



First report of the genus *Tricondylomimus* Chopard, 1930 (Mantodea, Gonypetidae) from India with a note on its geographical distribution

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ABSTRACT. The genus *Tricondylomimus* Chopard, 1930 (Mantodea, Gonypetidae) is reported for the first time from India with the species *T. coomani* Chopard, 1930, based on a female specimen collected from Namdapha National Park, Arunachal Pradesh, India. This species was earlier reported only from Vietnam in the Oriental region. This is the third species of the tribe Iridopterigini (Gonypetidae, Iridopteriginae) that occurred in India. The extension in the distribution of the genus points to the high chances of *T. coomani* being reported from adjacent countries like Myanmar, Thailand, Laos and Cambodia. The geographical distribution of *T. coomani* and its resemblance with another group of insects is briefly discussed.

Key words: Iridopterigini, mantid, mimicry, new record, Namdapha

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INTRODUCTION

Genus *Tricondylomimus* was originally described by Chopard (1930) with *T. coomani* based on male and female specimens collected from Tonkin, Hoa-Binh, Northern Vietnam and suggested to place the genus in the tribe Metallytici Westwood, 1835. Later, it was synonymized with the genus *Nemotha* Wood-Mason, 1884 by Beier (1935) which was earlier placed in the subfamily Iridopteryginae. Otte and Spearmann (2005) mentioned *Tricondylomimus* as a synonym of *Nemotha* Wood-Mason, 1884 by following Beier (1935) and listed the genus under the family Iridopterygidae Giglio-Tos, 1915 in their Mantodea catalogue. Stiewe and Shcherbakov (2017) removed the synonymization of *Tricondylomimus* with *Nemotha* and accepted it as a valid genus. Schwarz and Roy (2019) placed the genus in the family Gonypetidae. In the present study, the genus *Tricondylomimus* and the species *T. coomani* are reported for the first time from India. The discovery upgraded the number of genera and species of Indian Mantodea to 70 and 170 respectively (Kamila & Sureshan, 2022).

MATERIAL AND METHODS

The specimen was collected from Namdapha National Park, Arunachal Pradesh, India during the Namdapha expedition conducted by Zoological Survey of India in 2009 and deposited in ZSIK. The

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specimen of a tiger beetle, *Tricondyla* sp. (Coleoptera, Carabidae, Cicindellinae) deposited in the ZSIK was also examined to indicate the convergent similarities. They were studied using Labomed CZM6 stereo-zoom microscope and the images were taken with Leica® DFC 500 and Canon® M50 camera. The images were post-processed using Adobe Photoshop® CS6 software. The key of the genus *Tricondylomimus* provided by Stiewe and Shcherbakov (2017) is used for the identification of the species. The morphological terminology follows Brannoch et al. (2017).

Abbreviations. **AvS:** Anteroventral spines; **DS:** Discoidal spines; **F:** Femur; **MZ:** Metazone; **PvS:** Posteroventral spines; **PZ:** Prozone; **T:** Tibia; **ZSIK:** National Zoological Collections, Zoological Survey of India, Western Ghat Regional Centre, Kozhikode.

RESULTS

Taxonomic hierarchy

Family Gonyptetidae Westwood, 1889

Subfamily Iridopteryginae Giglio-Tos, 1915

Tribe Iridopterygini Giglio-Tos, 1915

Subtribe Tricondylomimina Schwarz & Roy, 2019

Genus *Tricondylomimus* Chopard, 1930

Tricondylomimus coomani Chopard, 1930 (Figs 1–6, 7)

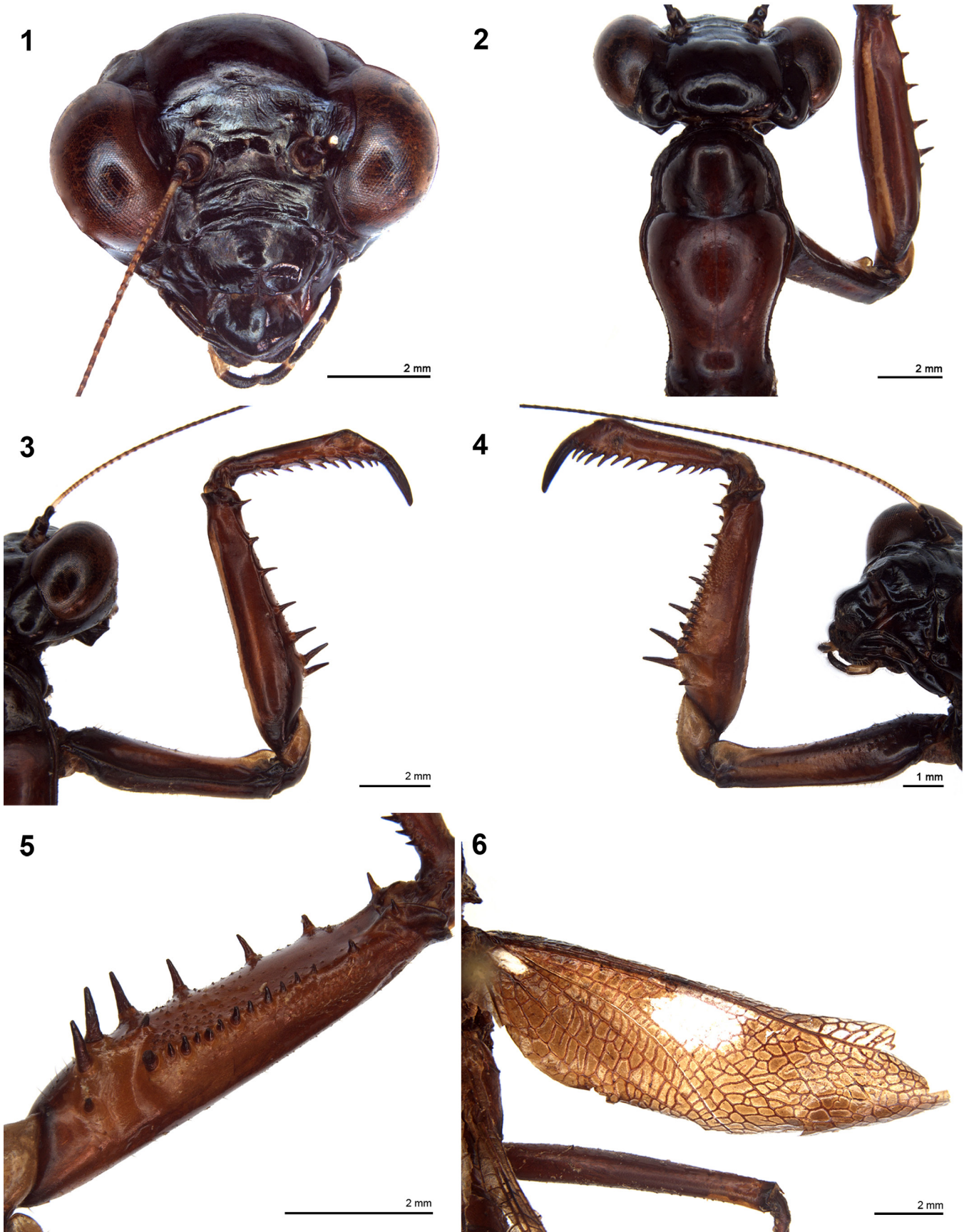
Tricondylomimus coomani Chopard, 1930:229; Beier, 1935, 203:45; Ehrmann, 2002, 239; Otte & Spearman, 2005, 114; Thinh, 2010, 32 (1):20; Zhu et al., 2012, 30; Stiewe & Shcherbakov, 2017, 53 (3):183; Schwarz & Roy, 2019, 55 (2):137.

Material examined. 1 ♀. INDIA, Arunachal Pradesh, Changlang, Namdapha National Park, Hornbill (27°31'50.16" N, 96°25'19.2" E, Alt. 634 m a.s.l.), 06.xi.2009, Coll. J.K. De & Party, Reg. No. ZSI/WGRC/IR/INV. 24630.

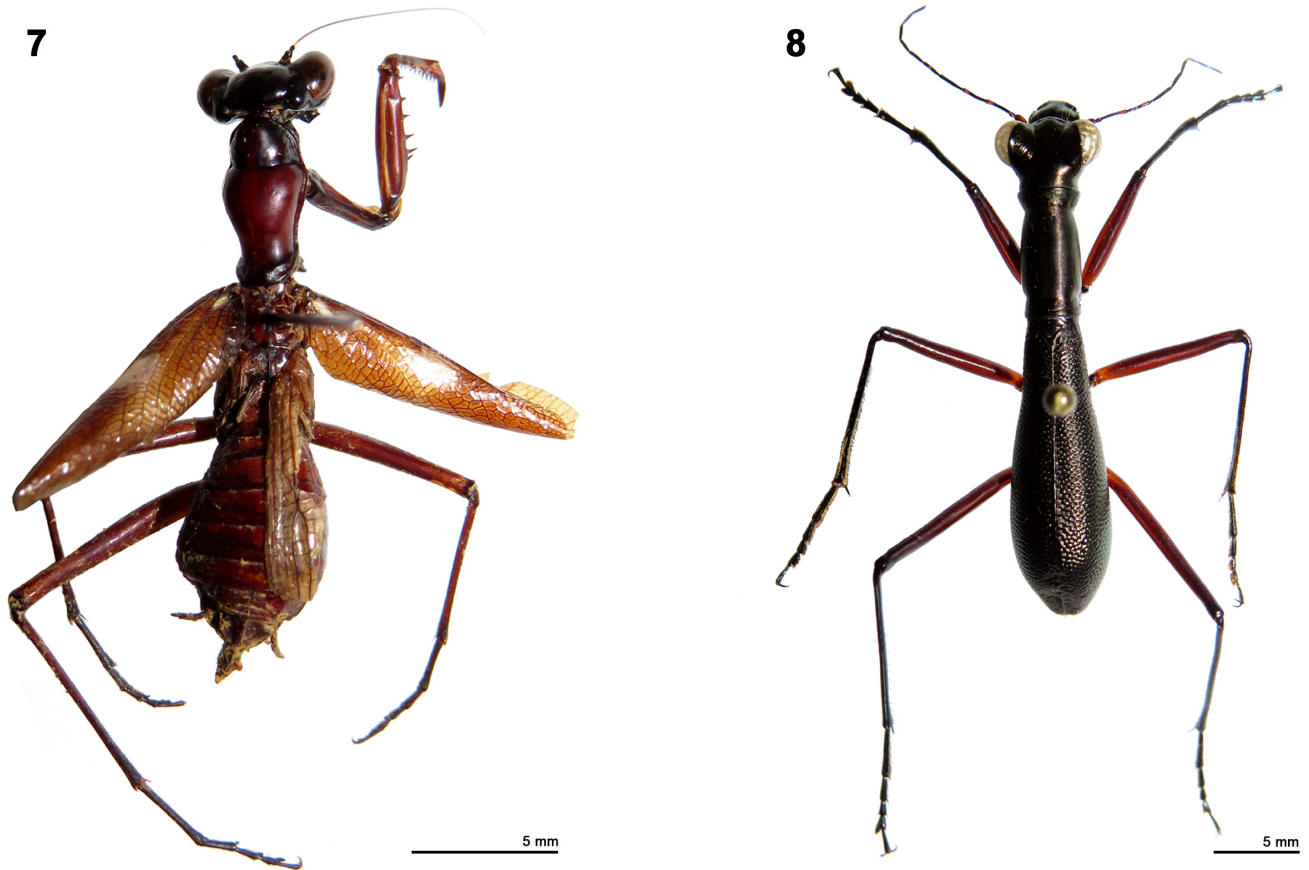
Brief description. **Head** (Figs 1–2). Pentagonal. Lower frons transverse, upper edge arched in the middle, disc with a pair of small notches in middle. Ocelli very small, round. Vertex bulging, extending beyond eye level. Juxta-ocular bulges prominent, round. **Pronotum** (Fig. 2). Laterally wavy. Metazone more than two times as long as prozone. Lateral edges denticulated more in metazone than prozone. Supra-coxal dilation distinct. Prozone semicircular, strongly bulging in middle. Metazone strongly bulging anteriorly; laterally constricted in the middle; posterior end with two middle tubercles. **Foreleg** (Figs 3–5). Coxa a little longer than metazone and a little widened just after base; upper edge with a row of small tubercles each with a long seta; coxal lobes divergent, anterior lobe extended to dorsal side. Trochanter distinctly curved. Femur with four posteroventral, four discoidal, 14 anteroventral (lililililililil) and a genicular spine on each side. First anteroventral spine highly enlarged, almost as long as first posteroventral spine. Tibia with six long, sharp posteroventral and 11 anteroventral spines, first one small, gradually increase in length towards apex. Tarsus completely ciliate, basitarsus a little longer than other tarsomeres together. Spination formula of foreleg: F = 4DS/14AvS/4PvS; T = 11AvS/6PvS. **Wings** (Fig. 6) Shorter than abdomen. Smoky, sub-opaque with irregular cells. Costal area of forewings darker, widest near base, nearly reaching apex; anal area with a small oval pale transparent patch near base; stigma like a large, oval, transparent patch.

Distribution (Fig. 9). **India:** Arunachal Pradesh (**New record**); **Elsewhere:** Vietnam; Lào Cai, Hòa Bình, Vin Phuc, Kon Tum (Stiewe & Shcherbakov, 2017).

Measurements (in mm). Body length 28.24; Pronotum 7.72 (PZ 2.41, MZ 5.2); **Foreleg** – coxa 5.82; femur 6.70; tibia 4.22; Basitarsus 4.27; Other segments together 3.87; **Midleg** – coxa 2.76; femur 8.79; tibia 7.21; basitarsus 2.93; Other segments together 4.14; **Hindleg** – coxa 2.04; femur 10.88; tibia 10.94; basitarsus 4.18; Other segments together 5.09.



Figures 1-6. *Tricondylomimus coomani* Chopard, 1930, Female. **1.** Head, frontal view; **2.** Head and pronotum, dorsal view; **3.** Foreleg, dorsal view; **4.** Foreleg, ventral view; **5.** Foreleg, lateral view; **6.** Forewing, dorsal view.



Figures 7–8. Habitus. 7. *Tricondylomimus coomani* Chopard, 1930, Female; 8. *Tricondyla* sp.

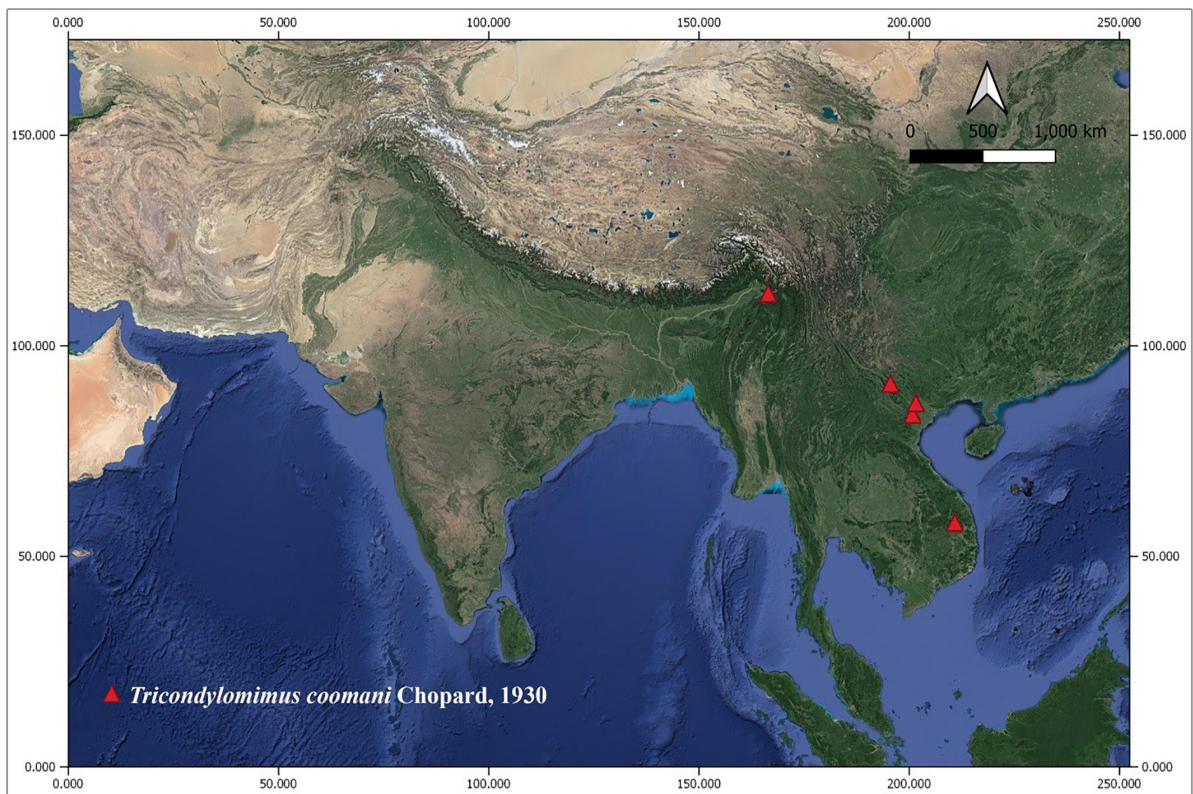


Figure 9. The distribution map of *Tricondylomimus coomani* Chopard, 1930, in the Oriental region.

Remarks. Morphologically, this species resembles tiger beetles of the genus *Tricondyla* Latreille, 1822 (Coleoptera, Carabidae, Cicindellinae) (Fig. 8), commonly known as arboreal tiger beetles found in South and Southeast Asia, which gave *Tricondylomimus* its name. The beetle species *T. macrodera* Chaudoir, 1860 and *T. tuberculata* Chaudoir, 1860 were reported from Northeastern India (Pearson et al., 2020). Chopard (1930) and Stiewe and Shcherbakov (2017) also pointed out the similarity between them.

DISCUSSION

The genera *Amantis* Giglio-Tos, 1915 and *Hapalopeza* Stal, 1877 of the subfamily Iridopteryginae were earlier reported from India with nine and two species respectively. *Tricondylomimus coomani* was originally described and only reported from Vietnam (Chopard, 1930), which is a part of the Indo-Malayan (Oriental) biogeographic realm and Indo-Burma biodiversity hotspot (Myers et al., 2000; Holt et al., 2013). Biogeographically, Namdapha National Park is under the Eastern Himalayan biogeographic province and is roughly at the intersecting junction of Himalaya and Indo-Burma biodiversity hotspots and also that of Indo-Malayan (Oriental) and Palaeartic biogeographic realms (Das et al., 2020). The extension of distribution of the genus points to the high chances of *T. coomani* being reported from adjacent countries like Myanmar, Thailand, Laos and Cambodia.

AUTHOR'S CONTRIBUTION

The authors confirm their contribution to the paper as follows: A.P. Kamila: Identification of the specimen, photography, preparing the distribution map, drafting and revising the manuscript, and funding acquisition; P.M. Sureshan: Supervisor, technical review of the manuscript. The authors read and approved the final version of the manuscript.

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AVAILABILITY OF DATA AND MATERIAL

The specimen examined in this study are deposited in the National Zoological Collections, Zoological Survey of India, Western Ghat Regional Centre, Kozhikode, Kerala, India, and are accessible from the curator, upon request.

ETHICS APPROVAL AND CONSENT TO PARTICIPATE

Not applicable.

CONSENT FOR PUBLICATION

Not applicable.

CONFLICT OF INTERESTS

The authors declare that there is no conflict of interest regarding the publication of this paper.

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اولین گزارش از جنس *Tricondylomimus* Chopard, 1930 (Mantodea, Gonypetidae) در هند و شرحی بر پراکنش جغرافیایی آن

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چکیده: جنس *Tricondylomimus* Chopard, 1930 (Mantodea, Gonypetidae) برای اولین بار از هند گزارش شد. این گزارش بر اساس تک‌نمونه ماده گونه *T. coomani* Chopard, 1930 جمع‌آوری شده از پارک ملی نامدافا، آروناچال پرادش، هند انجام شد. این گونه در منطقه اورینتال، فقط از کشور ویتنام گزارش شده بود. این سومین گونه از قبیله Iridopterigini (Gonypetidae, Iridopteriginae) است که در کشور هند انتشار دارند. حضور این گونه، نشان‌دهنده احتمال زیاد توسعه دامنه انتشار جنس *Tricondylomimus* در کشورهای مجاور مانند میانمار، تایلند، لائوس و کامبوج می‌باشد. توزیع جغرافیایی گونه *T. coomani* و شباهت آن با گروه دیگری از حشرات به طور مختصر بحث شد.

واژگان کلیدی: قبیله Iridopterigini، شیخک، تقلید، گزارش جدید، نامدافا