A new cave-dwelling cockroach from Western Australia
(Blattaria: Nocticolidae)

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Abstract
A new cavernicolous cockroach, *Nocticola flabella* sp. nov. is described.

Introduction
Three species of *Nocticola*, namely *babindaensis* Roth, *australiensis* Roth, and one unnamed are found in Queensland, Australia (Roth 1988). In this paper I describe a new cavernicolous species of *Nocticola* from Western Australia. Most of the specimens were collected by Dr. W.F. Humphreys of the Western Australian Museum, Perth (WAMP) and sent to me by Dr. D.C.F. Rentz of CSIRO. I received one specimen from Dr. M.R. Gray of the Australian Museum, Sydney (AMSA).

In addition to describing the new taxon and providing a key to the Australian males of the genus, I am transferring *Paraloboptera rohini* Fernando to *Nocticola*.

Systematics

*Nocticola flabella*, sp. nov.
(Figures 1-8)

**Holotype:** ♂, Cape Range, Western Australia, Cave C118, 16.viii. 1988, Humphreys et. al., Western Australian Museum, Reg. No. 88.2682.


All specimens were originally preserved in alcohol and, except for the AMSA ♂, were cleared and mounted on slides in Permount. Figures 1-7 were drawn from slide mounted specimens.

The following information regarding the caves in which *N. flabella* was collected was kindly supplied by Dr. W.F. Humphreys:

C103 (Trionomo: 22°07'27"S 114°59'21"E). About 60 m deep with two vertical descents leading to some horizontal development where temperature was 23°C, 95% R H, and 38% soil water. Little litter in the caves and all contain many species of isopods and troglobitic millipedes.

C118 (not named: 22°09'21"S 113°59'27"E). A dry steam bed containing water-smoothed pebbles runs between mud-banks on cave floor before bifurcating to a lateral
exit and two sump holes. Temperatures ranged from 17°C to 25.2°C with relative
humidities varying from 63% to 100%. In addition to *N. flabella*, this cave contains large
populations of earthworms, oniscoid isopods and white millipedes. At least 12
invertebrate species are present and small mammals have also been seen.

C167 (Spiral: 22°09'09"S 113°59'39"E). Narrow pothole ends in a horizontal lead
(walking height) which bifurcates. About 40 m deep and 30 m horizontal extent; at
bottom 27°C, 100% RH, 0.5% CO₂. Troglobites are only found in the range at 12% soil
water in mudbanks.

C169 (not named: 22°06'2"S 114°00'27"E). Narrow pothole perhaps 35 m deep
opening into two chambers connected by a tiny hole into the chamber where *N. flabella*
was found. Chamber was 28°C, 98% RH, soil moisture 26.8%, with almost no organic
debris.

**Diagnosis** (see also key below)

Anteroventral margin of front femur with a row of minute spines, terminal spines absent,
pulvilli and arolia absent, tarsal claws symmetrical, minute. Abdominal terga
unspecialized. Female: Eyes absent. Apterous.

**Description**

Male. Head exposed, eyes absent (Figure 1). Pronotum elongate, relatively narrow
(Figure 1). Tegmina greatly reduced, fan-shaped, coriaceous, veins absent, surface with
some minute spicules; hind wings absent (Figure 1). Legs very long, femurs uniformly
slender; anteroventral margin of front femur with a row of minute spinules, terminal
spines absent (Type C); pulvilli and arolia absent, tarsal claws minute, symmetrical
(Figure 7). Abdominal terga unspecialised. Supraanal plate broad, sides weakly angled,
corners broadly rounded, medial region of hind margin indented; right and left
paraprocts similar, lightly sclerotized plates (Figure 3). Subgenital plate asymmetrical
with hind margin concavely excavated, styles absent (Figures 4, 5; in Figure 4 the hind
margin of the plate is weakly concave and flattened; in Figure 5 the mounting medium
was thicker with less distortion of the plate). Genitalia as in Figure 4: genital hook on left
side, other phallomeres complex. Colorless except for pale amber around the
mouthparts, and darker amber tegmina (Figure 8).

Female. Apterous. Eyeless (Figure 2). Supraanal plate convexly rounded (Figure 6).
Subgenital plate valvular.

Measurements (mm) (⌀ in parentheses). Length, 4.6-5.5 (4.1-5.7); pronotum length x
width, 1.3 x 0.8 (0.9-1.2 x 1.0-1.4); tegmen length, 0.7-0.8.

**Etymology**

The specific name refers to the fan-shaped male tegmina.

**Comments**

Although males of *Nocticola* may have reduced tegmina, the fan-shape in *flabella* is
unique for the known members of the genus. The absence of a male tergal gland places
*flabella* in the *simoni*-species-group (Roth 1988).
Figures 1-7. *Nocticola flabella*, new species. 1, 5, ♂ holotype. 3, 4, ♂ paratype. 2, 6, 7, ♀ paratype. 1. Head (lateral view), thorax and tegmina (dorsal view); 2. Head (frontal view); 3. Supraanal plate and paraprocts (ventral view); 4. Subgenital plate and genitalia (dorsal view); 5. Distal part of subgenital plate (ventral view); 6. Supraanal plate (dorsal view); 7. Front leg (coxa not shown) (anterior view.)
A new cave-dwelling cockroach

Figure 8. Two views of a living male *Nocticola flabella*, new species, the bottom figure shows the individual cleaning its leg. (Courtesy of Western Australian Museum, through Dr. W.F. Humphreys).
Key to males of known Australian *Nocticola* species

1. Abdominal terga unspecialised .................................................. 2
   Fourth abdominal tergum specialised ...................................... 3

2. Tegmina greatly reduced in length, fan-shaped, hind wings
   absent. Eyes absent (cavernicolous) ................................... *flabella*
   Tegmina and wings fully developed, Eyes normal. (epigean) ...... *babindaensis*

3. Specialisation on T4 non-setose, inverted V-shaped on
   postero-medial hind margin (cavernicolous) ...................... *australiensis*
   Specialisation on T4 a large transverse depression filled with
   dark, recumbent setae (epigean): ...................................... unnamed

*Nocticola rohini* (Fernando), new combination

*Paraloboptera rohini* Fernando, 1957, p.7, pl.1-6, figures 1-18; 1962, p. 90, figures 14, 15; Princis, 1969. 1014 (sp. incertae sedis).

Although I was unsuccessful in obtaining Fernando’s types, his excellent description and illustrations leave no doubt that *Paraloboptera rohini* is a *Nocticola*.

The male’s tegmina are small lateral lobes, and hind wings are absent. Eyes are represented by a few ommatidia. There is only one style. An inverted-V-shaped gland with a small setal tuft is on the fourth abdominal tergum placing the species in the *uenoi*-species-group (Roth 1988). The female is apterous, and segments two and three of its cercus have three strong ventral spines or hooks. These have been noted on two proximal cercal segments of females of *Nocticola australiensis*, and *N. termitophila* Silvestri. Fernando described the ootheca which was still attached in the vertical position to the female; there are only four eggs and the keel and respiratory tubules are more like those found in the Blattellidae than the Polyphagidae.

*Nocticola rohini* was first taken in the jungle of Uramiy (Uva Province) in Sri Lanka, and is widely distributed on the island where it lives under stones and fallen tree trunks (Fernando 1962). This is the first record of *Nocticola* in Sri Lanka. Another nocticolid, *Cardacus willeyi* (Shelford) is also found on that island (Roth 1988: Table I).

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References


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