THE PHASMID GENUS *HOPLOCLONIA* STÅL FROM BORNEO, INCLUDING THE DESCRIPTION OF TWO NEW SPECIES

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ABSTRACT

A key and complete synonymy is provided to the Bornean members of the genus *Hoploclonia*. Lectotypes are designated for *H. draconia* (Westwood) and *H. gecko* (Westwood). The male and egg of *H. cuspidata* (Redtenbacher) are described for the first time. Both sexes and the egg are illustrated. Two new species, *H. apiensis* and *H. abercrombiei* are described and illustrated. A map is provided to show the distribution of the genus in Borneo.

INTRODUCTION

The genus *Hoploclonia* is predominantly a Philippine genus, but three species are recorded from Borneo. Two of these species appear to be endemic to Borneo; the other, *H. draconia* (Westwood), has been recorded from the Philippines on a number of occasions but only once from Borneo (Redtenbacher, 1906: 45); this is found to be due to misidentification. *H. gecko* (Westwood) has been recorded by a number of authors while the only record of *H. cuspidata* Redtenbacher is that of the female holotype.

This paper reports specific localities for *H. cuspidata*, describes the male and egg for the first time and illustrates the male, female and egg. Two new species are described from eastern Sarawak. The lectotypes of *H. draconia* and *H. gecko* are selected. A key and a complete synonymy of the Bornean members of the genus are also provided.

Museums are referred to by their standard codons: BMNM (Natural History Museum, London), OXUM (Oxford University Museum), NHMW (Natural History Museum, Wien, Austria), BMKB (Brunei Museum, Brunei) and SMSM (Sarawak Museum, Sarawak, Malaysia). Specimens which have been in the author's collection at some time (and still there unless stated otherwise) are given an individual accession number prefixed by the initials PEB and a hyphen e.g. PEB-1234.

MATERIAL AND METHODS

Material has been collected from several areas of Sarawak and Brunei. In addition a number of museum specimens which have precise locality data have been included. All type specimens of *H. gecko* and *H. draconia* have been examined. The holotype of *H. cuspidata* has not been examined.

THE TRIBE OBRIMINI

Bradley & Galil's (1977) key to families, subfamilies and tribes refers the genus *Hoploclonia* to the tribe Obrimini. Within Borneo only two

genera of Obrimini have been recorded, *Aretaon* and *Hoploclonia*. Two species of *Aretaon* have been recognised from Borneo, *A. asperrimus* (Redtenbacher) and *A. muscosus* (Redtenbacher); however it seems likely that they represent a single species (Bragg, in Jennings 1992) but further examples are needed to confirm this possibility.

In their detailed treatment of their "Obriminae" of the Philippine Islands, Rehn & Rehn (1938: 465) stated that *Hoploclonia* ". . . can immediately be distinguished from all the other genera in the tribe by having a raised, more or less triangular area on the anterior portion of the mesonotum, and by its general body form". *Aretaon* species are much larger than *Hoploclonia* and clearly lack the triangular area on the mesonotum.

Hoploclonia Stål 1875

The type species, by monotypy, is *H. gecko* (Westwood) [*Acanthoderus gecko* Westwood, 1859].

Rehn & Rehn (1938) gave a detailed redescription of the genus and synonymised it with *Tisamenus* Stål. They also described eight new species and provided a key to the species from the Philippines but did not include the two species which are endemic to Borneo.

Rehn & Rehn (1938: 466) when mentioning *H. gecko* and *H. cuspidata* said "It seems quite probable that these two species may form a distinct species group". There is little doubt that they are closely related, the females being almost identical in colouring, size and shape; the only distinguishing features are a few of the spines. The eggs of these two species are almost identical.

KEY TO *Hoploclonia* OF BORNEO

MALES

1 Abdominal segments without obvious spines. Pronotum with a pair of large, double spines. ..... *gecko*
— Spines present on at least abdominal segments 2–3. 2

2 A pair of large, upright spines present on only abdominal segments 2 and 3, abdominal segment 4 unarmed. ..... **abercrombiei** sp. n.
— Obvious spines present on the fourth abdominal segment as well as segments 2 and 3. ..... *cuspidata*

FEMALES

1 Large lateral pointing spine present on metapleura 2
— No large spine on the metapleura ..... *cuspidata*

2 Abdominal segments 2 and 3 each with a pair of spines near the centre line ..... ***abercrombiei*** sp. n.
— Third abdominal segment without spines; second segment spineless or with only a small pair of spines 3

3 Front of metanotum with a central pair of spines arising from a single base; second abdominal segment with a pair of small spines ..... ***apiensis*** sp. n.
— Metanotum without any large spines; second abdominal segment spineless ..... *gecko*

Hoploclonia gecko (Westwood, 1859)

Acanthoderus gecko Westwood, 1859: 52, pl. 26.6/7. Lectotype: ♀ Borneo, Sarawak, accession number 56.44 (BMNH) [here selected]. Paralectotypes: 2 ♂ data as lectotype (BMNH). ♂♀ Sarawak, coll. Wallace 1858 (OXUM), 2 ♂ 2 ♀ Sarawak, (OXUM).
Hoploclonia gecko (Westwood), Stål, 1875: 92.
Hoploclonia gecko (Westwood), Kirby, 1904: 399.
Hoploclonia gecko (Westwood), Redtenbacher, 1906: 46.
Hoploclonia gecko (Westwood), Rehn & Rehn, 1938: 466, footnote 74.
Hoploclonia gecko (Westwood), Bragg, 1991: 13–15.
Hoploclonia gecko (Westwood), Bragg, 1992: 298–299, figs 3 & 4.

The two males at the BMNH were accidentally omitted from the list of syntypes given in the Sarawak Museum Journal (Bragg, 1992: 298). It is not clear which specimens were illustrated by Westwood; the illustrations are probably composites of several specimens.

Westwood's description implies all specimens were collected by Wallace although only two, at OXUM, bear the name Wallace. The accession numbers of the BMNH types indicate that they were acquired in 1856; Wallace states that he was in Borneo from 1st November 1854 to 25th January 1856 (Wallace 1869), consequently he could have collected the BMNH specimens. The two OXUM specimens which bear Wallace's name are dated 1858. However Wallace was not in Borneo during 1858, he was in the Moluccas and New Guinea, so the date on the OXUM specimens must refer to the date that they were acquired by Mr W.W. Saunders, not the date they were collected. Although no specific localities are given, Wallace spent a lot of his time collecting insects near the Sadong river in western Sarawak.

This species has previously been recorded from two areas of Sarawak, Bako National Park and Mt Serapi (Bragg, 1991, 1992). In addition two females of this species were found at an altitude of about 100 m on Mt Santubong in August 1992. The Sarawak Museum contains nine specimens; two males and two females are without data, those with data are as follows: ♀ Santubong, May 1904; ♀ Matang road, 30-05-1900; ♂ Matang, December 1898; ♂ Lingga, November 1895; ♂ 10th mile, June 1895.

Hoploclonia draconia (Westwood, 1848)

Pachymorpha draconia Westwood, 1848: 78, pl. 38.5 (♀). Lectotype ♀ [here designated] Philippine Islands, coll. D. Cuming (OXUM). Paralectotype ♂, data as lectotype (OXUM).
Acanthoderus draconium (Westwood), Westwood, 1859: 51.
Hoploclonia draconia (Westwood), Stål, 1875: 93.
Tisamenus draconia (Westwood), Kirby, 1904: 399.
Hoploclonia draconia (Westwood), Redtenbacher, 1906: 45, pl. 1.9.
Hoploclonia draconia (Westwood), Rehn & Rehn, 1938: 468, pl. 34.28 & 34.30.

Redtenbacher includes Borneo in his list of localities for this species but this was due to misidentification of the specimen. All other records of this species refer to the Philippine Islands.

Hoploclonia abercrombiei sp. n.

FEMALE (fig. 7a)

Whole of body and legs mid to dark brown; tips of larger spines reddish brown; apical segment of antennae white. Centre of mid femora with pale patch; bases of all tibiae pale.

Whole of dorsal surface and head rugose, sparingly setose, and granulose; thoracic sternites smooth, abdominal sternites rugose. Femora, tibiae and tarsi all setose; hind femora only very sparsely setose.

Head rectangular, with two medium spines just behind eyes and numerous tubercules on top of head.

Pronotum with a transverse median depression. Anterior half of pronotum with a pair of multiple spiny processes each with a row of three spines which decrease in size posteriorly; anterior spine pointed, others blunt; middle spines of paratype almost as large as anterior spines. There are two small blunt spines just behind the transverse depression.

Mesonotum a trapezium; anterior with a raised triangular area running to about mid point of mesonotum. Anterior edge of triangular area with several small blunt spines or large tubercules, the two anterior corners are formed by a cluster of spines; each cluster consists of a forward pointing medium spine, a laterally pointing very large broad-based spine, and a variable number of small or medium spines on the sides and base of the large spine. Three quarters of distance from anterior margin is a large rounded mound with a pair of large dorsal spines. Large pleurite of mesothorax with four large laterally pointing spines on the lower margin and one very large laterally pointing spine just below the upper margin; these occur at almost regular intervals from anterior margin and end with the very large spine which is level with the pair of large spines on mesonotum.

Metanotum and median segment both short and both with a pair of tubercules near the hind margin. Metapleural sclerite with a very large central spine; lower margin with two to four small to medium, and one large spine.

Second and third abdominal segments with a pair of small spines just behind anterior margin and a pair of tubercules just in front of the posterior margin. Abdominal segments six to nine each with a pair of medium to large tubercules on posterior margin, close to mid line. Abdomen tapers from segments two to seven, eighth and ninth segments are of equal width. Tenth and eleventh abdominal tergites elongated and pointed, forming an ovipositor with the elongated operculum.

Anterior prothoracic sclerite with two circular raised sensory areas between base of legs; posterior sclerite with two blunt spines. Mesosternum with a row of three or four blunt spines on each side in front of mid legs. Metasternum with one or two blunt spines on each side. First abdominal sternite with a pair of tubercules; second abdominal sternite with one or two tubercules on each side. Operculum with a longitudinal carina; apex curving downwards.

Fore femora curved and compressed near base, upper carinae armed with a few blunt spines. All four carinae of middle and hind femora indistinct but armed with small spines. Apices of all tibiae with a small spine on the underside. Middle tibiae armed with two or three small spines on undersides; hind tibiae with three to five. First and fifth tarsomeres long, the intermediate three short. Antennae reaching to apices of tibiae or slightly beyond.

Measurements as given in Table 2.

Holotype ♀, SARAWAK: Niah National Park, outside Great Cave, (*I. Abercrombie*), 27-10-1994, PEB-2162. In Natural History Museum (BMNH), London.

Paratypes: ♀ (PEB-2161) data as holotype; ♂ (PEB-1641) locality as holotype, (*P.E. Bragg*), 17-08-1992; 2 ♂♂ (PEB-2159 in BMNH & PEB-2160 in OXUM) data as holotype.

Others: ♂, ♀ (live specimens) data as holotype.

TABLE 1. — MEASUREMENTS OF *HOPLOCLONIA CUSPIDATA*.

Measurements of the metanotum and median segments are taken along the mid line of the body. Measurements given for the female are those of the largest specimen (PEB-983) from Brunei. Redtenbacher gave only a few measurements of the holotype.

Lengths (mm)	Males	Females	Holotype
Total	32–33	47–50	52.5
Antennae	17	16.2	–
Head	3.5	4.1	–
Pronotum	3.5	4.1	4.3
Mesonotum	6.5	9.2	9
Metanotum	3	3.1	5.8
Median segment	2	2.8	
Abdominal segments 2–11	15	27.5	–
Fore femora	9.5	10.4	10.5
Fore tibiae	10	9.7	–
Fore tarsi	3.5	3.3	–
Mid femora	8.5	8.6	–
Mid tibiae	9	9.2	–
Mid tarsi	3.5	3.5	–
Hind femora	10.5	12.5	13
Hind tibiae	12	13.1	–
Hind tarsi	4	4.1	–

TABLE 2. — MEASUREMENTS OF *HOPLOCLONIA ABERCROMBIEI* SP. N. AND *H. APIENSIS* SP. N.

Measurements of male *H. abercrombiei* are for the largest specimen only.

Lengths (mm)	*H. abercrombiei*		*H. apiensis*
	♂	♀	♀
Total	39.6	54–56	48.5
Antennae	18.7	20–21	19
Head	2.8	5	5.5
Pronotum	4.0	4.5	4
Mesonotum	8.8	10–10.5	7
Metanotum	3.1	3–3.5	3
Median segment	2.8	3	3
Fore femora	10.7	11.5–12	12
Fore tibiae	10.2	12–12.5	12.5
Fore tarsi	3.8	4–4.5	5
Mid femora	8.3	10–10.5	11
Mid tibiae	9.8	10.5–11	11
Mid tarsi	3.5	3.5–4	4.5
Hind femora	11.7	14	14.5
Hind tibiae	14.2	14–16.5	15.5
Hind tarsi	3.8	4–4.5	5.5

MALE (figs 2, 3d)

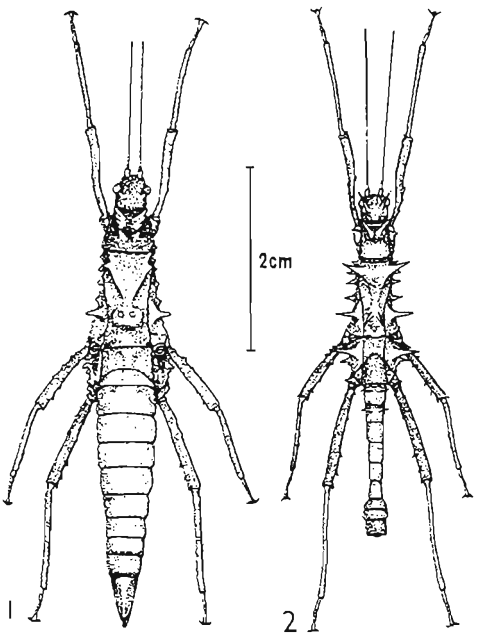
The coloration is based on a photographic transparency of a living male which was taken *in situ* at the time of capture.

Head, prothorax, anterior triangular area of mesonotum, pleural region, all sternites, and antennae, dark brown. Legs, mesonotum, metanotum, and abdominal terga, black. Major pleural sclerites of mesothorax and metathorax very dark brown, almost black. There are yellowish-orange markings present: as bands at base of all tibiae, and as stripes along lateral edges of mesonotum and metanotum. Body only very slightly rugose and not granulose. Fore femora and all tibiae setose.

Head quadrangular, two large spines behind eyes, four small spines along posterior margin of head, several minute spines or tubercules on the top of head.

Pronotum quadrangular, slightly longer than wide, two very large upward pointing spines just behind front margin (fig. 3d), a deep transverse indentation at mid point, four or five spine-like tubercules on lateral margins. Prosternum with two raised granulose sensory areas between base of legs.

Mesonotum a long trapezium with a narrow posterior margin. Front of mesonotum forming a raised triangle which ends at about mid point of mesonotum. Mesonotum with four small spines on anterior margin, inner pair little more than tubercules; two very large outward pointing spines just behind anterior margin, a large double spine one fifth of way from posterior margin. Large pleurite of the mesothorax with four large and one very large lateral pointing spines; these occur at regular intervals from anterior margin and end with a very large spine which is level with the double spine of mesonotum. Mesosternum with a pair of tubercules near fore margin, followed by two pairs of spine-like tubercules.



Figs 1–2. — 1, ♀, *Hoploclonia cuspidata*, PEB-983; 2, ♂, *H. abercrombiei* sp. n. PEB-1641.

Metanotum small, almost quadrangular, with three tubercules arranged transversely. Major pleurite of the metathorax with a very large spine near dorsal margin, and two medium and one small spine near ventral margin.

Median segment rounded anteriorly and straight posteriorly, without spines. Second and third abdominal segments each with a large pair of upright spines just behind fore margin. Abdomen tapers evenly to sixth segment, seventh segment slightly wider, eighth segment a trapezium much wider at posterior, ninth and tenth segments narrowing slightly. Operculum short and rounded. Cerci flattened, tapering to blunt points.

Antennae slightly shorter than fore legs. Carinae of all legs indistinct. fore femora curved, with basal third narrow and with three spines on the outer surface of narrow portion. Dorsal surface of mid femora with four spines near base and a tubercule near mid point. Dorsal surface of hind femora with four spines near base and two tubercules near mid point. The indistinct ventral carinae of mid and hind femora with tubercules and spines along their length, becoming larger towards apex, the two apical pairs are powerful spines.

Fore tibiae unarmed. Middle and hind tibiae with a pair of small spines on the underside, one at mid point of tibia, the other slightly towards apex. First and fifth tarsomeres long, the three intermediate are short.

Body length 38.0–39.6 mm; measurements of longest specimen as in Table 2.

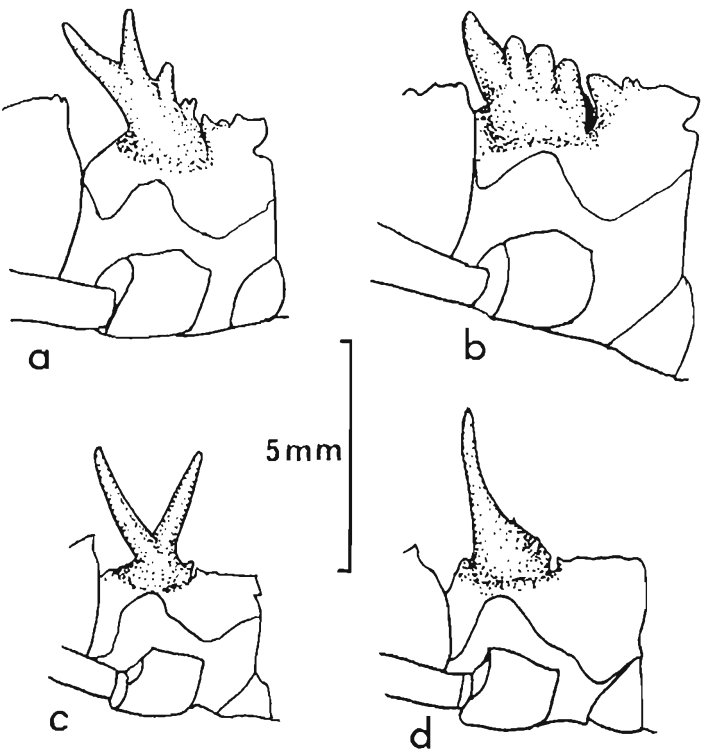


Fig. 3. — Lateral views of the prothorax of: a, *Hoploclonia gecko* ♀; b, *H. cuspidata* ♀; c, *H. gecko* ♂; d, *H. abercrombiei* sp. n. ♂.

EGG

Capsule a short cylinder, rounded at polar end, flattened at opercular end. Capsule, micropylar plate and operculum greyish brown and densely covered with numerous short hairs which are longer at opercular end. Micropylar plate indistinct; a "T" shape, with the arms extending from sides near to polar end and almost joining on ventral surface. Operculum round, almost flat, covered with short hairs and lacking a capitulum. The single egg examined has the following measurements: length 3.8 mm, height 3.0 mm, width 2.6 mm.

When the first male of this species was found in 1992 it was assumed that it was the male of *H. cuspidata* as a female of the latter species was found less than 200 m away. However the uncertainty caused by several museum specimens of male *H. cuspidata* prompted a return visit to this site in 1994. On this visit two mating pairs of the new species were collected, along with a male and a female. Mr Abercrombie has one live pair of this species and is attempting to breed them; these have only been superficially examined and are therefore not designated as type specimens. In addition a male of an undetermined species was also collected (*Hoploclonia* sp. 1, below) at this site.

Hoploclonia cuspidata Redtenbacher, 1906

Hoploclonia cuspidata Redtenbacher, 1906: 46. Holotype ♀, Nord-Borneo (Paris Museum).

Hoploclonia draconia, Redtenbacher, 1906: 45 (not Westwood 1848) [♂ specimen from Borneo only].

The coloration of the female of this species is almost identical to that of *H. gecko,* and it was initially assumed that the specimen collected in Brunei was *H. gecko*. Examination of the spines on the mesopleural plate and the pronotum is necessary to distinguish the species. The male is described here for the first time, the female is redescribed in greater detail than it was by Redtenbacher. Measurements are given in Table 1.

FEMALE (figs 1, 3b)

The author's preserved specimens of Brunei origin are mid brown, slightly darker on abdomen. Large and medium spines on body are reddish coloured, as are portions of all femora, particularly near bases. However, the specimen from Niah is significantly darker than those originating in Brunei; dorsal surface of abdomen is very dark brown, almost black, and there is little evidence of any red colouring on the insect. There is no sign of yellow on margins of mesonotum and metanotum mentioned by Redtenbacher; this is probably a variable characteristic.

Whole of body and head rugose, sparingly setose, and granulose except for ventral surface which is smooth. Femora, tibiae and tarsi all setose, fore legs densely setose.

Head rectangular, with two small spines just behind eyes and numerous tubercules on top of head.

Pronotum with a transverse depression across mid point. Front half of the pronotum is occupied by a pair of multiple spines which consist of a row of three or four blunt ended spines which decrease in size towards posterior (fig. 3b). These are not symmetrical; in each of the three specimens examined in detail one side has three spines while the other has four. There are two blunt spines just behind the transverse depression.

Mesonotum a trapezium with a raised triangular area at front running to about mid point of mesonotum. Anterior edge of the triangular area has several small blunt spines or large tubercules, the two anterior corners are formed by a large broad spine. Three quarters of way from anterior margin is a large rounded mound topped with a pair of tubercules. Large pleurite of mesothorax with four medium and one large lateral pointing spines, occurring at almost regular intervals from anterior margin and ending with large spine which is slightly behind rounded mound on mesonotum.

Metanotum and median segment both short and unarmed. Metapleural sclerite with two small and one medium spine on ventral margin.

Second abdominal segment with a pair of small spines just behind anterior margin. Abdominal segments six to nine have a pair of large tubercules on posterior margin, close to mid line. Abdomen tapers from segments two to six; seventh, eighth and ninth segments are of equal width. Tenth and eleventh abdominal tergites elongated and pointed, forming an ovipositor with the elongated operculum.

Fore femora curved and compressed near base, upper carinae armed with a few tubercules. All four carinae of middle and hind femora indistinct but armed with small spines. Fore tibiae armed with a few minute spines on underside. Middle and hind tibiae armed with small spines on under sides; five or six pairs on hind tibiae, three to four pairs on mid tibiae. First and fifth tarsomeres long, the intermediate three short. Antennae reaching to the apices of tibiae.

MALE (fig. 7c)

Similar to *H. abercrombiei* but differing in size, coloration and in the number of spines on the abdomen.

Colour mid to dark brown, spines of thorax red-brown, sides of mesonotum very dark brown. Lateral margins of mesonotum and metanotum yellow.

Large pronotal spines each with two tubercules or small spines near base on posterior face. Size of small spines variable (see fig.7c).

Mesopleura with four small spines on lower margin and one large spine level with double spine of mesonotum; the small spines are of equal size and not evenly spaced, there is a large gap between the third and fourth spines.

Abdominal segments two, three and four with a pair of spines just behind the fore margin.

Spines on the femora small but otherwise as in *H. abercrombiei*. All tibiae without spines, except for a minute apical spine on mid and hind tibiae.

Body length 32–33 mm; measurements of Redtenbacher's specimen are given in table 1.

EGG (fig. 4)

Capsule a short cylinder, rounded at polar end, flattened at opercular end. Capsule, micropylar plate and operculum greyish brown and densely covered with numerous short hairs which are longer at opercular end. Micropylar plate indistinct, elongated oval with two arms extending from sides near to polar end. Position of micropyle shown by a black micropylar cup at polar end of the plate. Operculum round, almost flat, covered with short hairs and lacking a capitulum.

A typical egg length is 3.5–3.7 mm, height 2.8–2.9 mm and width 2.5 mm. Opercular angle is difficult to measure due to egg being so short relative to curve of dorsal surface; however, it is in the region of −12° if a line passing through centre of operculum and centre of polar end is taken as being parallel to micropylar plate.

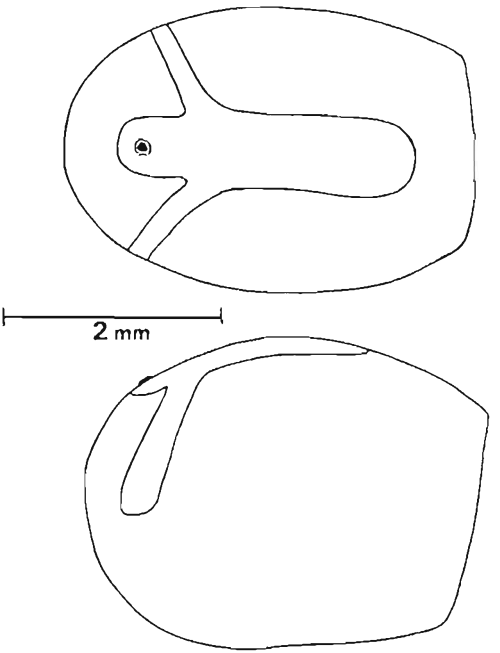


Fig. 4. — Egg of *Hoploclonia cuspidata*, (dorsal & lateral views).

NYMPHS

The first instar nymphs are 12 mm in length, and black with reddish brown legs. A third instar female nymph has a length of 27 mm, legs are clearly reddish and the body does not show any obvious spines.

MATERIAL EXAMINED

♀ Brunei, Temburong district, Kuala Belalong, 100 m (*P.E. Bragg & I. Abercrombie*), 06-08-1991 (PEB-983). ♀ captive bred from PEB-983 by I. Abercrombie (PEB-1904). ♀, Sarawak, Niah National Park (*P.E. Bragg*) 17-08-1992 (PEB-1906). 1 ♀ (C.L. Chan), Sabah, Mayog, 24-04-1989; 1 ♀ (C.L. Chan) Brunei, Seria, Sungai Liang, Arboretum, (*K. Kosugi*), June 1986. 2 ♀♀ nymphs (C.L. Chan), Sabah, Long Pa Sia, coll. J. Huisman; 1 ♂ (NHMW), Sabah, Mt Kinabalu, (*Staudinger*); 1 ♂ (SMSM), Sarawak, Niah Caves, Gan Kira, on the ground, (*HK.S*). 19-05-1959; 1 ♂ (OXUM), Brunei, Captain Waterstradt van der Poll coll. Bought Janson 1909; 1 ♂, 1 ♂ nymph (C.L. Chan), Sabah, Crocker Range, above Kallang, Tenom. (*A. Lamb*), 12-08-1984. 2 ♀♀ (BMBK). Brunei, Bandar Seri Begawan, January 1968.

Although the type specimen of this species has not been examined, Redtenbacher's description and key leaves no doubt about the identity of the female. The type locality of "Nord-Borneo" is assumed to refer to what is now the Malaysian state of Sabah.

The sole record of *H. draconia* (Westwood, 1848) from Borneo is that of Redtenbacher (1906: 45). Having examined Redtenbacher's specimen (a male in NHMW), and the type specimens of *H. draconia* it is clear that the specimen was wrongly identified.

It is with some hesitation that I describe these male specimens as *H. cuspidata*. Mating has not been observed and the range of this species is known to overlap that of *H. abercrombiei*. There is a possibility that this is another new species or the male of *H. apiensis*.

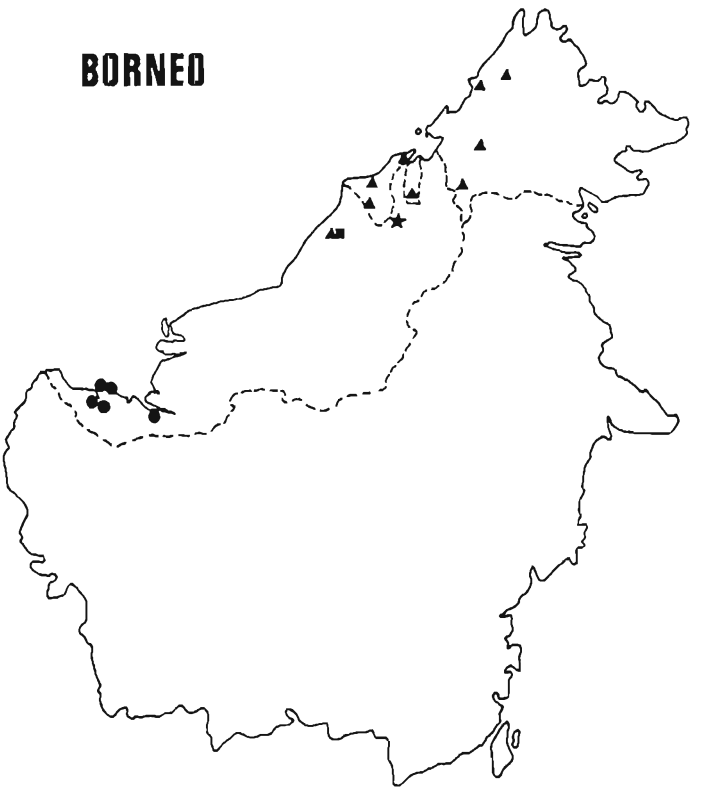


Fig. 5. — Distribution map. Circles indicate sites of *Hoploclonia gecko*, triangles indicate sites of *H. cuspidata*, star indicates *H. apiensis*, square indicates *H. abercrombiei*.

Hoploclonia apiensis sp. n.

The male is unknown. The female may be distinguished from *H. cuspidata* by the presence of large metapleural spines and double spine on the pronotum; from *H. gecko* by the spines on the second ab-

dominal segment; from *H. abercrombiei* by the absence of spines on the third abdominal segment; and from all three by the double spine on the metanotum.

FEMALE (fig. 6, 7d)

Specimen almost uniformly mid brown, lateral margins of mesonotum and metanotum pale brown. Measurements as given in Table 2.

Dorsal surface of body and head rugose, sparingly setose, and sparingly tuberculate; ventral surface smooth, sternites of thorax setose. Femora, tibiae and tarsi all setose, fore legs densely setose.

Head rectangular, with two pairs of small spines just behind the eyes and numerous tubercules on top and back of head.

Pronotum with a median transverse depression. Anterior half of pronotum with a pair of spines which fork into two equal sized branches (fig. 7d). Lateral margins of pronotum with two small blunt posterior spines.

Mesonotum a trapezium, with a raised triangular anterior area running to about mid point of mesonotum. Anterior margin of mesonotum forms anterior edge of triangular area and has a large spine at each corner and two small spines near middle. Triangular area with a second, larger, pair of spines just behind front pair. Posterior apex of triangular area with a pair of spines arising from a single swollen base. Mesopleura

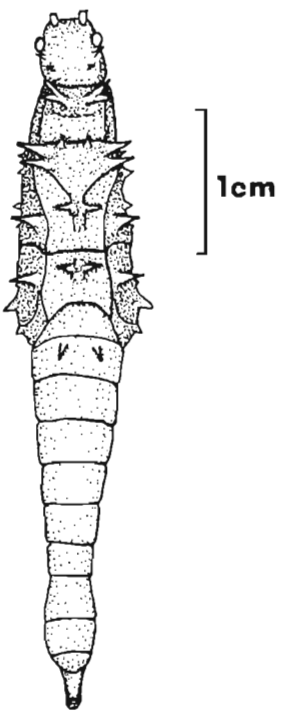


Fig. 6. — *Hoploclonia apiensis* sp. n., ♀ holotype (legs omitted).

bearing five spines: one large spine near dorsal margin; and three medium and one small spine which occur at almost regular intervals from the anterior margin, the small spine is the most posterior and is below the large spine. Anterior of mesosternum with two pairs of tubercules.

Metanotum short; with a pair of spines on a swollen base at about mid point. Median segment short and unarmed. Metapleural sclerite with two small and one medium spine on ventral margin and one large laterally pointing spine near dorsal margin.

Second abdominal segment with a pair of medium sized spines just behind anterior margin. Abdominal segments six to nine with a pair of large tubercules on the posterior margin, close to mid line. Abdomen tapers from segments two to six (seventh, eighth and ninth segments distorted during preservation). Tenth and eleventh abdominal tergites elongated and pointed, forming an ovipositor with the elongated operculum.

Fore femora curved and compressed near base, upper carinae armed with a few spine-like tubercules. All four carinae of middle and hind femora indistinct but armed with small spines. Undersides of fore tibiae armed with a few minute spines. Middle and hind tibiae armed with small spines on undersides. First and fifth tarsomeres long, intermediate three short. Antennae reaching apices of tibiae.

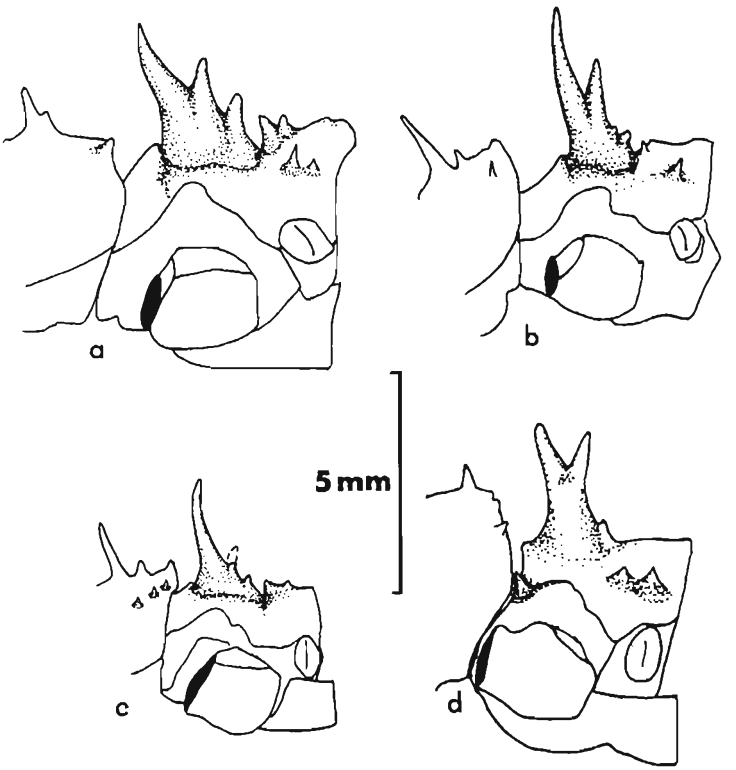


Fig. 7. — Lateral views of prothorax of *Hoploclonia*: a, *H. abercrombiei* sp. n. ♀; b, *H.* sp. ♂ (PEB-2158); c, *H. cuspidata* ♂ OXUM specimen, with larger second pronotal spine of NHMW specimen shown with dashes; d, *H. apiensis* sp. n. ♀.

Holotype ♀ SARAWAK: Gunung Mulu National Park, RGS Expedition 1977-8 (*J.D. Holloway et al.*), Gunung Api summit, 1710 m, crawling beneath the characteristic dense low vegetation, 26-04-1978. In Natural History Museum (BMNH, BM1978-206), London.

Hoploclonia sp. 1. (fig. 7b)

♂ Sarawak, Niah N.P., outside Great Cave. (*P.E. Bragg*), 27-10-1994 (PEB-2158).

This specimen has body proportions and spination similar to *H. abercrombiei*. However the spines on the pronotum are branched like those of *H. gecko* and there is a spine on the left side of 4th abdominal segment, as if it were *H. cuspidata* with a spine missing. It is possible that this is a variation of *H. abercrombiei*; however it may be a hybrid.

Hoploclonia sp. 2

♂ nymph, Batu Lawi expedition. 25-05-1911 (SMSM).

This immature specimen has a pair of spines on the second abdominal segment, but not on any other abdominal segments. It is possible that the specimen may be a male of *H. apiensis* but only a cursory examination of this specimen has been possible.

DISTRIBUTION OF THE GENUS IN BORNEO

The single record of *H. draconia* (Redtenbacher, 1908) was made in error, this species does not occur in Borneo. *H. cuspidata* is found in the north east of the island, in eastern Sarawak, Brunei and Sabah.

Distribution of *H. gecko* is patchy, but it can be common, as was the case along one trail in Bako National Park, with nine specimens being found in two nights (Bragg 1992: 298); elsewhere only one or two individuals have been encountered. The numerous specimens of *H. gecko*, and rarity of *H. cuspidata* in museums may be due to their distribution rather than a great difference in abundance. In the case of *H. gecko*, of those for which a precise locality is given, all but one are from within 25 Km of Kuching. The Sarawak Museum, Borneo's only long established natural history museum, is in Kuching, the capital of Sarawak. Until very recently travel within the country was a major undertaking and, as most of the collection is about 100 years old, it is thus inevitable that most of it was collected in the vicinity of Kuching. The closest record of *H. cuspidata* is from the opposite end of Sarawak, an area with a smaller human population and, until recently, no easy access for collectors.

REARING IN CAPTIVITY

Rearing of *H. gecko* has been described elsewhere (Bragg 1991). Ian Abercrombie successfully reared two female specimens of *H. cuspidata* from eggs laid by the specimen collected in Brunei and has also

found that this species can reproduce by facultative parthenogenesis (personal communication, 1993). Neither of these species is easy to rear: the number of eggs laid and the hatch rate both appear to be low compared to *Aretaon asperrimus* which is the other Bornean member of the Obrimini which has been reared in captivity. Mr Abercrombie is currently attempting to rear *Hoploclonia abercrombiei*. All three species which have been kept in captivity have been found to feed on bramble; the author has also found that *H. gecko* will feed on eucalyptus, hawthorn, ivy, raspberry, rose, oak and pyracantha.

SUMMARY

Only six members of the tribe Obrimini are recorded from Borneo. This paper serves to distinguish the Bornean members of the genus *Hoploclonia* by means of a key and illustrations. The females of *H. gecko* and *H. cuspidata* are very similar and likely to be confused under field conditions unless carefully examined. In contrast, the males are relatively easy to distinguish. These two species are clearly closely related as Rehn & Rehn stated (1938: 446). Knowledge of the distribution of the genus in Borneo is very limited but suggests that *H. gecko* only occurs in the west while *H. cuspidata* is found only in the east. The two new species are each known from only one locality.

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