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New distributional record of *Ctenus Indicus* (Gravely 1931) from Western Ghats, Kerala

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Abstract
In this paper new distribution of *Ctenus indicus* gravely 1931 is reported. The previous report was from Parambikulam, Kerala, India. New distribution report result in the range extension of this genus over Kerala. The distributional map, illustrations and diagnosis are provided.

Keywords: *Ctenus indicus*, distribution, abdominal sigillae

1. Introduction
The family Ctenidae are ambush-hunting spiders with 515 nominal species distributed in 48 genera (World Spider Catalog 2020) [5]. Though widely represented in other parts of the world they are poorly investigated in India. These spiders are found over the leaf litter in the rainforest, holes or under the fallen tree logs on the ground. They show the property of camouflage.
The members of this family are closely related to the family Clubionidae and Lycosidae but due to their particular arrangement of eyes, they are separated in an independent family (Tikader 1973, 1976). In 1931, gravely reported some Ctenid species from India. Tikader and Malhotra (1981) [4] revised the genus *Ctenus walckener* from India. Sankaran and Sebastian (2018) [3] description of *Ctenus indicus* gravely 1931 from Kerala provides some more knowledge about this species.
In this present paper, a new distributional record of this species from Veloor Reserve Forest, Kerala is reported. The current distributional data of *Ctenus indicus* gravely 1931 is also mapped and new diagnostic images of the species are also provided.

2. Materials and Method
The specimen was collected from Veloor reserve forest, Udumbannoor, Idukki, Kerala, India. Identification was done in the laboratory by referring gravely (1931) [1], Tikader & Malhotra (1981) [4] and Sankaran & Sebastian (2018) [3]. The specimen was preserved in 70% ethyl alcohol. The images of the preserved specimen were taken by MICAPS PROHDMI1080CC camera attached Labomed Luxeo 6Z Stereozoom microscope. Measurements were taken using MICAPS PROHDMI1080CC software. Measurements of leg and pedipalp were considered from the dorsal side of the body and are in the given order: Total, femur, patella, tibia, metatarsus and tarsus. Female epigyne was cleared in situ with clove oil. The description was done by immersing the spider in a Petri dish containing 70% alcohol. All measurements are taken in millimeters. The map was prepared using an online tool available at https://mapmaker.nationalgeographic.org/.
Abbreviations used: AME-Anterior median eye, ALE-Anterior lateral eye, PME-Posterior median eye, PLE-posterior lateral eye, I -IV–1st to 4th leg, Fig-Figure.

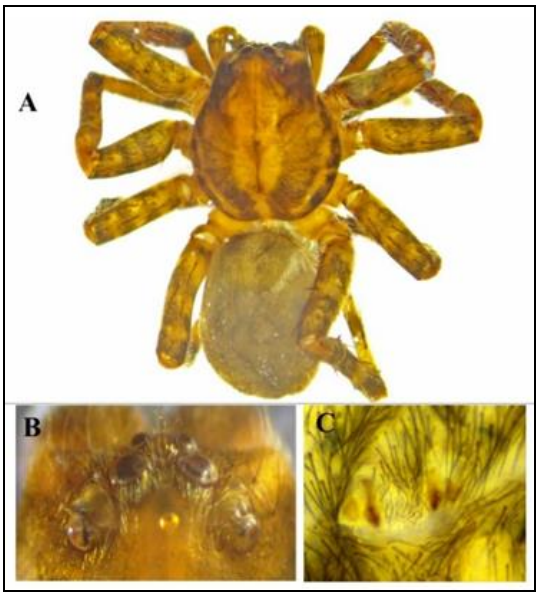

Fig 1: *Ctenus indicus* gravely (1931) Female. (A) Whole body, (B) Eyes, (C) Epigyne

Fig 2: Distribution Map- Geographic distribution record of *Ctenus indicus*, Gravely 1931 Veloor, Udumbannor, and Kerala, India.

3. Result and Discussion

3.1 Taxonomy: *Ctenus indicus* gravely 1931

3.2 Material examined: One female, Veloor reserve forest (9°34'50.7"N 76°29'43.1"E) Idukki District, Kerala, India

3.3 Diagnosis: Carapace is wider than longer with particular brown and yellow patches found dorsally. Strongly recurved eyes and hairy bulged abdomen with two pairs of sigillae in dorsal side is a distinguishable feature of Ctenidae. Alternate yellow and black patterns noticed in the IVth leg. Females have anteriorly broad epigynal plate with strongly sclerotized lateral plate (Sankaran & Sebastian, 2018) [3]. Epigynal plate somewhat triangular and nearly circular epigynal tooth in *C. indicus* differs from other females is noticed.

3.4 Description

Cephalothorax is wide with pale yellowish, brown and dark grey patches. Fovea is very clear, reddish, surrounded by yellowish patches. Eyes are recurved and found in three rows. Anterior row is strongly recurved so the anterior laterals come in the line of posterior medians thus forming three rows of eyes. AME are close to each other compared to PME and PLE. Sternum brown colored covered with hairs, labium is wide distally and narrowed anteriorly, pale brown in color. Maxillae light brown anteriorly end with scopulae. Chelicera with horizontal fangs and retromarginal teeth four. Dorsal part of chelicera covered with brown stiff hairs and smooth hairs surrounding the dark brown fangs. Clypeus dark colored and hairy. Sternum covered with black hairs, three pairs of sigillae present. Pedicel clearly visible. Leg and palpal segments are pale yellow with alternate grey patches. Laterally arranged spines present along the femur to metatarsus of all legs. Palpal tarsus with single palpal claws. Leg tarsal with two claws end with claw tufts lined by dense scopulae. All other leg segments lack scopulae. Except tarsus all leg segments possess dark brown colored spines. Body length 10.53, Carapace length 5.17, and width 6.2. Opisthoma length 4.82, width 5.32. Eye diameters ALE 0.30, AME 0.41, PLE 0.52, PME0.61. Eye interdistance between ALE-ALE 8.7, AME-AME 1.51, PLE-PLE 2.00, PME-PME 0.35. Clypeus height at AMEs 0.29, at ALEs 1.00. Measurements of legs and palps: palps 8.43 [2.31,1.49,2.232.40], I 18.25[5.52,2.16,5.97,4.6], II 15.6[5.01,2.20,4.59,3.80], III 13.29[4.17,2.10,3.73,3.29], IV 25.63[7.96,3.90,7.04,7.50]. Leg formula 4123. Spination on tibia and metatarsus, spine present in IVth patella and femur, which is absent in I, II & III; tarsi I to IV spineless. Abdomen is hairy ovoid consist two pairs of sigillae, dorsally (fig 1.6). Ventrally two rows of epigastric furrow present. Epigynum is highly sclerotized. Epigynal plate somewhat triangular and nearly circular Epigynal tooth. Spinnerets are not protruding outside encircled by dark colored hairs.

3.5 Distribution: India (Kerala –Idukki).

3.6 Natural history: The hunting spiders are usually found on the floor underneath rotten tree bark, rock, burrows, or leaf litters of tropical evergreen and semi evergreen forests. They have been collected underneath a rotting tree bark near small water fall across the mud road. One side of the road were covered with mud embankments and the other side is deep slope full of large trees and plants. They were strictly camouflaged and no particular webs or burrows found.

4. Conclusion

Though Ctenid spiders have 212 species in total, only 11 of them were reported from India so far. Simon in 1897 reported first Indian Ctenid spider (*Ctenus walckener*). Gravely, 1931 reported some of the Ctenus genus from India, Kerala. A new additional record from Idukki, veloor forest range extends the distribution of

Ctenus indicus over Western Ghats. Hence this study expose furthermore information about this poorly known genus.

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