

## A new species of *Nala* (Dermaptera: Labiduridae) from Cambodia

Petr KOČÁREK

Department of Biology and Ecology, University of Ostrava, CZ-710 00 Ostrava, Czech Republic;  
e-mail: petr.kocarek@osu.cz

**Abstract.** *Nala alenae* sp. nov. from Cambodia is described and the diagnostic morphological characters are illustrated. The species is characterized by very short tegmina, only as long as the pronotum, and by entirely absent hind wings. A determination key to males of *Nala* species occurring in South-East Asia is provided.

**Key words.** Dermaptera, Labiduridae, Nalinae, taxonomy, description, new species, Cambodia, Oriental region

### Introduction

Representatives of the family Labiduridae are medium-sized to very large earwigs (7.0-70.0 mm total length) with a stout and usually not depressed body. They have characteristic, distally slightly elongated second tarsal segments with the third segment articulated on their ventral surface; hence the tarsal segments are not scapiform. Male genitalia have two functional lobes; the parameres have a large or small epimerite (sometimes absent); the virga are stout, tubular, at base sometimes with a vesicle or only a dilatation, and with a sinuous tube throughout their entire length or only at base.

The family has a nearly worldwide distribution and is subdivided into three subfamilies with seven genera and approximately 54 species (WALLER et al. 1996; ANISYUTKIN 1997; SRIVASTAVA 1993, 2003; STEINMANN 1989b; VIGNA TAGLIANTI 1994; BIVAR DE SOUSA 1999).

The subfamily Nalinae can be distinguished by the presence of a characteristic longitudinal ridge along the lateral margins of the tegmina. Legs are short; the hind femora are not longer than the pronotum (BRINDLE 1966, STEINMANN 1989b). This subfamily includes only one genus *Nala* Zacher, 1910, with 12 species (STEINMANN 1989a, b; VIGNA TAGLIANTI 1994; BIVAR DE SOUSA 1999) distributed throughout the Ethiopian, Oriental, Australian and South Palaeartic faunal regions (STEINMANN 1989a). Representatives of this genus are small (up to 16 mm in size), usually fairly uniformly dark in colour, and have a flat, parallel-sided body. Both branches of the male forceps are arcuate, with or without basal inner teeth; the forceps of females are simple with crenulated inner margins. So far, six species have been known from South-East Asia (STEINMANN 1989a, SRIVASTAVA 2003). This paper describes a seventh species recently found in Cambodia.

## Material and methods

All morphological measurements were made with an ocular grid mounted on MBS-10 stereomicroscope at 16x (body length) and 32× magnification (remaining measurements).

The specimens are preserved in the following collections:

- ZSMG Zoologische Staatssammlung München, Germany;  
MMBC Moravian Museum, Brno, Czech Republic;  
PKOC Petr Kočárek collection, Ostrava, Czech Republic.

Each type specimen is mounted on a separate card; dissected body parts (genital armature, subgenital plate) were mounted with a methylcellulose glue on the same card as the specimen. Exact label data are cited for all type specimens; a slash (/) divides the data on different lines.

## Taxonomy

### *Nala alenae* sp. nov.

(Figs. 1-5)

**Type locality.** Cambodia, Siem Reap, Angkor Wat temple.

**Type material.** HOLOTYPE: ♂, 'NW CAMBODIA, Siem Reap env. / Angkor Wat temple; 40 m a.s.l. /13°24'42.23"N, 103°51'49.84"E / P. Kočárek leg.; 7.-11.ix.2002' (MMBC); Paratypes: 5 ♀♀, same label data as holotype (one specimen MMBC, one specimen ZSMG, three specimens PKOC).

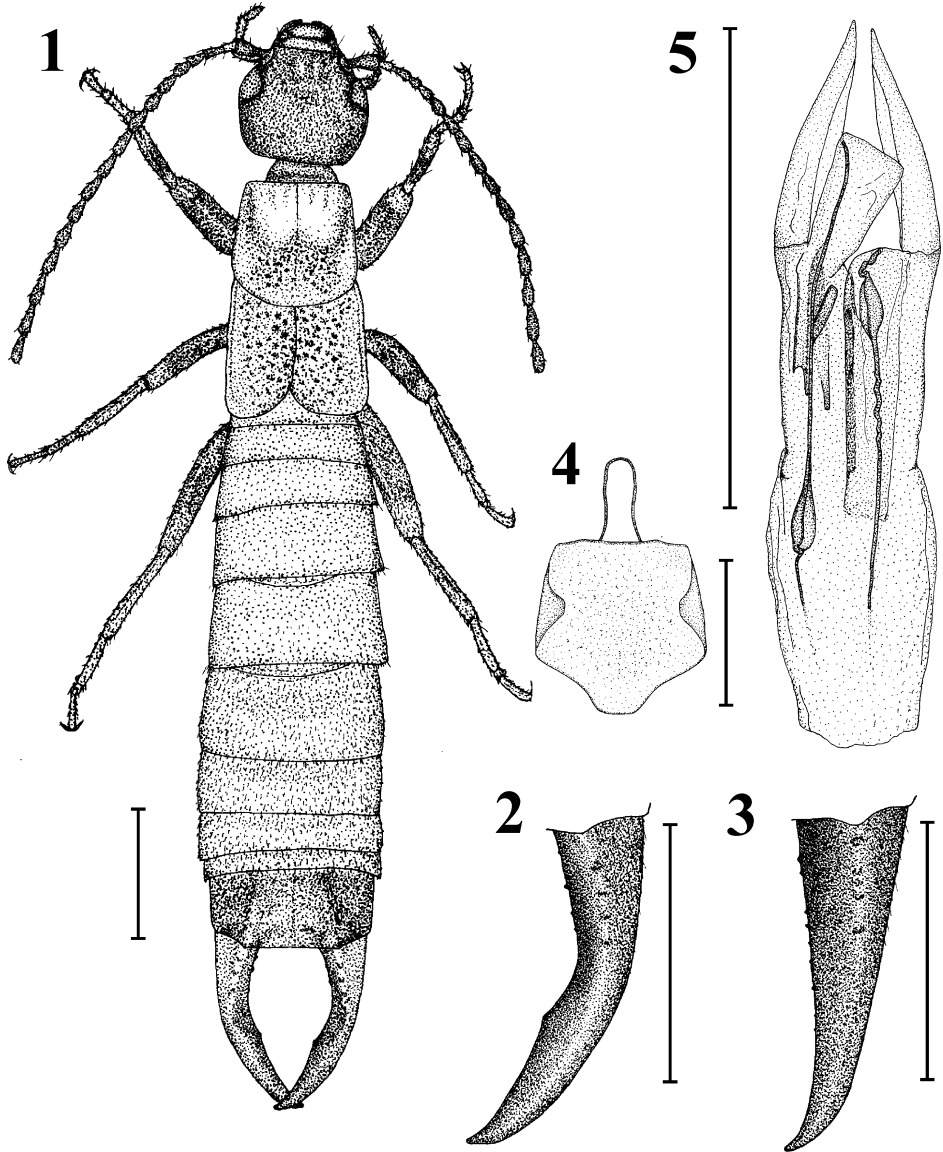
**Description of male.** Body dark reddish brown; head entirely black, antennae dark brown; pronotum and elytra reddish brown to brown with paler sides; legs yellowish brown, femora and tibiae with dark brown basal parts; ultimate abdominal tergite dark brown; forceps dark brown to reddish brown at apex. Cuticle punctured, dull, pubescent; tegmina rugose. Length without forceps 7.3 mm, length of forceps 1.3 mm.

Head globose, as wide as long, postfrontal and coronal sutures indistinct, posterior margin straight, with short and dense pubescence. Eyes small, less than 0.5 times as long as length of head behind eyes. Antennae of holotype male with 17 antennomeres (incomplete); antennomere 1 short, narrowed basally, widened terminally, half as long as the distance between antennal bases; antennomere 2 transverse, only little longer than wide; antennomere 3 longer than antennomere 4. Antennomeres 1-3 cylindrical, antennomeres 4-17 conical.

Pronotum transverse, widened posteriorly. Anterior margin straight, posterior margin broadly rounded. Pronotal disc rugose, with smoother anterior half, median suture distinct. Tegmina as long as pronotum, rugose, parallel-sided; each with well marked lateral longitudinal ridge, tegminal disc flattened; posterior margin convex, with broadly rounded interior angle. Wings entirely concealed under tegmina, reduced to very small, longitudinally oriented flaps (0.25 mm long, 0.05 mm wide).

Abdomen convex, somewhat widened posteriorly, densely punctured, shortly pubescent with long setae along hind margin of each tergite except the ultimate one, lateral glandular folds invisible. Penultimate sternite punctulate, sides scarcely concave, hind margin obtusely produced in middle (Fig. 4). Ultimate tergite transverse, slightly depressed medially, with invisible median line, little oblique laterally, hind margin straight with protuberance at each base of forceps branch.

Pygidium invisible in dorsal view. Forceps (Figs. 1, 2) with branches remote, gradually incurved, each tapering to pointed and gently hooked apex, triangular in basal half and dorso-ventrally flattened in distal half. Inner and upper margins of forceps serrated in proximal third, middle of forceps with distinct tapering, distal third widened into flat protuberance.



Figs 1-5. *Nala alenae* sp. nov. 1 – habitus of male, dorsal view; 2 – right branch of male forceps, dorsal view; 3 – right branch of female forceps, dorsal view; 4 – subgenital plate of male, dorsal view; 5 – male genitalia, dorsal view. Scale bar = 1 mm.

Genitalia (Fig. 5) typical for the genus *Nala*, with parameres a little over six times longer than broad, narrowed apically, tip acuminate; genital lobes widening to the apex, with straight apical part; virga tubular with undulated central part and sclerotized basal vesicles.

**Description of female.** Body length without forceps 6.8-7.9 mm, length of forceps 1.4-1.5 mm. Body colouration similar to holotype male, abdomen wider in middle part. Ultimate tergite with tapering sides, hind margin sinuate in middle. Forceps straight, simple, tapering, inner margin serrated, triangular in basal third, the rest dorsoventrally flattened (Fig. 3).

**Differential diagnosis.** *Nala alenae* sp. nov. and *N. lividipes* (Dufour, 1829) are the two smallest species of this genus known from South-East Asia, with total body length including forceps ranging between 7.5-8.5 mm. *Nala alenae* sp. nov. can be distinguished from *N. lividipes* by the very short tegmina, which are only as long as the pronotum, and the wings entirely concealed under the tegmina. *Nala timorensis* Brindle, 1967, and *N. basalis* Bey-Bienko, 1970, also have concealed wings; however, winged specimens were described for the latter species (SRIVASTAVA 2003). The forceps of *N. alenae* sp. nov. are unusually short in males, being only as long as the width of the ultimate tergite. *Nala alenae* sp. nov. is further characterized by the entirely black head. Although the females of *Nala* are morphologically very similar and cannot be reliably identified, the females of *N. alenae* sp. nov. are fairly easily recognized by their exceptionally short tegmina and the absence of wings (see above). The males of South-East Asia *Nala* can be separated by the key provided below.

**Etymology.** The new species is dedicated to my wife Alena, who helped me collect the type specimens.

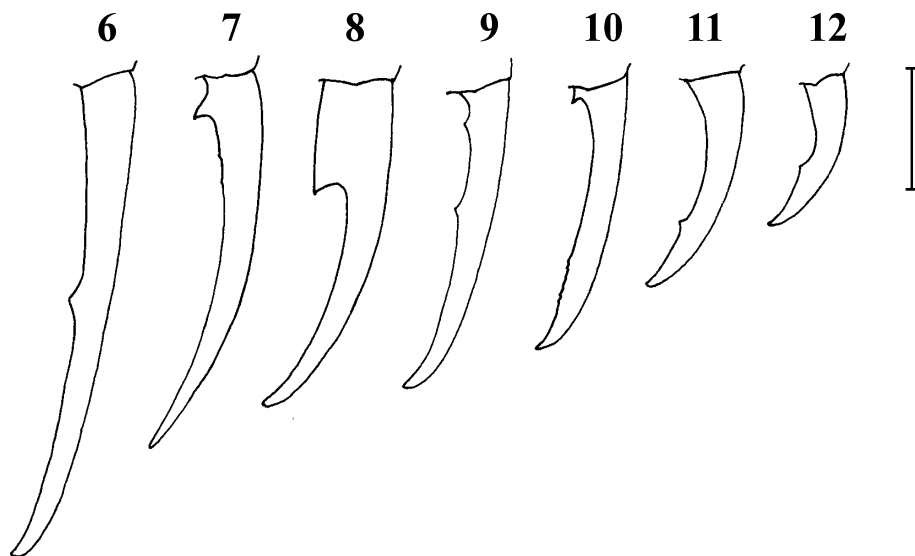
**Bionomics.** Unknown. Type specimens have been collected in the surroundings of Angkor Wat temples in a stony habitat surrounded by lowland rain forest. The earwigs were observed to run on stony ground in late afternoon.

**Distribution.** Cambodia.

**Comments.** *Nala alanae* sp. nov. is a very characteristic species, differing from all other Asian species in the shape of the reduced tegmina with well marked longitudinal ridges (see Fig. 1). Other *Nala* species with similar tegmina, reduced wings and short stout forceps are known only from Central and South Africa (*N. caprai* Menozzi, 1929, *N. figinii* Burr, 1908, *N. intermedia* Menozzi, 1937, *N. saegeri* Brindle, 1968, *N. rossii* Vigna Taglianti, 1994, and *N. mendesi* Bivar de Sousa, 1999). *Nala alenae* sp. nov. is the only known Asian representative with a noticeable morphological similarity to this African group of species, which may indicate some affinity to this group. From the known African species, *N. alenae* sp. nov. differs in the characteristic shape of male forceps.

### Key to males of South-Eastern Asian species of *Nala*

- 1 Forceps in basal third to basal half conspicuously dilated internally (Fig. 8). Distribution: Pakistan, India, Nepal, Bhutan, Malaysia. .... *N. nepalensis* (Burr, 1907)
- Forceps long and slender, not dilated in basal half ..... **2**
- 2 Each branch of forceps with large, distally oriented hooked tooth near inner base (Fig. 7). Distribution: Timor. .... *N. timorensis* Brindle, 1967



Figs 6-13. Right branches of forceps in South-East Asian species of *Nala* Zacher, 1910. 6 – *N. tenuicornis* (Bormans, 1900); 7 – *N. timorensis* Brindle, 1967; 8 – *N. nepalensis* (Burr, 1907); 9 – *N. ornata* Borelli, 1932; 10 – *N. basalis* Bey-Bienko, 1970; 11- *N. lividipes* (Dufour, 1829); 12 – *N. alenae* sp. nov. Scale bar = 1 mm. Adopted from BRINDLE (1966), BEY-BIENKO (1970), STEINMANN (1989b) and SRIVASTAVA (2003).

- Forceps without prominent hooked teeth (Figs. 6, 9-12) ..... **3**
- 3 Tegmina long, 1.5-2 times as long as pronotum. Wings visible or concealed ..... **4**
- Tegmina short, approximately as long as pronotum. Wings entirely concealed. Distribution: Cambodia. .... *N. alenae* sp. nov.
- 4 Dark brown species, head black or blackish brown. .... **5**
- Yellowish-brown to pale reddish-brown species (including head). .... **6**
- 5 Slender species, forceps twice as long as width of ultimate tergite (Fig. 6). Distribution: Indonesia. .... *N. tenuicornis* (Bormans, 1900)
- Stout species, forceps 1.1 to 1.4 times as long as width of ultimate tergite (Fig. 11). Distribution: Europe, Africa, Asia. .... *N. lividipes* (Dufour, 1829)
- 6 Forceps with two pairs of small teeth on inner margin (Fig. 9). ... *N. ornata* Borelli, 1932
- Each branch of forceps with cylindrical tooth (not hooked) on inner margin close to base (Fig. 10), entire inner margin sparsely serrated. Distribution: Afghanistan, Pakistan, Thailand. .... *N. basalis* Bey-Bienko, 1970

### Acknowledgements

I am obliged to Ernst-Gerhard Burmeister (München, Germany) for the loan of the holotype of *Nala basalis* from the collection of Zoologische Staatssammlung München.

## References

- ANISYUTKIN L. N. 1997: New and poorly known Dermaptera from south-east Asia. *Zoosystematica Rossica* **6**: 37-44.
- BEY-BIENKO G. J. 1970: Novye i interesnye kozhistokrylye (Dermaptera) iz tropicheskoy i subtropicheskoy Azii. [New and interesting earwigs (Dermaptera) from tropical and subtropical Asia]. *Zoologicheskyy Zhurnal* **69**: 1710-1820 (in Russian).
- BIVAR DE SOUSA A. 1999: Descrição de uma nova espécie de dermáptero de Guiné Bissau. *Nala mendesi* sp. nov. (Insecta, Dermaptera). (Description of a new species of Dermaptera from Guinea-Bissau. *Nala mendesi* n. sp. (Insecta, Dermaptera)). *Boletim da Sociedade Portuguesa de Entomologia* **194**: 141-146 (in Portuguese, English summary).
- BRINDLE A. 1966: A revision of the subfamily Labidurinae (Dermaptera, Labiduridae). *Annals and Magazine of Natural History* **13**: 239-269.
- SRIVASTAVA G. K. 1993: Notes on Dermaptera (Insecta) of Namdapha (Arunachal Pradesh, India) a proposed biosphere reserve. *Records of the Zoological Survey of India* **91**: 61-87.
- SRIVASTAVA G. K. 2003: *Dermaptera. Part II. Superfamily: Anisolaboidea. Fauna of India and adjacent countries.* Zoological Survey of India, Kolkata, 235 pp.
- STEINMANN H. 1989a: World catalogue of Dermaptera. *Series Entomologica* (Dordrecht) **43**: 1-934.
- STEINMANN H. 1989b: *Dermaptera Catadermaptera 2. Tierreich 105.* Walter de Gruyter, Berlin – New York, 504 pp.
- VIGNA TAGLIANTI A. 1994: Further notes on Dermaptera from Sierra Leone. *Quaderni dell'Accademia Nazionale dei Lincei* **267**: 199-212.
- WALLER A., JAMET C. & ALBOUY V. 1996: Description d'une espèce nouvelle de Dermaptère des plages de la Mauritanie, *Forcipula caussaneli* (Labiduridae). *Annales de la Société Entomologique de France* **32**: 461-465.