

A NEW GENUS AND SPECIES OF ACRIDIDAE FROM SOUTH INDIA (ORTHOPTERA, ACRIDOIDEA)

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Nathanacris quadrimaculata gen. et sp. n. is described from Anaimalai Hills in South India. The systematic position of this acridid genus is not yet clear. For the time being we propose to arrange the genus under the unclassified group of Catantopinae sensu lato.

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Major contributions to the Acrididae fauna of South India were provided by Bolívar (1902), Hebard (1929), Uvarov (1929), Henry (1940), Muralirangan et al. (1992) and Shrinivasan & Muralirangan (1992). Nevertheless our knowledge of the grasshopper fauna of south India is still insufficient, particularly of species living in natural habitats and commonly distributed over small areas. Among material before us, we found a series of an acridid species that could not be identified to any known species or genus. Consequently we propose to describe the series as a new monotypic genus.

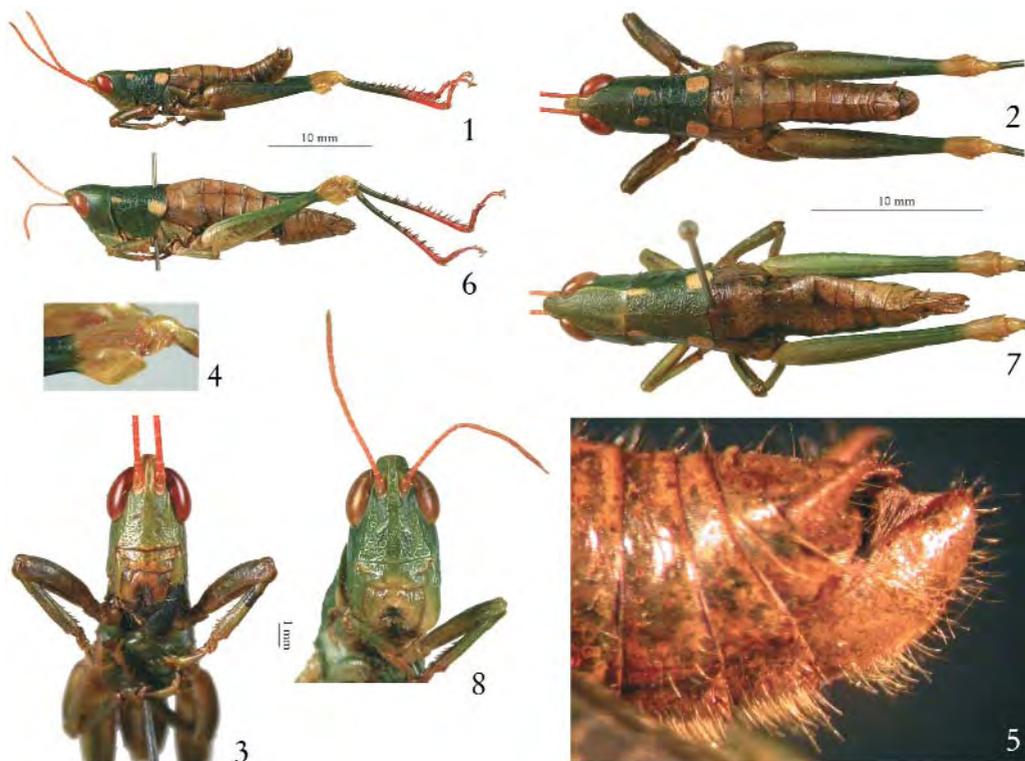
Nathanacris gen. n.

Type species: *Nathanacris quadrimaculata* sp. n.

Description

Medium size. Integument of head, thorax and proximal abdominal tergites rugose, impresso-punctate. Antennae filiform, longer than combined length of head and thorax, basal segments of flagellum faintly compressed but not widened. Head conical, face strongly reclinate (figs. 1, 6, 21). Interocular distance in male equal to combined length of scape and pedicel, in female longer, including the length of first segment of flagellum (figs. 2, 7). Fastigium verticis projecting horizontally, margins weakly carinate, slightly wider than interocular distance, in male a little longer

than wide, in female a little shorter than wide, in male lateral margins almost parallel and converging towards widely rounded apex, in female lateral margins short and apical margin semicircular (figs. 2, 7); in lateral view tip angularly merging with frons, foveolae obsolete or scarcely recognisable as elongate triangular furrows. Frontal ridge projecting slightly between antennae, with rugose surface, shallowly furrowed in male, unfurrowed in female; indistinct at and below median ocellus. Frons slightly rugose; lateral facial keels distinct in the area above ventral margin of compound eyes, indistinct below (figs. 3, 8); subocular furrow distinct (fig. 21). Mandibles with lateral surface flattened, rugose in female only, and with a short vertical carina parallel to posterior margin. Pronotum rugose, with two smooth spots on each side in dorsal area of lateral lobes; disc without lateral margins but gradually rounded into lateral lobes; anterior margin subtruncate; median carina indistinct, almost obsolete, cut by three transverse sulci (plus a first transverse sulcus restricted to lateral lobes); posterior margin angularly excised in middle. Squamipterous; tegmina lanceolate, longitudinal venation strongly reduced, apex rounded. Abdominal tympana covered by tegmina. Prosternal spine rather short, narrowly conical, apex acute (fig. 12). Mesosternal lobes wider than long; mesosternal interspace longer than wide in male, about as wide as long in female; metasternal lobes contiguous in male (fig. 11), subcontiguous in female (fig. 19). Hindfe-



Figs. 1-8. *Nathanacris quadrimaculata* male, holotype (1-5) and female, paratype (6-8). – 1, 6, Habitus in lateral view; 2, 7, same in dorsal view; 3, 8, frons; 4, hindknee; 5, apex of abdomen.

mur rather slender; dorso-medial carina indistinct in proximal half, almost obsolete in male, very low but distinct in distal half; lower genicular lobes obtuse (fig. 4). Hindtibia setose, in dorsal view slightly widened towards apex but without projecting margins; with 7-8 dorso-external and 8 dorso-internal spines; a small, dorso-external apical spine present. Hind tarsus less than one third length of hindtibia; third segment as long as combined two proximal ones; middle segment less than half as long as first segment.

Male genitalia. – Tenth abdominal tergite divided in midline, with small obtuse furculae (fig. 10). Supra-anal plate with a median furrow in basal half. Paraprocts normal. Cerci conical. Abdominal sternites 6-8 and basal half of subgenital plate strongly setose on both sides, smooth in midline. Subgenital plate short, conical, setose (figs. 5, 9).

Female genitalia. – Supra-anal plate long and triangular, apex obtuse; lateral areas sloping; with a median furrow in basal area; with a very indistinct transverse fold in or behind middle of length. Cerci conical, slightly flattened. Abdominal sternites 6-7 with tufts

of hair on both sides of midline. Ovipositor short, margins smooth, apices of valves hooked; lateral areas setose (fig. 18).

Discussion

An important character of the new genus is the shape of the head, which is reminiscent to some members of the family Pyrgomorphidae. However, among other characters, the structure of the phallic complex disagrees strongly with this family.

The new genus belongs to the Acrididae. The tufts of hair on the last abdominal sternites and the apical widening of the hindtibia (although the dorsal margins are not projecting) agree with Oxyinae sensu lato. However, the lower hindknee lobes are obtuse and not spined, and the epiphallus is entire and not divided as in most Oxyinae. Only some species of the African *Badistica* Karsch, 1891 and *Digentia* Stål, 1878, have an epiphallus that is not divided, but presents a faint suture in midline (Hollis 1975).

Actually, the new genus does not fit properly any recognized subfamily or tribe of Acrididae. Genera

provided with a prosternal tubercle that do not agree with any of the other recognised subfamilies of Acrididae were and still are commonly arranged under Catantopinae sensu lato. Among this subfamily 17 tribes are recognized, one of them Catantopini with 22 subtribes together with an assemblage of 210 highly heterogenous genera (Otte et al. 2004), which have in common that they cannot be arranged with any of the other subfamilies or tribes.

Comparison of the new genus with the latter group of genera reveals superficial similarities to the *Cranae* group of genera (C. Willemse 1956, 1957, F. Willemse 1972, 1974, 1977a-b) which share the short frontal ridge, and less so with *Pseudocaryanda* Willemse, 1939 and *Paracaryanda* Willemse, 1955 which share the shape of the cylindrical pronotum and in *Pseudocaryanda* also an acute prosternal spine. The new genus differs from the *Cranae* group, among other characters, by the head being not globose, incomplete lateral facial carinae, the pointed prosternal spine, the slender hindfemora with incomplete dorsal carina, shorter hindtarsi and the apically expanding hindtibiae. Striking differences from *Pseudocaryanda* and *Paracaryanda* are the incomplete frontal ridge, the incomplete lateral facial carinae, the incomplete dorsal carina of hindfemur, and (*Pseudocaryanda* only) the apically expanding hind tibiae of the new genus. The *Cranae* genera and *Pseudocaryanda* were assigned to the unclassified tribes of the Catantopinae (s. l.), but recently, for unknown reasons and -as we believe - erroneously, a number of the *Cranae* genera and *Pseudocaryanda* are listed under the Oxyinae (Otte et al. 2004).

Another genus reminiscent to the new one, is the monotypic *Siamacris* Willemse, 1955 from Thailand. The new genus has been compared with its unique male holotype but the distinction was apparent: frontal ridge furrowed over all its length; hind margin of pronotal disc broadly rounded; transverse pronotal sulci scarcely indicated on disc; prosternal spine needle like; tegmina not squamipterous but micropterous with well recognisable longitudinal venation; male supra-anal plate furrowed along entire midline.

More resemblance exists with *Gerunda* Bolívar, 1918, described after two species from the Philippines, each of them known from a single male. However, in this genus the frontal ridge is furrowed throughout its length, the interocular distance and the fastigium verticis are much narrower and the supra-anal plate is either provided with a median furrow over its entire length in *G. elegantula* Bolívar, 1918 or with an obsolete furrow in *G. gracilis* Bolívar, 1918. Also the type of color pattern differs between the new genus and *Gerunda*.

For the moment the best solution appears to be to place *Nathanacris* under the unassigned genera of the Catantopinae sensu lato.

Etymology

Named after the surname of the collectors and the Greek suffix -acris, which means grasshopper in ancient Greek (gender feminine).

Nathanacris quadrimaculata sp. n. (figs. 1-22)

Type material. - Holotype ♂, 's. INDIA Anamalai Hills Cinchona 3500 ft Mrs. T.R.S.Nathan V 1976 (CW). -Paratypes: 1 ♂, 5 ♀, do. (1 ♂, 1 ♀ ZSI; remainder CW); 1 ♂, 'South INDIA Tamil Nadu St. Anamalai hills Kadamparai 1360m T.R.S.Nathan V-VI. 1980' (CW); 1 ♂, 'SOUTH INDIA Anamalai Hills Kadamparai 3500 ft V.1963 P.Susai Nathan' (RMNH).

Other material studied. - 2 nymphs (♀ last instar), as holotype (CW); 1 nymph (♀ last instar), as paratype from Kadamparai 1360m (CW).

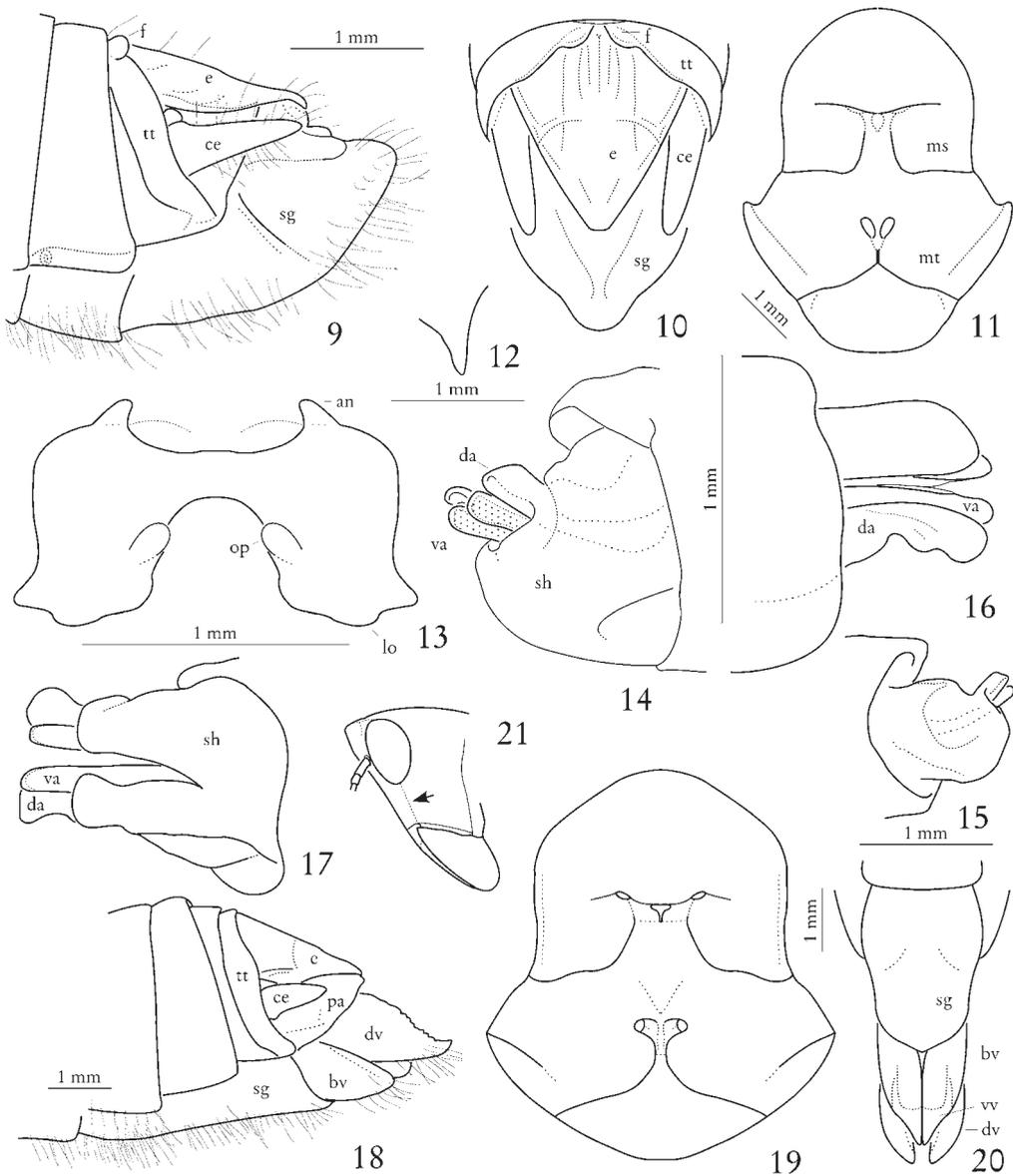
Depositories. - The type material is in the collection Willemse (CW, in the future to be deposited in a public collection) except for 1 ♂ 1 ♀ paratype in the Museum of the Zoological Survey of India, Calcutta (ZSI) and 1 ♂ paratype in the collection of Naturalis, Leiden, The Netherlands (RMNH, formerly Rijksmuseum van Natuurlijke Historie).

Description

Fastigium verticis (measured from front margin of eyes to tip) 1.1-1.2× longer than interocular distance in male, 0.7-1.0× as long as interocular distance in female. Index interocular distance : eye length 0.3 (male), 0.4-0.5 (female); one eye 2.3-2.5× (male) or 1.6-1.9× (female) longer than subocular furrow. Pronotum with principle sulcus in seventh tenth of pronotal length (index 'distance anterior margin to sulcus : pronotum length' 0.66-0.70). Mesosternal lobes wider than long; mesosternal interspace about as long as wide in male or wider than long in female (figs. 11, 19).

Male genitalia. - Tenth abdominal tergite interrupted in midline, with short, rounded furculae (fig. 10). Supra-anal plate roughly triangular; basal half with a groove along midline, an indistinct transverse elevation at circa halfway to apex, and a faint constriction before apex. Cerci conical, slightly flattened, not completely reaching apex of supra-anal plate (fig. 9). Epiphallus entire, bridge-shaped, lophi not distinct, completely fused with bridge; with a small, obtuse projection on both sides of the bridge; anchorae small, obtuse (fig. 13). Aedeagal valves sheathed; sheath of dorsal aedeagal valves with a large, latero-ventral extension that embraces the ventral aedeagal valves laterally and ventrally; only apex of ventral aedeagal valves free with aedeagal sclerite darkened (figs. 14-17).

Female genitalia. - Cerci conical, slightly compressed, not reaching apex of supra-anal plate (fig. 18).



Figs. 9-21. *Nathanacris quadrimaculata* male (9-16) and female (17-21), details of morphology and genitals. – 9, 18, Abdominal apex in lateral view; 10, same in dorsal view; 11, 19, thoracic sternites; 12, prosternal spine in lateral view; 13 epiphallus in dorsal view; 14-17, apex of phallic complex in apico-lateral view (14), lateral view (15), dorsal view (16) and ventral view (17); 20, subgenital plate and ovipositor in ventral view; head in lateral view, the arrow points at the subocular furrow.

Abbreviations: an – anchora of epiphallus; br – bridge of epiphallus; bv – basisvalvula of ovipositor; ce – cercus; da – dorsal valves of ovipositor; dv – supra-anal plate; e – supra-anal plate; f – furcula; lo – lophus of epiphallus; ms – mesosternum; mt – metasternum; op – obtuse projection; pa – paraproct; sg – subgenital plate; sh – membranous sheath; tt – terminal tergite; va – ventral aedeagal valves; vv – ventral valves of ovipositor.

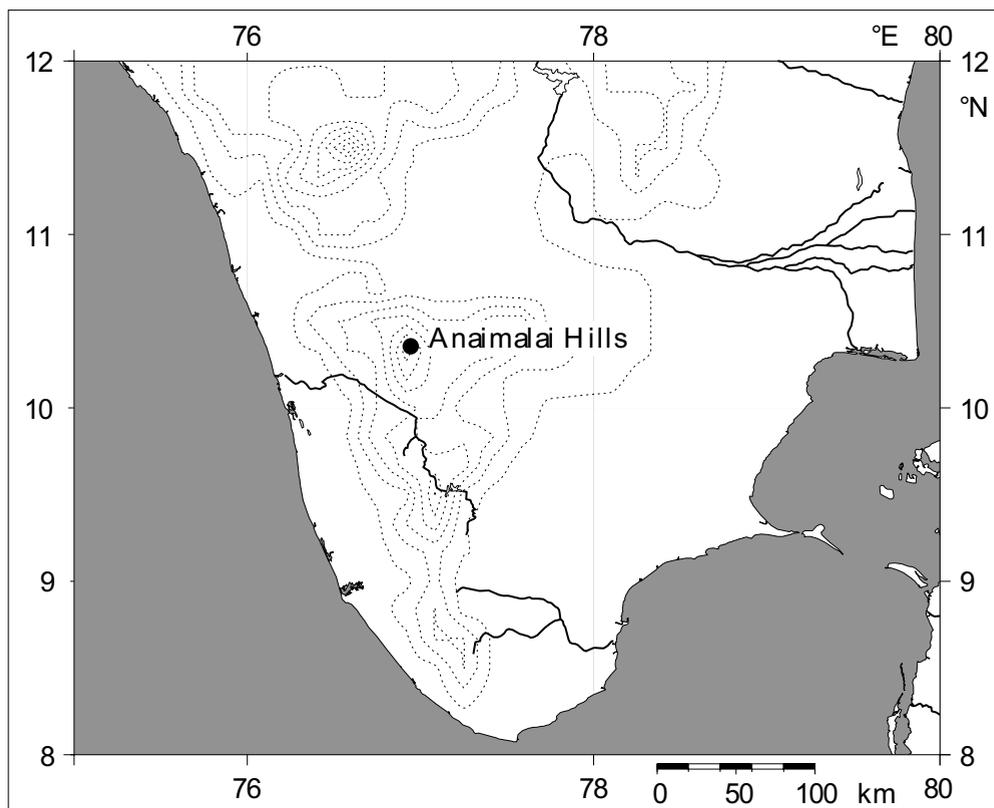


Fig. 22. Distribution of *Nathanacris quadrimaculata* in Anaimalai Hills, South India. (Map outline with OMC <http://www.aquarius.geomar.de/>, modified).

Subgenital plate with apex obtusely angular (fig. 20).

Coloration (of specimens with well preserved colour pattern). – Head and pronotum dark green; compound eyes reddish brown; antennae light red, becoming orange towards apex; pronotum with four yellowish white marks, one each at anterior and posterior corners of disc, the posterior marks larger than the anterior ones (figs. 2, 7). Body brown with remnants of green (probably wholly green when alive). Fore and mid legs yellowish green; hindfemur dark green, hind-knees yellow; hindtibia in genicular area yellow, otherwise in basal two thirds (male) or slightly more than basal half (female) black; remaining apical area and tarsus red.

Four of the six females at hand and the 2 nymphs are almost uniformly dirty brown and probably discoloured.

Measurements (length in mm) – body ♂ 19-25, ♀ 25-30; pronotum ♂ 3.9-4.6, ♀ 5.4-5.8; tegmen ♂

3.1-3.9, ♀ 3.8-4.3; hindfemur ♂ 11.7-13.0, ♀ 14.5-16.0; antenna ♂ 9-11, ♀ 7-10; fastigium verticis in front of eyes ♂ 0.9, ♀ 1.0-1.2; interocular distance ♂ 0.7-0.8, ♀ 1.2-1.4; eye length ♂ 2.4-2.5, ♀ 2.6-3.0.

Discussion

So far the only known species of the genus. It is easily recognisable by its typical habitus and coloration.

Distribution (fig. 22)

Known only from the type series from Cinchona (1070 m) and nearby Kadamparai (1360 m), Anaimalai Hills, Tamil Nadu district, South India.

Etymology

Named after the four yellow spots of the pronotum, 'quadrimaculata' meaning 'with four spots'.

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