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SAPINDUS LAURIFOLIUS VAHL, 1794 AS A NEW HOST PLANT FOR THE COMMON GUAVA BLUE BUTTERFLY *VIRACHOLA ISOCRATES* IN GUJARAT, INDIA

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Abstract

The Indian Soap-nut tree *Sapindus laurifolius* is traditionally used as a shampoo and detergent in India. The Common Guava Blue *Virachola isocrates* is a pest to a variety of floral species, especially *Psidium guajava*. In this study, we have documented its complete life cycle on *S. laurifolius*.

Introduction

The Common Guava Blue *V. isocrates* (Fabricius, 1793) (Lycaenidae: Theclinae: Deudorigini) is a widely distributed species occurring throughout India (Varshney & Smetacek, 2015). Caterpillars are mostly fruit borers and feed on a variety of floral species. Known host plants for *V. isocrates* in India are reviewed by Nitin *et al.* (2018). *S. laurifolius* and *S. emarginatus* are the two species of genus *Sapindus* which have been reported from Gujarat. In *S. laurifolius*, flowering is observed during October-January and fruiting during February-April whereas in *S. emarginatus*, flowering occurs during October-February and fruiting during January-April (Patel, 1971). Variya (2018) observed a female *V. isocrates* laying eggs on *Sapindus laurifolius* (Fig. 1a & 2) at the Post Graduate Department of Biosciences, UGC-Centre of Advanced Study, Anand, Gujarat. Looking at the characters given by Patel (1971) the tree species was confirmed as *S. laurifolius*. The female laid a single, white, spherical egg (Bhakare & Ogale, 2018). on the underside of the leaf (Fig. 1a & 1b) and fruit as well (Fig. 2). Later, both eggs were collected for further study. Rao (1992) has reported larval stages of *V. isocrates* feeding on *Sapindus* sp. but does

not clarify any particular species of *Sapindus*. Other than *V. isocrates*, early-stages of *Deudorix epijarbas* and *Rapala varuna* from India (Varshney, 2018) and *Acytolepis puspa* from Sri Lanka (Jayasinghe, 2014) have been reported feeding on *S. laurifolius*.

Materials and Methods

The life cycle was studied under laboratory conditions at room temperature between 29th January - 11th March, 2018 at the Post Graduate Department of Biosciences, UGC-Centre of Advanced Study, Sardar Patel University, Anand, Gujarat. Collected eggs were placed in a sterile plastic container closed with breathable cloth cover. After the eggs hatched, fresh leaves and fruits of *S. laurifolius* were provided to the larvae (Fig. 3). They preferred to feed on the fruit and they made a hole and started feeding on the soft internal mass (Fig. 4 & 5). Once a larva finishes the fruit from inside, leaving only the outer covering intact, it travels to another fruit (Fig. 6). Till pupation, fresh green soap-nuts were fed as the main food source of larval stages.

Result and Discussion

Rao (1992) noted that *V. isocrates* larvae have been found feeding on *Sapindus* sp. and our study supports that observation. Along with laboratory observations, field observations

were also carried out and wild larvae of *V. isocrates* were found inside the fruits of *S. laurifolius* (Fig. 7). We documented the early stages of *V. isocrates* starting from egg-laying till pupation on *S. laurifolius*. Before pupation, the leftover of soap-nuts was removed and larvae pupated at the bottom of the container (Fig. 8). It took a total of 41 days to become an adult starting from the egg stage. An enclosed adult male was released in the wild (Fig. 9).

As *Virachola isocrates* causes economic damage to many trees, its life cycle on *Sapindus laurifolius* is a noteworthy addition. *S. laurifolius* occurs commonly in India and perhaps plays an important role in sustaining the wild populations of *V. isocrates* along with other host plants as mentioned above. For the confirmation of *S. laurifolius* as a new host plant, the cited literature (Bell, 1920; Wynter-Blyth, 1957; Atwal, 1976; Varshney, 1997; Kalesh & Prakash, 2007; Kalesh & Prakash, 2015; Khan, 2016) has been cross checked. However, in India, a few other species of *Sapindus* occur which support the early stages of many insect species (Rao, 1992). Also, there is a likelihood that *V. isocrates* utilizes/infests other species of *Sapindus* found on the Indian Subcontinent during the larval stage.

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Fig.1a: Female laying egg on leaves



Fig.1b: Egg



Fig.2: Female laying egg on fruits



Fig.3: Caterpillar on fruit



Fig.4: Punctures the fruit from the lateral side



Fig.5: Feeds on the inner mass of fruit 48



Fig.6: After consuming one fruit, travels to another fruit



Fig.7: Larvae observed in wild



Fig.8: Pupa just before eclosing



Fig.9: Adult