



A new Indian species of shoot and capsule borer of the genus *Conogethes* (Lepidoptera: Crambidae), feeding on cardamom

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Abstract

A new species, *Conogethes sahyadriensis* sp. nov. (Lepidoptera: Crambidae), feeding on cardamom, is described from India. The species status is supported by diagnostic morphology as well as by genetic data. A phylogenetic analysis based on the publicly available *Conogethes* COI barcode sequences finds *C. sahyadriensis* as sister to *C. pluto*, and it further reveals a number of clades that potentially represent additional undescribed species. The new species is delineated from closely related and superficially similar species of *Conogethes*.

Key words: *Conogethes*, yellow peach moth, shoot and capsule borer, India, cardamom, DNA barcode, phylogenetic analysis

Introduction

The genus *Conogethes* Meyrick, 1884 currently includes fourteen species (Shaffer *et al.* 1996; Inoue & Yamanaka 2006; Nuss *et al.* 2003–2017), distributed in the eastern Palearctic and Indo-Australian regions (Shaffer *et al.* 1996). *Conogethes* contains several species with an economic impact on crops and other plants, with the yellow peach moth *C. punctiferalis* (Guenée, 1854) being the most notable among them (Chakravarthi *et al.* 2012). Considerable research, especially in India, China and Japan, has been conducted on *C. punctiferalis*, investigating its olfactoric (Konno *et al.* 1982; Liu *et al.* 1994; Chakravarthi & Thyagaraj 1998) and acoustic communication (Nakano *et al.* 2012a, b, 2014) as well as its morphology (Kimura *et al.* 2002), ecology (Du *et al.* 2012; Doddabasappa *et al.* 2014; Xu *et al.* 2014; Li *et al.* 2015), reproduction behaviour (Kaneko 1978; Konno *et al.* 1980; Honda 1986; Konno 1986) and genetics (Li *et al.* 2010; Zhang *et al.* 2010). The larval host plants are unknown for the majority of the *Conogethes* species, but of the six species with host plant records, the food spectrum ranges from the monophagous *C. diminutiva* (Warren, 1896) which only feeds on *Ipomoea batatas* (L.) Lam., to the extremely polyphagous *C. punctiferalis* (Inoue & Yamanaka 2006; Robinson *et al.* 2010), whose larvae have been recorded from 30 crop plants belonging to 23 different plant families in India (Shashank *et al.* 2015), and from 32 plants in 17 different plant families in Japan (Inoue & Yamanaka 2006). In recent years, the Australian *C. pluto* (Butler, 1887) has become a major problem on *Alpinia* Roxburgh and other Zingiberaceae (El-Sayed *et al.* 2012).

In Japan, Koizumi (1960), Inoue (1982) and Honda & Mitsuhashi (1989) identified two different types of *C. punctiferalis* that differ from each other in the morphology of larvae, pupae and the genitalia of the adults. As these two types also differ in larval foodplants, they referred to them as the angiosperm fruit-feeding type and the Pinaceae-feeding type. Later, Inoue & Yamanaka (2006) recognized the two types into species, with *C. pinicolalis* Inoue & Yamanaka, 2006 representing the Pinaceae-feeding type, and the revised and re-described *C. punctiferalis* as the fruit-feeding type.