



## ***Parapoynx diminutalis* Snellen, 1880 (Lepidoptera: Crambidae): A pest of submerged aquatic weed *Hydrilla verticillata* (L.f.) Royle**

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**ABSTRACT:** *Parapoynx diminutalis* was observed in *Hydrilla verticillata* (a weed) in artificial tanks at Kerala Agricultural University. The incidence was so severe that the entire biomass of hydrilla was eaten away by the larvae which pupated in water. Pupal case was made of stem pieces of hydrilla, thus curtailing the growth and multiplication of the weed was suppressed in a period of one month indicating that this is a potential biocontrol agent for the weed.

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**KEY WORDS:** Weed, water thyme, biocontrol agent, caterpillars, severe feeders

Water thyme, *Hydrilla verticillata* (L.f.) Royle (Family: Hydrocharitaceae), is a submerged obligate aquatic plant with cosmopolitan distribution (Cook and Luond, 1982). *Hydrilla* is a profusely branched, herbaceous perennial with very slender stems with pointed leaves arranged in a whorl fashion (CAIP, 2021). Generally, when hydrilla takes over an aquatic habitat, it gradually eliminates all other aquatic plants, leaving just hydrilla. However, submerged weeds like najas, utricularia are also found to co-exist in many freshwater ecosystems in Kerala. During mid- September 2020, *Hydrilla* was collected from a pond at Ollukara, Thrissur, Kerala (10.53° N; 76.25° E) and was grown in cylindrical concrete tanks with 40 cm height and 38 cm inner diameter, maintained in the AICRP centre. By late September, 2020, egg mass

of a moth was first observed, under the leaves of hydrilla. It took 4-6 days to hatch. The hatched out larvae were very active and started feeding voraciously. The caterpillar constructed case out of hydrilla plant part and moved around by remaining within the case (Fig. 1). The caterpillar is creamy white with yellowish brown head, prothoracic shield and thoracic legs; with brown spots on head, and thoracic segments around the base of setae; branched gills present on meso and metathorax and abdominal segments 1-9. Larval length was about 10 mm and was light yellow in colour with brown patch on head and tip of thorax. The larvae caused damage to hydrilla by feeding on the plant parts and preparing cocoon case from hydrilla stem cuttings and were found to retreat in between feeding cycles inside the case. It caused

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Fig 1. Larva of *Parapoynx diminutalis*

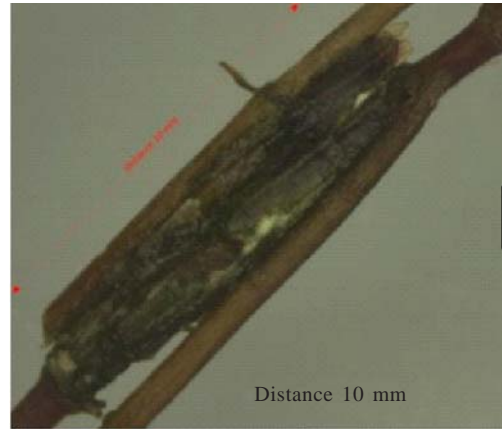


Fig 2. Pupal case of *Parapoynx diminutalis*



Fig 3. Hydrilla stem with pupal cases of the moth



Fig 4. Adult moth immediately after emergence

extensive damage by cutting the stems and defoliation (Fig. 3). The larval period was 20-30 days. The hydrilla samples with pupal cases (Fig. 2) were kept in glass tumblers containing water and covered with fine mesh net, so as to observe the emergence of adult moth. Adults were emerged in 6-8 days. The adult moth was small, straw-colored with white and brown stripes, and resembled a rice leaf roller moth in size and colour. Male moths were smaller than female moths (Fig. 4).

The insect species was identified as *Parapoynx diminutalis* Snellen, 1880 based on the larval description provided by Habeck and Balcuinas (2005). According to Habeck (1996), the presence of branched gills and brown patches on the head and tip of the thorax, distinguish larvae of this moth from those of other aquatic species. *P. diminutalis* is an adventive moth, found in a variety of water bodies, including rivers, backwaters, lakes, and ponds. It was first reported in Florida in 1976 by Del Fosse, Perkins and Steward, but gradually appeared in wider areas (Habeck, 1996). Larval stage of the moth causes damage to *Hydrilla*. *Hydrilla* and other aquatic plants are regularly attacked by aquatic larvae (Buckingham and Bennett, 1989). This moth has been reported earlier in 1971 in India and Pakistan during an attempt to determine potential biological control agents in *Hydrilla* (Baloch *et al.*, 1980). Purcell *et al.* (2019) have reported its incidence in hydrilla from China, Indonesia, Malaysia, Singapore, Thailand and Vietnam. The search for a potential biocontrol agent for *Hydrilla* began in early 1980s and though some snails and pathogens were detected, the results were not promising (CAIP, 2021). A detailed study on life cycle and host range of this moth is required to establish its potential as a biocontrol agent for aquatic weed management.

## ACKNOWLEDGEMENT

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