An unusual new anapid spider from the rainforest of Brunei (Araneae: Anapidae)

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Summary

Borneanapis belalong, n. gen., n. sp., is described from the Batu Apoi Forest Reserve in the Temburong District of Brunei, Borneo, and its taxonomic affinities and habitat are discussed.

Introduction

Between 28 January and 5 March 1992, spiders were collected as part of the Joint Royal Geographical Society/Universiti Brunei Darussalem Rainforest Project which was based at the then newly built Kuala Belalong Field Studies Centre. The Belalong study area, which is situated in the Temburong district of Brunei and lies within the Batu Apoi Forest Reserve, is predominantly primary mixed dipterocarp lowland rainforest with a small area of montane forest around Bukit Belalong (Cranbrook & Edwards, 1994). On 28 February 1992, a number of males and females of an unknown species of anapid spider were taken from the trunk of a large buttressed tree on the East Ridge path near Pondock Busiri. The following day, a single male of the same species was taken in a sample beaten from low understory trees next to a stream crossing the Ashton trail.

The family Anapidae is worldwide in distribution and, although the majority of described species are tropical, there are representatives in both the northern and southern temperate regions (Platnick & Shadab, 1978, 1979; Platnick & Forster, 1989). Where anapid populations have been studied in detail they have proved to be extremely diverse and show high levels of endemicity at both specific and generic levels. Following detailed study of the specimens, it has proved impossible to include the species in any previously described genus and it is therefore described here in a new genus as *Borneanapis belalong*, n. gen., n. sp. All measurements are in mm.

Genus *Borneanapis*, new genus

Type species: *Borneanapis belalong*, new species.

Etymology: The generic name is a contraction of Bornean *Anapis* and is feminine in gender.

Diagnosis and generic relationships: Males of *Borneanapis* can be distinguished from those of all other anapid genera by the highly sculptured nature of the abdomen, which is triangular in lateral view, and the posterodorsal scutum which carries long spines on a series of tubercles (Fig. 4), females by the circular, conical, spine-carrying tubercles on the abdomen (Fig. 7). The only other anapid genera with abdomens that are triangular in lateral view are the Australasian genera *Risdonius* Hickman, 1939 and *Tasmanapis* Platnick & Forster, 1989. However, the scutation of these genera differs markedly from that of *Borneanapis* and they do not carry the series of long spines, many of which originate from large tubercles, which are found in the latter. In the male of *Borneanapis* the apophyses of the palpal patella and tibia are similar to those of *Tasmanapis strahan* Platnick & Forster, 1989 but the palp is more simple and lacks the prolateral bulbal apophysis. It also seems highly unlikely that a tropical species would be closely related to a species from the temperate south of Australia and Tasmania.

Borneanapis can be distinguished from other anapid genera found in the South East Asian region as follows: *Sinanapis* Wunderlich, 1994 has a subglobular abdomen, six eyes with ALE protruding well over the clypeus, and the male palpal patella complex with four apophyses. *Conculus* Komatsu, 1940 has elongated legs I and II with femur I considerably lengthened and sinuous with a ventral row of teeth proximally. It also has ALE protruding beyond AME. *Pseudanapis* Simon, 1905 is distinguished by the coarsely punctate carapace, sternum and abdominal scuta, also by the possession of two femoral, one or two patellar, and no tibial apophyses on the male palp. It is also very small with a body length less than 1 mm. *Enielkenie* Ono, 2007 is also very small with a subglobular abdomen. In the male the eyes are in a compact group set on an oval swelling in the centre of the carapace. The male palpal patella has an apico-dorsal digitiform apophysis.

Description: Small spiders of total length 1.45–2.02, males being slightly larger than females. Carapace dark brown. Eight eyes; AME much reduced, contiguous, oval in shape; PME separated by 0.5 × their diameter; ALE and PLE contiguous; ALE not projecting beyond AME. Male abdomen yellow, highly sculptured, with large dark red-brown, posterodorsal scutum carrying long spines, four on distinct tubercles. Small anterior scutum surrounds petiole. Anterior booklungs appear to have been retained. Female abdomen similar to male but lacking scutum, long spines carried on conical sclerotised tubercles. Leg formula I, II, IV, III, yellow-brown, all tibiae darkened distally, particularly in female. All tibiae with one long dorsal spine at 0.65, tibia I also with one prolateral spine. All patellae with two dorsal spines, most distal very long, 1.5 × length of patella. Male with single row of four short peg-like spines proventrally on tarsus and metatarsus of legs I and II (leg I with three on tarsus and one on metatarsus, leg II with two on tarsus and two on metatarsus). Male palp small and pale, with large spatulate conductor and hooked apophysis on patella at half its length. Female palp absent.

Included species: Only the type species.

Distribution: Known only from the Kuala Belalong Field Studies Centre study area.

Borneanapis belalong, sp. n. (Figs. 1–8)

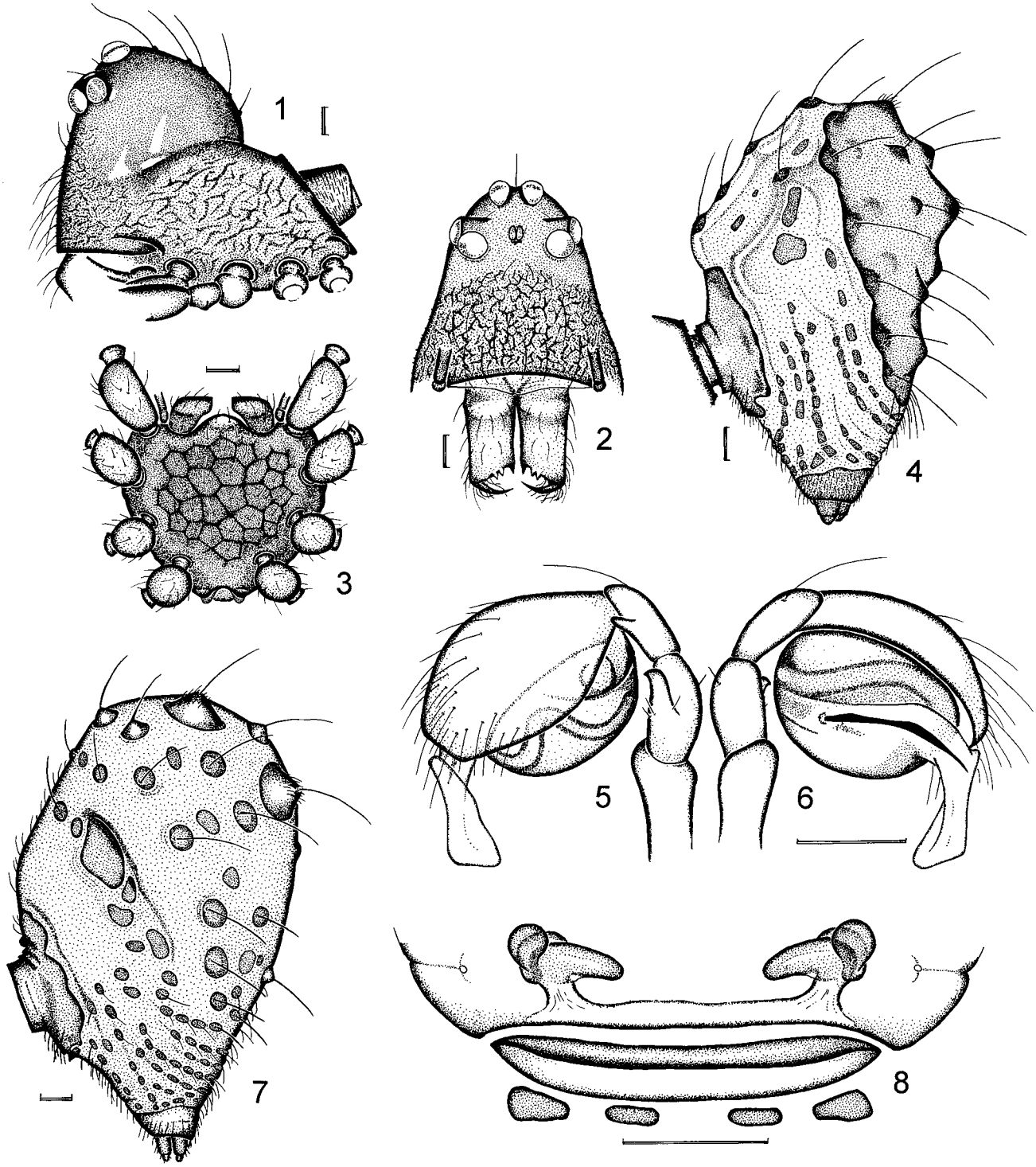
Types: Holotype ♂ from trunk of tree, East Ridge path nr. Pondock Busiri, Kuala Belalong Field Studies Centre, Temburong, Brunei Darussalem, Borneo, 28 February 1992, leg. R. Snazell, deposited in Natural

History Museum, London. Paratypes: 1♂ 2♀, same data, deposited in Natural History Museum, London; 8♂ 9♀, same data, in Snazell coll. (also 2♀ damaged during description in Snazell coll.).

Etymology: The specific name is a noun in apposition referring to the type locality.

Diagnosis: Males can be distinguished from all other anapid species by the highly sculpted nature of the abdomen and the long spines on the posterodorsal scutum (Fig. 1), females by the circular, conical, spine-carrying sclerotised tubercles on the abdomen (Fig 7).

Male: Total length ($n=10$) 1.55–2.02. Carapace (Figs. 1, 2): Length 0.72–0.9, width 0.55–0.68; dark red-brown; thoracic region and lower half of clypeus reticulate; cephalic region smooth, rounded and raised; large anterolateral porepit, adjacent to palp, pores obscure. Eyes (Figs. 1, 2): AME small, oval and contiguous; ALE and PLE large and contiguous; PME large, separated by 0.5 × their width. Chelicerae (Fig. 2): Slightly swollen proximally, with three promarginal teeth, a single proximal tooth and two closely placed distal teeth. Sternum (Fig. 3): Length 0.40–0.52, width



Figs. 1–8: *Borneanapis belalong* sp. n. **1** Male carapace, lateral view; **2** Male carapace, anterior view; **3** Sternum, ventral view; **4** Male abdomen, lateral view; **5** Left male palp, retrolateral view; **6** Left male palp, prolateral view; **7** Female abdomen, lateral view; **8** Vulva, dorsal view. Scale lines =0.1 mm.

0.40–0.52; dark red-brown; fused to carapace between legs to form coxal sockets; surface divided into polygonal areas each with centrally placed hair. Labium fused to sternum, labral spur small. Legs: I, II, IV, III. Leg measurements of male with carapace length 0.87:

	Fe	Pa	Ti	Mt	Ta	Total
I	0.95	0.32	0.80	0.32	0.55	2.94
II	0.70	0.30	0.56	0.26	0.50	2.32
III	0.55	0.22	0.47	0.20	0.40	1.84
IV	0.65	0.25	0.57	0.25	0.38	2.10

Legs red-brown, tibiae slightly darker distally. Femora I and II slightly swollen with fine rugosity ventrally. Patellae swollen distally, curved at proximal end. All tibiae with one long dorsal spine at 0.65, tibia I with one prolateral spine. All patellae with 2 dorsal spines, most distal very long, 1.5 × length of patella. Single row of four short peg-like spines pro-ventrally on tarsus and metatarsus of legs I and II (leg I with three on tarsus and one on metatarsus, leg II with two on tarsus and two on metatarsus). Abdomen (Fig. 4): With dark red-brown posterodorsal scutum carrying four major and several smaller tubercles. All tubercles carry a long spine, four major tubercles also carry a patch of short hairs. Anterodorsally with two rows and two individual sclerotised patches each carrying a long spine. With anterior scutum surrounding pedicel in which anterior spiracles are situated. No posterior spiracle discernible. Softer area of cuticle yellow and complexly ridged, with several rows of small oval and elongate sclerotisations (size, shape and exact position of these variable, even from one side of abdomen to other). Small colulus and six spinnerets surrounded by sclerotised ring. Palp (Figs. 5, 6): Small, pale and simple, with large spatulate conductor; femur thin and pale; with small pale tibial apophysis and larger hooked patellar apophysis.

Female: As in male except where noted. Total length (n=12) 1.45–1.75. Carapace length 0.70–0.75, width 0.53–0.56. Sternum length 0.42–0.45, width 0.40–0.45. Palp: absent. Legs: I, II, IV, III. Leg measurements of female with carapace length 0.75:

	Fe	Pa	Ti	Mt	Ta	Total
I	0.72	0.25	0.54	0.28	0.46	2.25
II	0.58	0.22	0.48	0.22	0.42	1.92
III	0.45	0.22	0.38	0.18	0.38	1.61
IV	0.56	0.18	0.45	0.22	0.38	1.79

Legs as in male but lacking small peg-like spines on metatarsus and tarsus I and II. Abdomen (Fig. 7): Lacks large posterodorsal scutum of male but carries four major and several smaller circular, conical sclerotised tubercles, all carrying long spines, four major tubercles also carrying patch of short hairs. With single large and several smaller sclerotisations associated with transverse depression on either side of abdomen; also with smaller sclerotisations, some of which carrying spines, and rows of small round and elongate sclerotisations posteriorly (size, shape and exact position of these variable, as in male). Softer area of cuticle yellow, but less heavily ridged than in male. Vulva (Fig. 8): Openings to copulatory ducts at posterior edge of anterior scutum, very indistinct. Spermathecae and associated ducts not heavily sclerotised and rather indistinct.

Material examined: Only the type material and a single male beaten from low understory trees next to a stream crossing the Ashton trail, 29 February 1992.

Distribution: Known only from the type locality and from one other site in the Kuala Belalong study area.

Biology: The great majority of anapids hitherto described have been taken from the litter layer or among very low ground layer vegetation, and web building has been observed in only a few New World genera (Coddington, 1986; Eberhard, 1987). In all cases the webs are described as tiny horizontal orb webs supported from above by a series of additional hub loops. However, Platnick & Forster (1989) state that it is by no means certain that all anapids construct orb webs. The findings below support this suggestion.

All but one of the specimens taken of this species were found on the trunk of a large buttressed tree. They were taken from very small, usually triangular, horizontal sheet webs built into various corners and depressions in the smooth bark of the tree. In virtually every case the spider was found on the lower surface of the web hanging directly beneath a small fragment of detritus which presumably had fallen from above. The single male from the Ashton trail was swept from vegetation with large trees nearby.

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