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National Library of Australia card number
ISSN 0079-8835

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PTERONETA DEELEMEN-REINHOLD AND A REMARKABLE SYMPATRIC
CLUBIONA (CLUBIONIDAE: ARANEOMORPHAE: ARACHNIDA) IN NORTHERN
AUSTRALIA

ROBERT J. RAVEN AND KYLIE S. STUMKAT

Raven, R.J. & K. S. Stumkat 2002 5 31: *Pteroneta* Deeleman-Reinhold and a remarkable sympatric *Clubiona* (Clubionidae: Araneomorphae: Arachnida) in northern Australia. *Memoirs of the Queensland Museum* 48(1): 199-206. Brisbane. ISSN 0079-8835.

Pteroneta spinosa, and similar sympatric *Clubiona pseudopteroneta* are described from north Queensland. The concept of *Pteroneta* and a possible synapomorphy for the Clubionidae are noted. □ *Araneomorphae, Clubionidae, taxonomy, Australia, distribution.*

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Generic diversity of clubionid spiders is greater in northern than southern Australia where *Clubiona* and *Cheiracanthium* dominate. *Clubiona* and *Matidia* Thorell have long been known in north Queensland. Deeleman-Reinhold (2001) transferred *Cheiracanthium* from the Miturgidae back to the Clubionidae and included *Pteroneta* and *Calamoneta*.

Clubionids are commonly encountered in ecological surveys using sweeping, beating and, more rarely, pitfall trapping. Most are nocturnal hunters. Among survey collections from Cape York, males with strong, porrect chelicerae with similar dorsal spination and (in freshly preserved material) blue internal lobes evident through the coxae and carapace cuticle were considered to be a species of *Clubiona*. However, the blue lobes are clearly those of the midgut diverticula and had previously been reported only in *Pteroneta* (Ono, 1989; Deeleman-Reinhold, 2001). Closer determination of tarsal features recognised separate species belonging to *Clubiona* and *Pteroneta*.

Pteroneta Deeleman-Reinhold, 2001 is remarkably *Clubiona*-like but is easily recognised by the setal flag—a brush of long thick hairs along the ventral and prolateral surface of the tarsi (Fig. 3A, C, D)—on tarsi II. Females have also retained the striking blue lobes of the midgut diverticula. The more common of the two previously confused species belongs to widespread *Clubiona* which has many species still undescribed in Australia. This paper was originally intended to describe only the new *Pteroneta* species but its similarity with the sympatric *Clubiona* and compromised generic boundaries necessarily expanded its limits.

SYSTEMATICS

Family CLUBIONIDAE
Subfamily CLUBIONINAE

Both species described here have a condition not previously reported in Clubioninae. The setation around the tarsal claws and the size of the claws themselves is different on the front and back pairs of legs. On legs I, II (Fig. 1A) the hairs do not form a tuft, whereas on III, IV a distinct cluster of hairs is evident (Fig. 1B). The claws on I, II are small and concealed by the hairs but on III, IV, although the tuft is distinct so too are the larger claws. We have found the condition present in other *Clubiona* species and contrasting with that in other groups (e.g. Sparassidae, Corinnidae) in which the tufts are similar size on all legs. Should the condition prove to be informatively distributed it may be another synapomorphy of the Clubionidae.

***Pteroneta* Deeleman-Reinhold, 2001**

Pteroneta Deeleman-Reinhold, 2001:145.

TYPE SPECIES (by original designation). *Pteroneta saltans* Deeleman-Reinhold, 2001.

DIAGNOSIS. Differs from all other clubionid genera by the setal flags on tarsus II of ♂♂ and ♀♀ (Fig. 3A, C, D).

DESCRIPTION. Anterior eye row equally spaced. All eyes of similar size. PME much closer to lateral eyes than to each other. Tibia I with 2 pairs of spines ventrally; tibia II, III spineless or with 1-2 spines in line. Leg formula 4213. Setal flags on tarsus II of males and females. Sternum without constriction anteriorly. Male palp typical of *Clubiona* basic form.

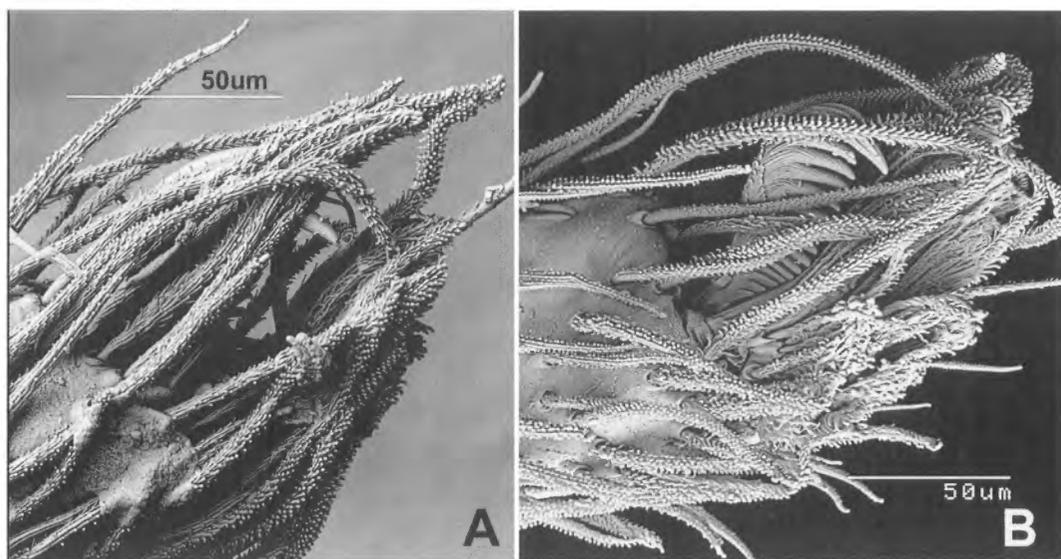


FIG. 1. *Clubiona pseudopteronea*, sp. nov. SEMs. A, tarsus II, ♂, lateral view showing weak setation and small claw; B, tarsus IV, showing dense tuft and large claw.

SPECIES INCLUDED: *P. saltans* Deeleman-Reinhold, 2001, *P. tertia* Deeleman-Reinhold, 2001, *P. ultramarina* (Ono, 1989), *P. spinosa* sp. nov.

DISTRIBUTION. Southern Japan, Malaysia, Borneo, Sulawesi, Sumba, northern Queensland.

***Pteroneta spinosa* sp. nov.**
(Figs 2, 3, 5E, 6D, E; Tables 1, 2)

MATERIAL. HOLOTYPE: QMS39414, ♂, Lockerbie, Cape York, 10°47'S, 142°27'E, 30 Jan 1975, R.J. Raven. **PARATYPES:** QMS54287, ♂, same data as holotype; QMS31444, ♀ allotype, West Claudie R, Iron Ra, 12°44'S, 143°13'E, 3-10 Dec 1985, G. Monteith, D. Cook; QMS39409, ♀, Mission Beach (S3), 17°55'S, 146°03'E, flight intercept trap, 4 Dec 1995-2 Jan 1996, M. Cernak. All in rainforest in Cape York, Queensland.

DIAGNOSIS. Differs from *P. saltans* Deeleman-Reinhold, 2001 by the dorsal spines on the chelicerae of males, from *P. tertia* Deeleman-Reinhold, 2001 by the more numerous and extensive dorsal spines on the chelicerae, and from both in the dorsal prong off the blade-like tibial apophysis. It differs from *P. ultramarina* (Ono, 1989) by the longer tibial apophysis and relatively longer tegulum in males and females by the larger spermathecae. It differs from *C. pseudopteronea* sp. nov. in the setal flags on tarsi II.

DESCRIPTION. Holotype male. Carapace 1.78 long, 1.28 wide. Abdomen 1.78 long, 0.88 wide. Total length 4.5. Presumably bleached by

prolonged contact with white plastic vial caps. Entirely yellowish fawn; no blue ducts evident.

Carapace. Slightly flattened ovoid in shape, posteriorly convex; eye region smoothly constricted; glabrous. Fovea short, straight, starts at posterior third. Clypeus gradually sloped.

Eyes. 8, all similar in size, pearly in 2 rows; front straight, back slightly procurved. ALE & PLE on common but low tubercle. AME a little further apart than to ALE; PME closest to AME, PME-PME=ca. 2-3 times PME-PLE. MOQ much wider behind than in front by 2 PME widths but about as long as wide in front. PME slightly ovoid, about 5 diameters apart and 2-3 from PLE. Lateral eyes about 1 of their widths apart. Group is width of head.

Chelicerae. Porrect, long with 15-20 short strong conical spines down anterior face in broad band. Base of fang with large triangular tooth on each side, furrow bowed for distal 2/3, large tooth on anterior promargin at distal 1/3 and similar large tooth at retrolaterally proximal of half length of furrow. Fang elongate, longitudinal; basally broad, constricting quickly in distal half.

Maxillae. Elongate with short basal neck; apically with inner bevel forming distinct pointed tip; at widest only ca. 1.4 times width at neck. Labium longer than wide with basal

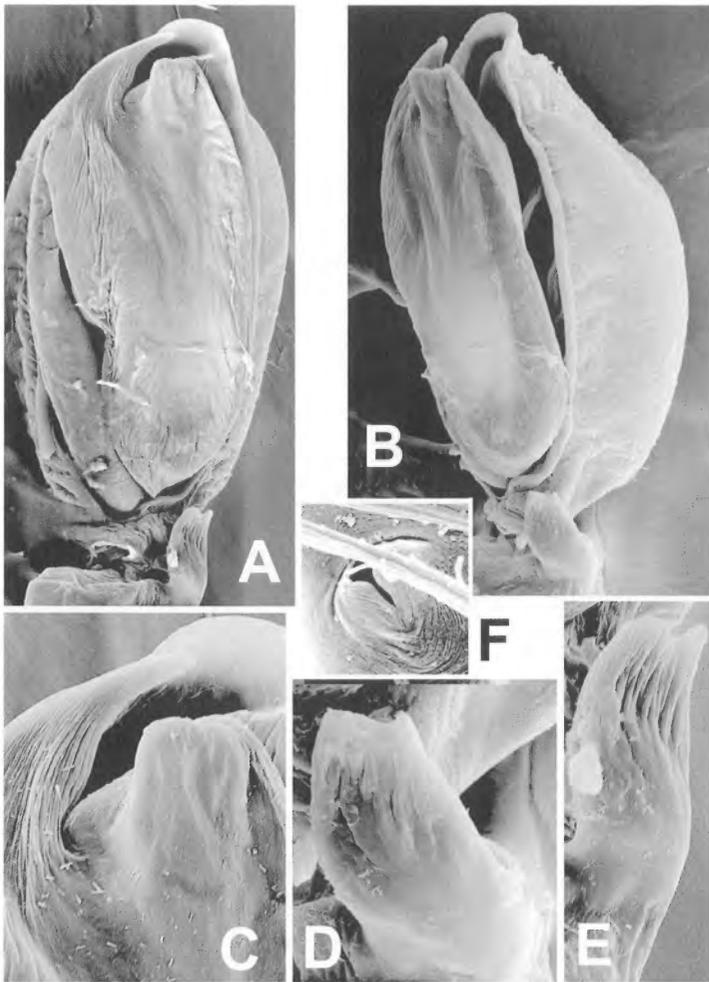


FIG. 2. *Pteroneta spinosa*, sp. nov. SEMs. A-E, ♂ palp. A, B, tibia, bulb and cymbium, ventral view (A) and retrolateral view (B). C, embolus and tegular process. D, tibial apophysis, retrolateral (D) and ventral (E) views. F, tarsal organ.

constriction; separated from sternum by procurved groove.

Sternum. Spearhead-shaped, glabrous, margins hardly sclerotised; posterior corners with intracoxal sclerites.

Legs. 4213. Legs I, II laterigrade. Distinct brush on tarsi II making it appear curved and thick; tarsi II ca. 0.8 length of metatarsi II; hairs of the brush lightly spinulate (Fig. 2D). Metatarsi III with 2 preening combs. Scopula entirely absent. No tibial fracture or tarsal rod.

Claws. Short, hooked, concealed by hairs, 6-9 teeth; claw tufts large, dense bipartite as high as claws on III, IV; weak, nominal tufts on I, II.

Spines. On tibiae and metatarsi I, II, ventral spines weak. I: fe p2d3; pa 0; ti v2.2 (no apical spines); me v2 basal. II: fe p1d2; pa 0; ti v1.1; me v1.1. III: fe p2d2; pa 0; ti p1v1.1; me p1.1.lrl.1vl + combs. IV: fe dlrl; pa rl; ti plrlvl; me p2r2v1.2. Palp: fe d1.2.

Palp (Fig. 2). Cymbium a typical *Clubiona*-like scoop with ovoid scopulate area dorsoapically; retrobasally with ventral lobe and excavation opposite blade-like acuminate tibial apophysis with secondary dorsal prong. Bulb with large dominant tegulum with low domed apical ridge just concealing cylindrical embolus passing over distal bulb and under retrodistal corner of cymbium; sperm duct passes through oval zone for length of outer tegulum; the sperm duct path is very similar to that in *P. saltans*.

Spinnerets. Set on separated ring from abdomen. ALS are long cones with short apical segment; PMS are cylinders; PLS longer but half diameter of ALS.

ALLOTYPE FEMALE. As for male except:- Carapace 1.48 long, 1.16 wide. Abdomen 2.16 long, 1.16 wide. Total length 4. Blue gut visible in pedicel with flecks through dorsal abdomen, ventral abdomen with lateral 2-3 anastomosing stars per side and median cluster with serial lobes.

Chelicerae. Without strong setae dorsally; not enlarged and with small teeth, 5 on promargin, 3 on retromargin.

Legs. II with much shorter metatarsi + 1/2 length of tarsus incrassate distally down curved with dense twisting flared brush prolaterally. Tarsal organ (Fig. 2F) low, long, keyhole-shaped with wide proximal aperture narrowing quickly.

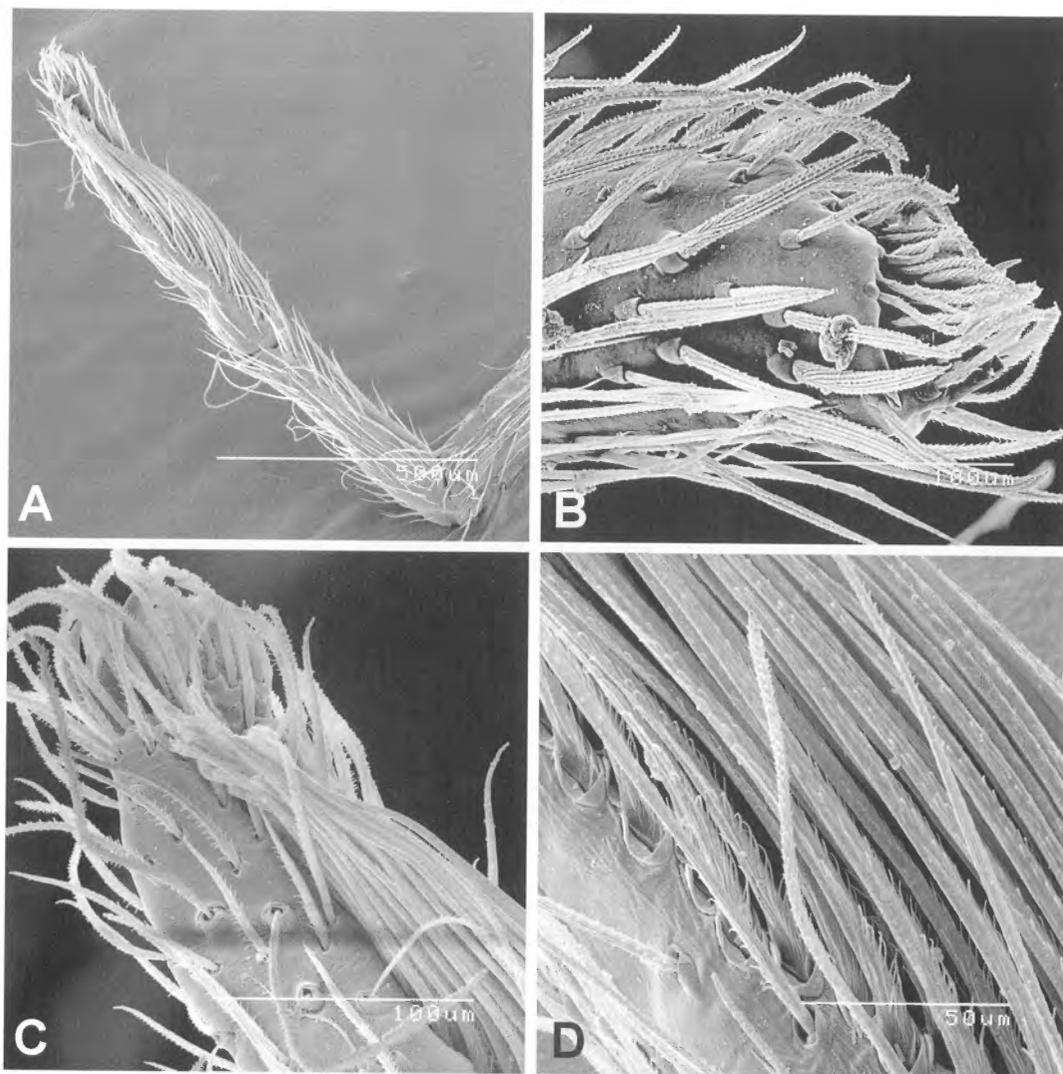


FIG. 3. *Pteroneta spinosa*, sp. nov. SEMs, ♀. A, tibia, metatarsus and tarsus II, prolateral view. B, apex of palpal tarsus, retrolateral view. C, tarsus II, prodorsal view showing trichobothria. D, hairs of special brush on tarsus II, prodorsal view.

Table 1. Leg measurements of *Pteroneta spinosa*, holotype male

	I	II	III	IV	Palp
Femur	1.03	1.25	0.81	1.25	0.47
Patella	0.56	0.59	0.38	0.53	0.22
Tibia	0.94	1.16	0.56	1.06	0.22
Metatarsus	0.66	0.69	0.72	1.16	
Tarsus	0.38	0.53	0.28	0.34	0.44
Total	3.57	4.22	2.75	4.34	1.35

Table 2. Leg measurements of *Pteroneta spinosa*, allotype female

	I	II	III	IV	Palp	
Femur	0.68	0.89	0.71	0.89	0.31	
Patella	0.37	0.39	0.29	0.35	0.12	
Tibia	0.62	0.83	0.39	0.81	0.17	
Metatarsus	0.37	0.35	0.39	0.85		
Tarsus	0.29	0.48	0.29	0.37	0.27	
Total	2.33	2.94	2.07	3.27	0.87	

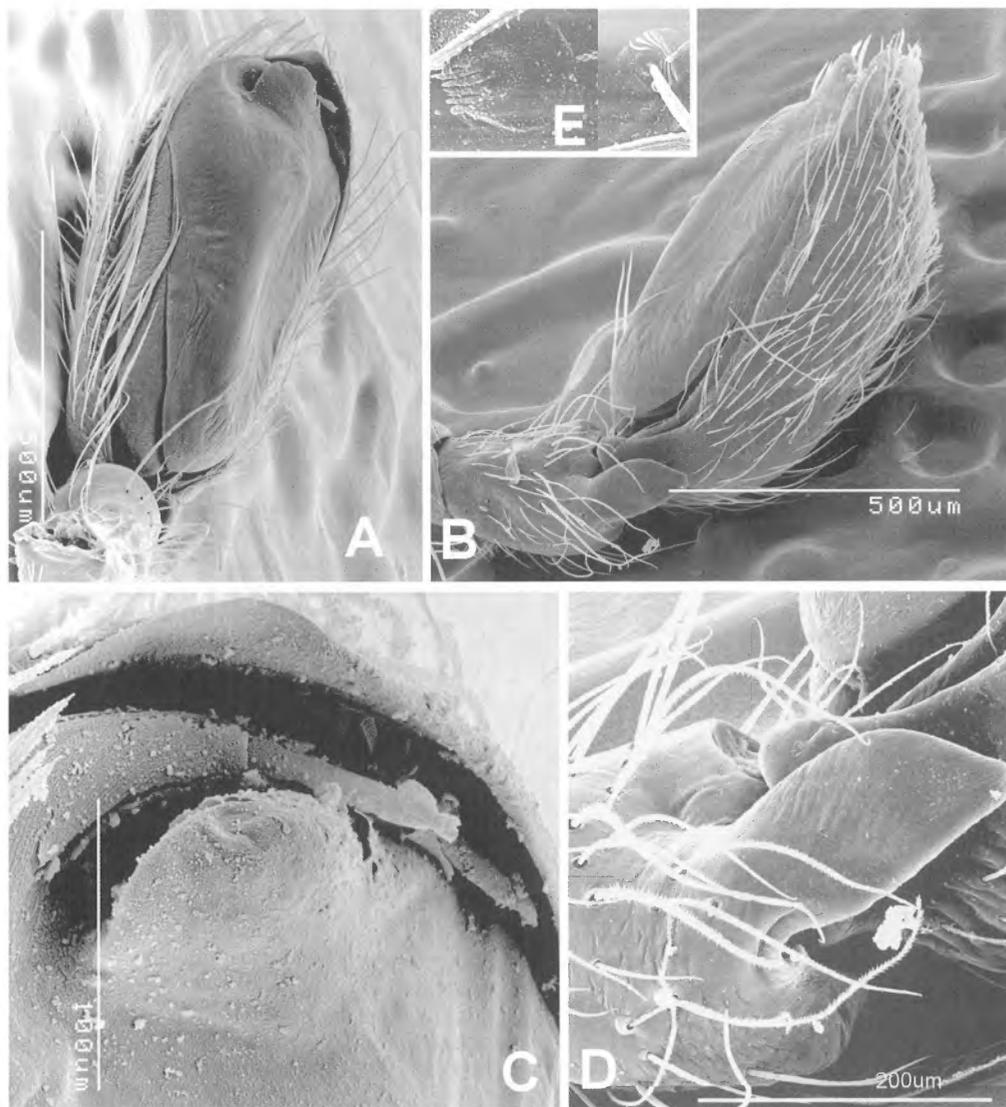


FIG. 4. *Clubiona pseudopteroneta*, sp. nov. SEMs. A-D, ♂ palp. A, B, tibia, bulb and cymbium, ventral view (A) and retrolateral view (B). C, embolus and conductor. D, tibial apophysis and basal cymbium, retrolateral view. E, tarsal organ (left) and trichobothrial base (right).

Trichobothrial bases with 1-4 lateral wings (Fig. 3E, right).

Spines. I: fe d2; pa 0; ti v2.2; me v2. II: fe d2; pa 0; ti 0; me v1.1. III: fe d2; pa 0; ti d1; me p3r2v1.2 + preening comb. IV: fe d2; pa r1; ti r2v1.1; me plr2v1.2.1. Palp: fe d2.

Palp. Tarsus sharply truncate distally with small claw concealed by small claw tufts

Epigyne. Bursae small, ovoid (Fig. 6E), subovate receptacula with ectal lobe and smaller overlying lobe.

DISTRIBUTION & HABITAT. Rainforest between Cairns and Bamaga at the tip of Cape York.

REMARKS. Deeleman-Reinhold (2001:148) listed 2 unidentified females (not examined) from

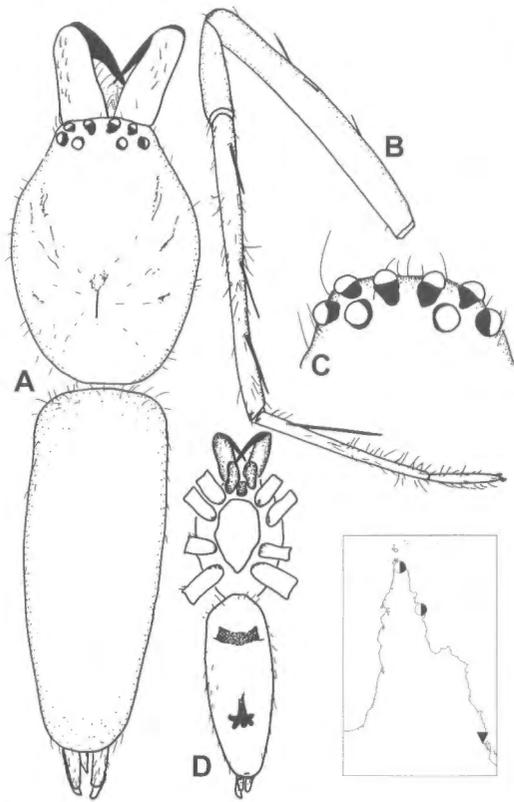


FIG. 5. *Clubiona pseudopteroneta*, sp. nov., holotype, ♂. A, cephalothorax and abdomen, dorsal view. B, leg II, prolateral view. C, eyes, dorsal view. D, sternum and abdomen, ventral view showing pigment posteriorly. E, Cape York showing localities of *Pteroneta spinosa* and *Clubiona pseudopteroneta*; records of both species are indicated by the bicoloured dot and of only *P. spinosa* by the triangle.

Mossman Creek NP, north Queensland, which are considered *P. spinosa*.

P. spinosa may seem very rare in its range. However, our sampling intensity for Cape York is much less than in areas near Cairns. Hence, it is likely that species in Cape York may become extinct long before they are documented.

Clubiona Latreille, 1804

Clubiona pseudopteroneta sp. nov. (Figs 1, 4, 5, 6A-C; Tables 3, 4)

DIAGNOSIS. Differs from *Pteroneta spinosa* in the absence of the setal flags on tarsus II, and from other known species of *Clubiona* in the combination of spines on the dorsal chelicerae of

males, 3 pairs of long spines ventrally on tibiae I, II, the widespread, presumably plesiomorphic, form of the palpal bulb, and the blue midgut evident through the cuticle.

MATERIAL. HOLOTYPE: QMS31443, ♂, West Claudie R, Iron Ra, 12°44'S, 143°13'E, 3-10 Dec 1985, G. Monteith, D. Cook. PARATYPES: QMS31445, QMS39412, QMS39413, ♂♂, ♀, as for holotype. Gordon Ck, Iron Ra, 12°43'S, 143°19'E, Cape York, 24-30 Jun 1976, QM Party: QMS39415, ♂♂♀♀; allotype, QMS54285, ♀, Lockerbie, 10°47'S, 142°27'E, 30 Jan 1975; QMS54286, ♂, R.J. Raven; QMS39411, ♂, same data but 3km E, G. Monteith. All in Cape York rainforest.

DESCRIPTION. *Holotype Male.* Carapace 2.00 long, 1.47 wide. Abdomen 2.97 long, 1.16 wide. Total length 5.9. In alcohol (for 16 years). Carapace fawn, legs and chelicerae lighter; abdomen almost white; from above coxae I- II with light blue area of midgut diverticula, small flecks of blue in carapace opposite coxae and just in front and behind fovea. Ventral abdomen with post-central large blue multilobate mark with short anterior shaft, genital area with wide brown collar, small transverse brown area in front of spinnerets marks tracheal spiracle; all leg joints yellow brown; maxillae light yellow brown.

Carapace. Slightly flattened ovoid in shape, posteriorly convex; eye region smoothly constricted; striae not evident; caput low, slightly arched; almost glabrous, few fine hairs on lateral margins, one long bristle between AME and two behind PLE. Fovea short, straight, starts at posterior third. Clypeus gradually sloped.

Eyes. 8, pearly in 2 rows; front slightly recurved, back slightly procurved. AME directed up and to side; ALE to front and side; PME up and PLE to side. AME slightly the smallest about 1 diameter apart and from slightly larger ALE. Front row on clypeal edge. MOQ wide behind by 2 PME widths but about as long as wide in front. PME slightly ovoid, about 3 diameter apart and 1 from PLE. Lateral eyes almost continuous. Group is width of head. Tapetum canoe-shaped.

Chelicerae. Porrect, long with 7-10 short strong conical spines down anterior face; boss small, if present. Promargin with large triangular tooth adjacent to base of fang and another smaller but still large tooth along furrow, one small tooth basally on retromargin. Fang elongate; basally broad, constricting quickly in distal half.

Maxillae. Elongate with short basal neck; inner concave ridge evident in paratype, distal concavity short diagonal, apically with inner

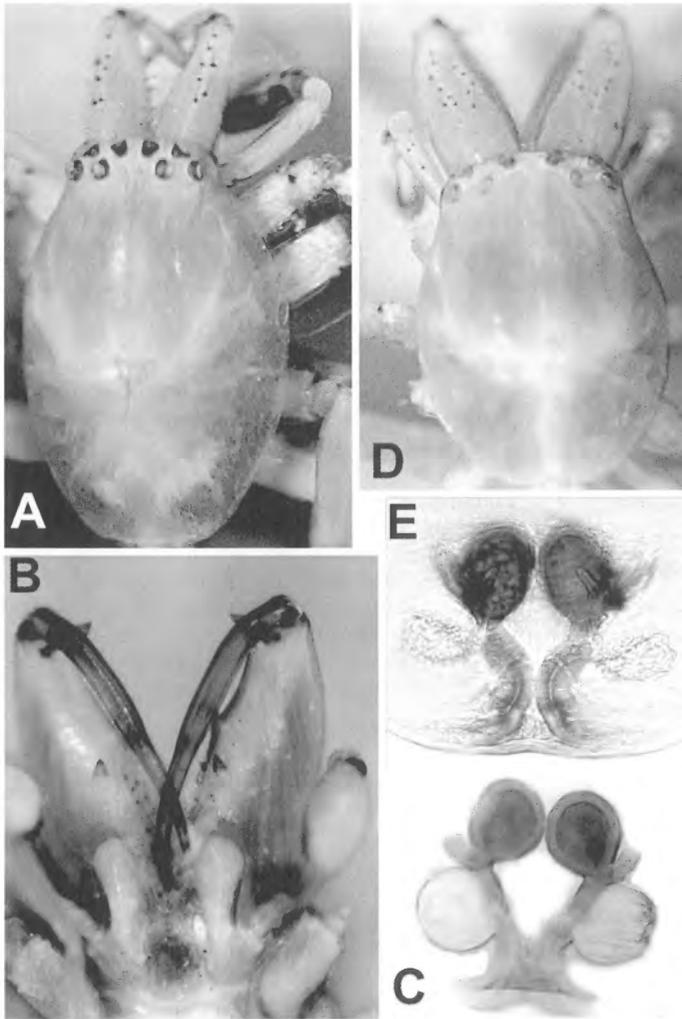


FIG. 6. *Pteroneta spinosa*, sp. nov. (D, E), and *Clubiona pseudopteroneta*, sp. nov. (A-C). A, D, dorsal cephalothorax. B, chelicerae, labium and maxillae. C, E, epigyne.

bevel forming distinct pointed tip. Labium as for *P. spinosa*.

Sternum. As for *P. spinosa*.

Legs. 2413. Inner edges of coxae ventrally gradually curve to sternum, no sharp box-like corners; posterior junction of coxae with sternum a more produced sclerotised lobe than anterior edge; strongest on coxae IV. Legs I-III laterigrade; coxae IV long, making femora IV posteriorly directed over abdomen. Coxae II > I. No brushes on tarsi II or elsewhere. Tarsi short slightly curved; metatarsi ca. 3 times longer;

tibiae longer again. Setation sparse, short erect pallid hairs. Line of 8-10 close hairs pro- and retroventrally distal of spines on tibia I, II. Metatarsi III with 2 preening combs. Scopula entirely absent. No tibial fracture or tarsal rod. Tarsal organ broad, low with longitudinal pectines distally (Fig. 3E).

Claws. Short, hooked with short teeth and small tufts on legs I, II; claws longer with 7-8 long teeth and tufts large, dense bipartite as high as claws on III, IV.

Trichobothria. 2 rows or band on tarsi, 4-5 long, evident on metatarsi, 4-6 long on tibiae.

Spines. Long paired spines on tibia and metatarsi I, II. I: fe p2d3; pa 0; ti v2.2.2; me v2 (very long, unpaired). II: fe p2 d3 pa 0; ti v2.2.2; me v2 (very long, unpaired). III: fe d3; pa 0; ti plv1.1; me pl.1.1r1.1v2.2 + combs. IV: fe d3 v.short; pa r1; ti pl.1r1.1v1.1; me pl.1.1.1.1r1.1.1.1v1.2.1. *Palp*: fe d1.2; pa d1 (distal). Apical bristle on all patellae.

Palp. Cymbium a "typical" *Clubiona*-like scoop with ovoid scopulate area dorsoapically; retrobasally with ventral lobe and excavation opposite blade-like acuminate tibial apophysis. Bulb flat, large dominant tegulum with low domed apical ridge just concealing cylindrical embolus passing over distal bulb and under retrodistal corner of cymbium; sperm duct as for *Pteroneta spinosa*.

Spinnerets. ALS are long cones with short apical segment; PMS are cylinders; PLS longer but half diameter of ALS. Tracheal spiracle marked by dark brown bar.

ALLOTYPE FEMALE. As for ♂ except: - Carapace 1.75 long, 1.25 wide. Abdomen 2.66 long, 1.41 wide. Total length 4.8.

Chelicerae not correct, without dorsal spines or thick setae; promargin with closely set line of 8 teeth of sizes varying up to 100%; retromargin

TABLE 3. Leg measurements of *Clubiona pseudopteroneta*, holotype ♂.

	I	II	III	IV	Palp
Femur	1.74	2.27	1.34	2.10	0.67
Patella	0.80	0.94	0.54	0.74	0.27
Tibia	1.60	2.30	1.00	1.77	0.34
Metatarsus	1.14	1.50	1.17	2.10	
Tarsus	0.50	0.57	0.40	0.54	0.64
Total	5.78	7.58	4.45	7.25	1.92

with basally converging line of 7 distinctly smaller teeth. Leg formula 4213.

Epigynum. Short predistal transverse ridge with two large basal circular bursae and two closer receptacula distally with ectal lobes.

DISTRIBUTION & HABITAT. Rainforest at Iron Range and Bamaga, Cape York.

REMARKS. Deeleman-Reinhold (2001) splits the *Clubiona* species of SE Asia into a number of species groups. Using her key, this species keys to the *C. hystrix* group. However, it has attributes reported only in *Pteroneta*: spines on dorsal chelicerae, and in *P. tertia* Deeleman-Reinhold, 2001 and *P. ultramarina* (Ono, 1989) and lazulite blue spots visible through the carapace and abdomen. However, tarsi II of ♂ *C. pseudopteroneta* are about 0.25 of length of the metatarsi.

Sexual dimorphism is also evident in relative leg lengths. Most *Clubiona* have a leg formula of 4213. However, although that is true of females of *C. pseudopteroneta* (and most *Clubiona* species described in Deeleman-Reinhold, 2001), it is not true of males (leg formula 2413) and it is not simply a result of measuring regenerated legs. The males of *C. pseudopteroneta* have the second leg longer than the fourth or first.

Most males from Gordon Ck are between 2.00 and 2.60mm in carapace length and are all similar

TABLE 4. Leg measurements of *Clubiona pseudopteroneta*, allotype ♀.

	I	II	III	IV	Palp
Femur	1.06	1.31	0.97	1.50	0.44
Patella	0.50	0.50	0.66	1.25	0.22
Tibia	0.97	1.28	0.66	1.25	0.22
Metatarsus	0.69	0.78	0.72	1.41	
Tarsus	0.34	0.41	0.31	0.47	0.28
Total	3.56	4.28	3.32	5.88	1.16

in chelicerae length dentition and spination dorsally on chelicerae. However, one male has a carapace only 1.62mm long and the chelicerae are hardly porrect, each has only 2 spines and small teeth. Also, the carapace of the smallest male is not as long as wide (1.4 vs 1.57) as the other other males. The difference in relative carapace shape is expected due to allometric growth but the difference in cheliceral size, spination, and dentition is not expected to be allometric because it is a sexual dimorphism and only 'exists' for the period of the final moult. In any case, care needs to be exercised in the characters noted variable here.

ACKNOWLEDGEMENTS

We are grateful to Drs Christa Deeleman-Reinhold and Barbara Baehr for comments on the manuscript.

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