



## A report on *Sipyloidea stigmata* Redtenbacher (Diapheromeridae: Necrosiinae) as the first phasmid crop pest in India and its redescription

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The order Phasmatodea, the stick and leaf insects, include fewer crop pests than other phytophagous groups of insects. Bedford (1978) reviewed their biology and ecology. Outbreaks of stick insects on economically important plants are known from the USA (Graham, 1937), Fiji and other islands in the South Pacific (O'Connor, 1949; Paine, 1968), Australia (Key, 1991) and China (Hennemann, et. al., 2008). Lit and Eusebio (2008) described *Pharnacia magdiwang* (Phasmatidae) [a junior synonym of *P. ponderosa* Stål (Hennemann and Conle, 2008)], a minor pest on mango in the Philippines and listed eight species of stick insects associated with economically important plants. Phasmatodea of the Indian subcontinent are poorly known in spite of the rich diversity and none of them are known to be associated with crop plants.

*Sipyloidea stigmata* Redtenbacher (Diapheromeridae: Necrosiinae) has been observed as an economically important pest on black pepper *Piper nigrum* L. (Piperaceae) in south India. Black pepper, the King of Spices, is the source of black and white pepper and India is its largest producer. Devasahayam (2000) reviewed pests of black pepper in India. *S. stigmata* is here reported as the first phasmid crop pest in India.

There are currently 67 species of *Sipyloidea* Brunner known mainly from Asia besides Australasia (Brock, 2008). The type species *Sipyloidea sipylus* (Westwood) is reported from Bangladesh, Borneo, China, India, Japan, Jawa, Madagascar, Mauritius, Peninsular Malaysia, Réunion, Rodrigues Island, Singapore, Taiwan and Vietnam and is one of the most widespread phasmids in the world. While *S. stigmata* is a specialized feeder, *S. sipylus* accepts numerous food-plants, which is the major factor in its successful transcontinental distribution.

*S. stigmata* was described by Redtenbacher (1908) based on a single female from Mercara, a pepper growing tract in Karnataka. No other life stage of the insect was known so far. The species is here redescribed and illustrated with information on its male, egg and biology for the first time. The measurements are in millimeters (mm) and the mean values are provided in brackets. Fifteen randomly selected specimens (females, males and eggs five each) were measured. The specimens are deposited in the Natural History Museum, London (BMNH) and the Travancore Insect Collection, Kerala Agricultural University, Vellayani (TCV).

### *Sipyloidea stigmata* Redtenbacher

(Figs 1–12)

*Sipyloidea stigmata* Redtenbacher 1908:546 (Holotype female, not examined, Natural History Museum, Vienna, Austria, No. 1094); Brock 1998: 60; Otte & Brock, 2005: 321; Zompro, 2005: 9.

**Description. Female.** Light green when live with light pink hind wings, abdominal sternites laterally dull white, abdominal tergites tinted brown beneath hindwings, tarsi light brown. Lateral band not distinct over leading edge of hind wings unlike in male. Either side of mesonotum with a light green longitudinal area with dark patches and dark border, extending from posterior end to slightly beyond middle.

Dry specimens dull brown with green tinge on anteroventral portion of head, forewings and abdomen (Fig. 1). Antenna light brown with distal two or three antennomeres olivaceous in some specimens, joints of antennomeres lighter in color. Lateral band along pro- and mesonotum and anterior area of wings less distinct compared to male. Radius black in proximal 1/3 of forewing. Anal region of hind wings translucent brown with light pink veins.