

First record of *Leptus* Charles De Geer, 1778 (Acari, Erythraeidae) larval parasitism on *Eyrepocnemis alacris alacris* Serville, 1838 (Orthoptera, Acrididae) from Kerala, India

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ABSTRACT: *Eyrepocnemis alacris alacris* is a species of short-horned grasshopper commonly found in grasslands, forests, and open habitats across Kerala. *Leptus* larvae, which are six-legged parasitic mites, typically inhabit soil and leaf litter. For the first time, a severe infestation of *Leptus* larvae on *E. a. alacris* was recorded in Aralam Wildlife Sanctuary, Kerala. *Leptus* larvae were collected from the host's abdomen, antennae and hind wings. These larvae penetrate the host's cuticle, creating deep puncture wounds, particularly in the abdominal region, to feed on body fluids. The heavy infestation suggests that the larvae exploit the grasshopper not only for nourishment but also as a means of dispersal.

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KEY WORDS: Ectoparasite, mites, infestation, dispersal

Interactions between insects and ectoparasitic mites are widespread, influencing host ecology, behaviour, and population dynamics. *Leptus* Charles De Geer, 1778 (Acari, Erythraeidae) larvae are six-legged parasitic mites infecting a variety of arthropod hosts, including, though rarely, grasshoppers. *Eyrepocnemis alacris alacris* (Serville, 1838) (Orthoptera, Acrididae), is native to the Western Ghats of India, particularly in Kerala.

Field surveys were conducted in Aralam Wildlife Sanctuary, Kerala, India (11.9536° N; 75.8284° E), to assess the prevalence and distribution of short-horned grasshoppers. Sampling was conducted

between May 2022 and December 2024, for 10 days each month, between 09:00 AM and 12:00 PM. Grasshoppers were collected using standard sweep netting techniques across various microhabitats within the sanctuary. During summer, grasshoppers were more conspicuous due to reduced vegetation density. A close examination of collected specimens in the field revealed one short-horned grasshopper *specimen* with small, bright orange-red larval mites attached to the intersegmental membranes of the thorax and abdomen, particularly at the coxa–sternum junctions, and occasionally near the spiracles. The specimen also showed some external abnormalities and

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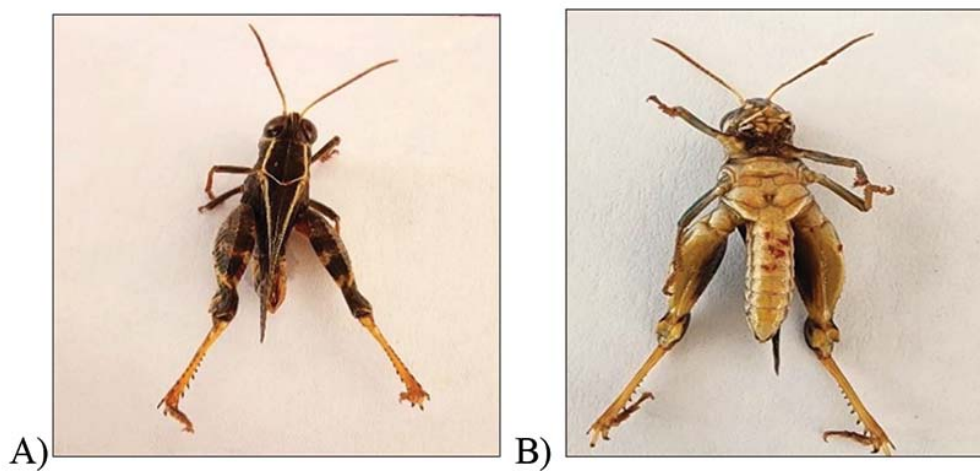


Fig. 1 Parasitised host body (Dorsal A & Ventral B) showing antennoal, leg and abdominal infection



Fig. 2 Collected larvae from the host

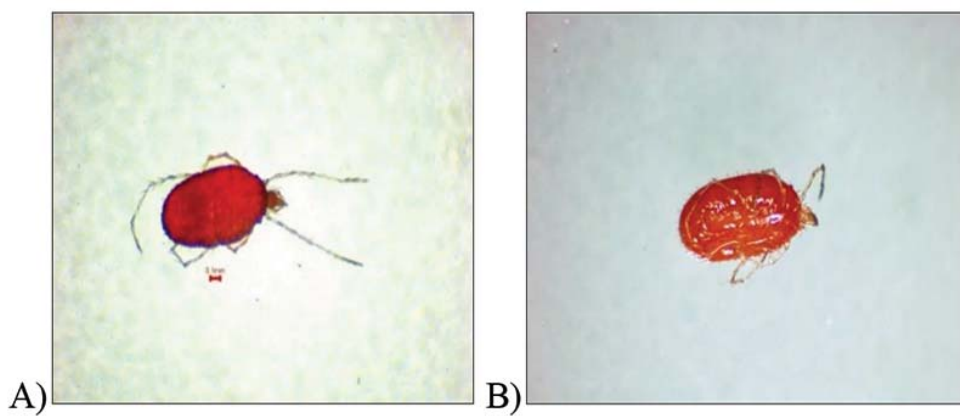


Fig. 3 Stereomicrographs of *Leptus* larvae (A: Dorsal, B: Ventral view) from the host body

sluggish movement. This individual was separated from the sweep net collection and kept in a separate bottle for detailed laboratory examination.

Infected sample were preserved in ethanol (70%) and subjected to detailed laboratory analysis to identify the parasite and assess its effects. Larvae were gently extracted using fine forceps and mounted on slides in lactic acid (50%). The slides were briefly warmed over a 40W electric lamp until lactic acid fumes appeared, facilitating better clearing of the specimens. Microscopic examination was performed using a Magnus Trinocular Stereo Microscope, and images were captured via a connected computer system. Identification of the host was based on morphological characteristics using standard taxonomic keys and expert consultation. The parasite was confirmed as six-legged larval mites belonging to the genus *Leptus*, identifiable by their distinct morphology under magnification (Figs. 1, 2, 3).

Host (*Eyprepocnemis alacris alacris*): Nymphs and adults occur among long coarse grass with bushes. This species considerably causes damage to paddy, maize, cucumber, oat, cowpea and fodder-like grasses. Both adults and nymphs are found from April, May to November. The trend of the population is a biennial generation (Shishodia, 2000). It is distributed in the states of Andhra Pradesh, Arunachal Pradesh, Assam, Bihar, Goa, Haryana, Himachal Pradesh, Karnataka, Kerala, Madhya Pradesh, Maharashtra, Punjab, Tamil Nadu and West Bengal.

Parasite: Species of *Leptus* is characterised by gnathosoma with elongated, chelate cheliserae; palps 5 segmented with terminal sensory setae; and pretarsal, claws or hooked setae for attachments. Larva is bright orange red with soft cuticle, sensory setae present on idiosoma, muscular pharynx adapted for fluid feeding and the absence of reproductive organs. In India, *Leptus* mites are typically found in various habitats like tropical and subtropical forests, open grasslands, savannahs,

farmlands and fields. They live in leaf litter and soil where they can find their hosts and where conditions are suitable for their survival. It is distributed in the states of Maharashtra, Karnataka, Kerala, Tamil Nadu, West Bengal, Uttar Pradesh, Himachal Pradesh and Punjab.

This is the first record of *Leptus* larval parasitism on the short-horned grasshopper *E. alacris alacris*. The finding broadens the known host range of *Leptus* mites and provides new insight into their ecological interaction with Acrididae.

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