absent (0); present (1)
10	Trochanteral notch: absent (0); present (1)
11	Large ventral spines on tibia and MT I, II: absent (0); present (1)
12	Feathery hairs: absent (0); present (1)
13	MT preening combs: absent (0); present (1)
14	MT TRICH: 2+ (0); 1 (1)
15	Tarsal TRICH: 0 (0); 2+ (1); double row (2)
16	CR: 2 spinning fields (0); 1 spinning field (1); absent (2)
17	CR spigots: absent (0); longitudinally ribbed (1); annulate (2)
18	Calamistrum: absent (0); proximal (1); proximo-medial (2)
19	MAP ♀ ALS: 2 (0); 1 and nubbin (1); 1 (2)
20	Position of MAP ♀ ALS: mesal (0); anterior (1)
21*	PCR ♀ PMS: one shaft per base (0); more than one shaft (1); absent (2)
22	Medial EPIG fossa: absent (0); present (1)
23	Posterior EPIG scape: absent (0); short (1); medium (2); long (3)
24	Insemination duct: absent (0); present (1)
25	EPIG lateral projections: absent (0); present (1)
26	E direction: straight (0); clockwise (1); anticlockwise (2)
27	Proximal E APOPH: absent (0); present (1)
28	Parembolic process: present (0); absent (1)
29*	Conductor: absent (0); rounded (1); large T-shaped (2); s-shaped–falciform (3)
30	Secondary conductor: absent (0); present (1)
31	Median APOPH: absent (0); present (1)
32	Orientation of CB to bulb: dorsal (0); mesal (1)
33	Paracymbium: absent (0); present (1)
34	RTA to CB length: absent (0); quarter or less (1); third (2); half (3); more than half (4)
35	Dorsal branch of RTA: absent (0); present (1)
36	Palpal patellal APOPH: absent (0); present (1)

(0.4) length (cf. *C. longiscapa*). Tibial apophysis long (cf. *C. breviscapa* and *C. wunderlichi*).

Female: CL 1.9, CW 1.4, AL 2.1, AW 1.4. Coloration, eye measurements, notation of spines similar to *C. longiscapa*. Legs, I, 7.5; II, 5.8; III, 5.4; IV, 7.3. Epigynum (Figs. 33, 34). Spinnerets (Figs. 38–40): ALS with two major ampullate spigots and about 25 piriform spigots. PMS with a large anterior spigot (minor ampullate) and about 10 smaller spigots, 2–3 with thicker shafts from cylindrical glands, the others from aciniform glands. PLS with about 25 aciniform spigots. Length 3.6–4.0.

Male: CL 1.7, CW 1.3, AL 1.8, AW 1.2. Legs, I, 7.9; II, 6.1; III, 5.6; IV, 7.5. Tegulum, conductor, embolus similar to *C. longiscapa*. RTA long, half length of cymbium (Fig. 35).

Distribution.—*Carbinea robertsi* was found at one site on Mt. Lewis (Fig. 42).

RELATIONSHIPS OF *CARBINEA*

A cladistic analysis examined 36 characters (Table 3) for relationships of *Carbinea* spp. and 18 other taxa (names and authors given on cladogram, Fig. 43). Voucher specimens of the taxa are deposited in the QM. Outgroup comparison was with the Australian spiders *Wandella barbarella*, a filistatid and an undescribed dictynid. A data matrix (Table 4) was assembled in MacClade 3.01 (Maddison & Maddison 1992). Unknown characters are represented by ''?'', inapplicable characters by ''-''. The data were analyzed in PAUP version 3.1.1 (Swofford 1993) and replicated in Hennig. A heuristic search of the data with 10 random-addition sequences and TBR branch swapping generated one most parsimonious tree (Fig. 43); length 103, CI = 0.52, CI excluding uninformative characters = 0.48, RI = 0.67, RC = 0.35. Char-

Table 4.—Data matrix

		10	20	30
Wandella	033001010	0000100212	00--000000	0000000
Dictynidae A	120000010	0000001112	1000101012	0010100
Badumna	010000010	0000110110	0110101013	0100100
Paramatachia	010000010	0000111120	0000101013	0000101
Desis	110000010	0000122002	1-00101013	0100100
Quemusia	111000010	0000110110	0200102013	1000100
Jalkaraburra	111000010	0000112000	0-00102013	1000100
Amphinecta	110000000	0001112002	0-00101011	0100100
Amaurobius	000000010	0001110110	0000101011	0100110
Storenosoma	112000001	0001112001	0-00101011	0100110
Tasmarubrius	112000000	0001112000	0-00111011	0101110
Procambridgea	100100010	1000110110	0100101011	0000100
Stiphidion	011100010	0010110120	0100101012	0000100
Midgee	102110000	0100112001	0-00101011	0000100
Dardurus	100100010	0100111110	0210101011	0000101
Manjala	110110010	0100110111	0?10101013	0100100
Malala	100010010	0100112001	0-00101013	0000100
Kababina	112100110	1010110110	0010101011	0000400
Carbinea longiscapa	112100110	1010112000	0-13101111	0000400
C. breviscapa	112100110	1010112000	0-11101111	0000100
C. wunderlichi	112100110	1010112000	0-12101111	0000200
C. robertsi	112100110	1010112000	0-12101111	0000300

acters were mapped in CLADOS version 1.2 (Nixon 1992) with DELTRAN optimization.

Conclusions.—*Wandella* and Dictynidae A appear as distinct from the ingroup which is regarded as the superfamily Amaurobioidea. This is composed of two clades, the first of which includes *Desis* (Desidae), *Amphinecta* (Amphinectidae) and *Tasmarubrius* (Davies 1998). The second clade includes *Amaurobius* (Amaurobiidae), *Stiphidion* (Stiphidiidae) and the metaltellines *Quemusia* and *Jalkaraburra*. *Kababina* and *Carbinea* are the only genera in this clade that form a well-supported monophyletic group Kababininae, which was previously (Davies 1995) placed in the Amphinectidae and from which it is now withdrawn. The group appears closest to *Stiphidion*; however, separation of the Kababininae would render the base of the clade paraphyletic. Until further description and analysis of the basal members of this clade are extended, the family placements of the clade will remain problematic.

ACKNOWLEDGMENTS

I am indebted to my colleague Dr. G.B. Monteith for his and co-workers, collections from the Wet Tropics region of north Queensland. Since 1993 the field trips have been supported by the Wet Tropics Management Authority which also supports Mrs. Kylie Stumkat, SEM technician. I thank the Council of the Australian Biological Research Studies for funding rainforest surveys during which some of this material was collected and for the financial support of illustrator, Mrs. Christine Lambkin, who also set up the program for phylogenetic analysis resulting in the cladogram. I am grateful for the support of other members of the Queensland Museum, particularly Mrs. Audra Topping and Ms. Jennifer Ingram for their help in preparation of this paper.

LITERATURE CITED

Davies, V.T. 1995. A new spider genus (Araneae: Amaurobioidea: Amphinectidae) from the wet tropics of Australia. Mem. Queensland Mus., 38(2):463–469.

Davies, V.T. 1998. A redescription and renaming of the Tasmanian spider *Amphinecta milvina* (Simon, 1903) with descriptions of four new species (Araneae: Amaurobioidea: Amaurobiidae). Pp. 67–82. *In* Proceedings of the 17th European Colloquium of Arachnology, Edinburgh 1977.

Maddison, W.P. & D.R. Maddison. 1992. MacClade: analysis of phylogeny and character co-

evolution. Version 3 documentation. Sinauer: Sunderland.

Monteith, G.B. & V.T. Davies. 1984. Preliminary account of a survey of arthropods (insects and spiders) along an altitudinal rainforest transect in tropical Queensland. Pp. 402–412. *In* Australian National Rainforest Study. (G.L. Werren & A.P. Kershaw, eds.). World Wildlife Fund (Australia). Project 44 Report. Vol. I. Reprinted 1991, Pp. 345–362. *In* The Rainforest Legacy: Australian National Rainforest Study, Vol 2: Australian Government Publishing Service. Canberra.

Nixon, K.C. 1992. Clados, Version 1.2. L.H. Bailey Hortorium, Cornell University, Ithaca.

Platnick, N.I. & M.U. Shadab. 1975. A revision of the spider genus *Gnaphosa* (Araneae: Gnaphosidae) in America. Bull. American Mus. Nat. Hist., 155:1–16.

Swofford, D.L. 1993. PAUP. Phylogenetic Analysis Using Parsimony. Version 3.1. Illinois Nat. Hist. Surv. and Smithsonian Institution: Champaign and Washington.

Manuscript received 29 April 1998, revised 4 December 1998.