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# New record of *Tricondyla gounelli* Horn 1900 (Coleoptera, Cicindelinae), an arboreal tiger beetle from Sri Lanka

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## Background

Arboreal tiger beetles belong to tribe Collyridini of order Coleoptera, family Carabidae, sub-family Cicindelinae and can be found predominantly in the tropical and subtropical regions of Asian countries mainly in forest habitat types (Toki et al., 2017). Tribe *Collyridini* is divided in to five genera - *Collyris*, *Neocollyris*, *Protocollyris*, *Derocrania* and *Tricondyla*. According to records provided by Fowler (1912) from his studies in the Fauna of British India' five species of genus *Tricondyla* reside in Sri Lanka - *Tricondyla femorata*, *Tricondyla tumidula*, *Tricondyla coriacea*, *Tricondyla nigripalpis*, *Tricondyla granulifera*). Three of these species, *T. coriacea*, *T. nigripalpis*, *T. granulifera* are endemic to the country, while the other two species also reside in India. However, the sources of this information is far outdated and unreliable and requires current investigations and revision. Thus, the present study was conducted to investigate the current species of arboreal tiger beetles of Sri Lanka, their morphology, locations, habitats and habitat preferences.

## Objectives

- To record the current arboreal tiger beetle species of Sri Lanka and update previous records.
- To record the morphological and morphometric characters of species.
- To revise the taxonomy of the arboreal tiger beetles of the island.
- To record the locations, habitats and habitat parameters of arboreal tiger beetles.

## **Research Design**

Field surveys were conducted in all zones of Sri Lanka and specimens were collected for subsequent identification.

## **Materials and Methods**

Arboreal tiger beetles were investigated in forty-one (41) locations of all provinces and climatic zones of the country from August 2017 to May 2019. Different habitat types such as forests, grasslands, beaches and coastal areas, urban areas and agro-ecosystems were searched for tiger beetles. Each sampling habitat was thoroughly surveyed using visual encounter sampling method (VES) along 100m transects at a slower pace. Once tiger beetles were encountered they were collected using hand picking and then preserved in vials containing 70% alcohol for subsequent identification. Specimens were identified to the lowest possible taxon using keys by Fowler (1912). Morphological characters of all specimens were recorded and morphometric parameters were measured using standard techniques. Locational, climatic, soil parameters and vegetation characters of all locations were recorded using standard methods and equipment.

## **Results and Findings**

From the forty-one locations which were surveyed, arboreal tiger beetles were found in eleven (11) locations of the island. *Tricondyla gounelli* was found in two locations - Kirinda, a coastal village area located in Hambantota district, Southern province; Vellankulam, an agro-ecosystem located in Mannar district, Northern province of the country. In both locations *Tricondyla gounelli* were found on tree trunks (Cashew, Masan trees) running closer to the ground and near branches. Habitat characters of the two locations are provided in Table 1. *T. gounelli* was identified to the genus by the large head that is strongly concave between the eyes, large labrum with six teeth, broad parallel sided pronotum with constrictions in front and behind and elytra fused at the suture. The species was characterized by the shorter elytra that were

narrower in the middle and antennal segments that were metallic black with the 3<sup>rd</sup> and 4<sup>th</sup> segments red in color. (Fig. 1)

Table 1. Habitat parameters of the locations of *T. gounelli* found in Sri Lanka

Location	Temperature (°C)	Humidity (%)	Wind speed (MPH)	Soil moisture (%)	Soil PH	Soil salinity (ppt)	Elevation (m)	Solar radiation (W/m <sup>2</sup> )
Kirinda	30	76	1	0.8	4.8	0	9.8	246
Vellankulam	31	67	2	0.72	4.6	0	23.4	156



Figure 1. *T. gounelli* found from the agro-ecosystems of Vellankulam

## Conclusions

This is the first record of *Tricondyla gounelli* from Sri Lanka even though the species has been recorded from India earlier. During 1912 to 2002 period this species was reported only from Ramnad, Anmalai Hills of Madras in India. At present, the total distribution of *Tricondyla gounelli* within the island is unclear but these new records point to a possible range expansion and contribute largely to the knowledge on distribution of *Tricondyla gounelli* in the Indian subcontinent.

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