

First record of aquatic stick insect, *Ranatra digitata* Hafiz & Pradhan, 1947 (Hemiptera, Heteroptera, Nepidae) from Kerala, India

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ABSTRACT: Water stick insects of the genus *Ranatra* Fabricius, 1790 are common inhabitants of lentic or slow-moving aquatic habitats. This is the first record of *Ranatra digitata* Hafiz & Pradhan, 1947 from Kerala. The data adds on the total number of known species of *Ranatra* from Kerala. Additionally, some notes on the bionomics of this species are also given to intensify the information on their ecology.

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KEY WORDS: Distribution, water scorpions, bionomics, ecology

Water stick insects or water scorpions are slender predatory insects of the family Nepidae and can be commonly seen in still or sluggish water bodies. They have a body length in the range 15- 45mm (Schuh and Slater, 1995). The genus *Ranatra* Fabricius, 1790 is characterized by elongated tubular or cylindrical body with large spherical eyes, long pliable respiratory tube, anterior femur longer than pronotum, a noticeable keel or a modification on the metasternum (Yule and Yong, 2004; Basu *et al.*, 2018). Other stick insects coming under the genus *Cercotmetus* apparently resemble *Ranatra* and enough to be mistaken for them at a glance. On closer examination, *Ranatra* can be distinguished by the presence of long and slender respiratory appendages instead of the short and stout respiratory appendages of the *Cercotmetus* (Basu *et al.*, 2018). The genus *Ranatra* is

widespread and a total of 12 species under the genus have been so far reported from India (Thirumalai, 2007). In India, bio-ecological investigations on some Nepidae were conducted by Rao (1976). Only four species of *Ranatra* viz., *R. elongata* Fabricius, 1790, *R. filiformis* Fabricius, 1790, *R. varipes varipes* Stal, 1861 and *R. varipes atrophica* Montandon, 1903 have been documented yet from Kerala (Thirumalai, 2007; Ranjini, 2025). Now *R. digitata* Hafiz & Pradhan, 1947 has been reported for the first time from Kerala.

It was collected from Sasthamkotta lake, the largest freshwater lake of Kerala in Kollam District. A D-frame net with a 500µm mesh size was used to collect samples. Obtained samples were preserved in ethanol (70%) and taken to the laboratory for in-depth taxonomic analysis. The genital segments and

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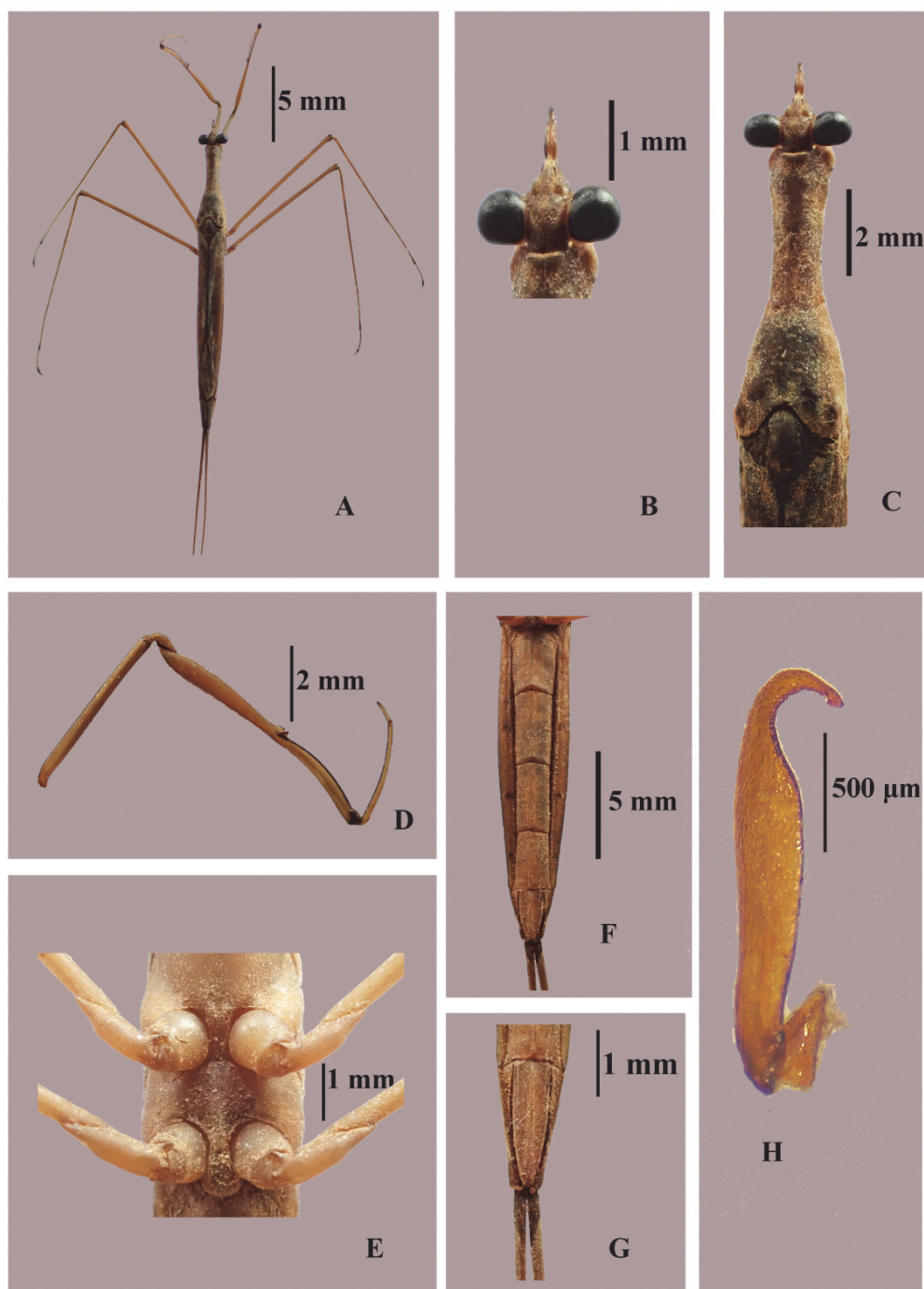


Fig. 1 A- H. *Ranatra digitata* Hafiz & Pradhan, 1947; A- Dorsal view; B- Head; C- Head, Pronotum and Scutellum; D- Forefemur; E- Metasternal keel; F- Abdominal sternites, ventral view; G- Genital segment, ventral view, H- Male paramere

related structures of male specimens were dissected and immersed in potassium hydroxide (10%) for 30 minutes for detailed morphological analysis. Olympus SZ51 stereomicroscope was used to examine the material and the pictures were captured using Olympus TG-6 digital camera. Image of the male paramere was captured using Leica stereo zoom microscope (Leica S9i), with the software Leica application suite (Version 4.12). Identification was performed with the aid of standard literatures and monograph (Hafiz and Pradhan, 1947; Jehamalar and Chandra, 2016; Basu *et al.*, 2018; Tran and Zettel, 2021).

Characterization of *Ranatra digitata* Hafiz & Pradhan, 1947

Ranatra digitata Hafiz & Pradhan, *Rec. Indian Mus.*, 45 (4): 347-376.

Order Hemiptera Linnaeus, 1758; Suborder Heteroptera Latreille, 1810; Infraorder Nepomorpha Popov, 1968; Superfamily Nepoidea Latreille, 1802; Subfamily Ranatrinae Douglas & Scott, 1865; Genus *Ranatra* Fabricius, 1790

Materials examined: 2 ♂, Sasthamkotta Lake; Punnakkadu Kadavu, Kollam district, Kerala, 8 m amsl., 9°2' 41.27"N and 76°37' 44.17" E, 27.iii.2022, Coll. Jyothylakshmi K and S. Nandakumar.

Diagnosis: Body length- 28mm; Colour- yellowish brown; head without tubercle; interocular space slightly constricted than eye width; antennal joints covered with spiny bristles; second joint of antennae digitate, shorter than the third; third antennal joint curved; mesosternum with a 'V' shaped slit between mid coxae; metasternum convex at posterior margin; respiratory siphon slightly shorter than the body; siphon length 22- 25 mm; male paramere- hook shaped apically and broad at middle (Fig. 1A-H).

Distribution: India: Chhattisgarh, Bihar, Haryana, Himachal Pradesh, Madhya Pradesh, Odisha and West Bengal.

Remarks: It is wide spread and commonly found species in India. The type specimens of *R. digitata* were collected by Hafiz & Pradhan (1947) from Titilagarh of Odisha and Patna of Bihar., *R. digitata*

have homology with *R. flagellate* Lansbury, 1972. The latter can be distinguished from the other by the following taxonomic characters such as gap between middle coxae nearly equal to the gap between hind coxae; hind femur somewhat exceeding the anterior border of operculum (Tran and Zettel, 2021).

Bionomics: *R. digitata* was collected from vegetated microhabitat of the lake. It is very difficult to spot them at a quick glance due to their floating stick appearance. The species is found among aquatic macrophytes near the edges of water. The species is slow moving and sometimes remain motionless at the middle of vegetation mass near the edges of the lake. The colour ranges from yellowish brown to dark brown. So they can hide well with the background of fallen twigs and decaying vegetation. It shows predatory behaviour for food acquisition, with the help of their raptorial forelegs and sharply pointed mouthparts. The species is carnivorous, like other *Ranatra* sp. and it feeds on other aquatic insects, tadpoles, small fishes and small invertebrates as their prey.

Present inventory is the first record of *R. digitata* from Kerala, it has been previously reported from the other states of India by Hafiz & Pradhan (1947), Jehamalar and Chandra (2016) and Basu *et al.* (2018). Under the genus *Ranatra*, only four species namely *R. elongata* Fabricius, 1790, *R. filiformis* Fabricius, 1790, *R. varipes varipes* Stal, 1861 and *R. varipes atrophica* Montandon, 1903 have so far been reported from Kerala. Hence, this current report adds another species of *Ranatra* to the state fauna.

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