



Research Note

First Record of *Protopanteles obliquae* (Wilkinson) (Braconidae: Hymenoptera) on *Spilosoma obliqua* Walker on jute crop

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ABSTRACT: A survey on native natural enemies of Bihar hairy caterpillar, *Spilosoma obliqua* Walker was conducted during April-August 2012 cropping season at ICAR-CRIJAF, Barrackpore as well as jute growing belts in West Bengal, India. The survey revealed that *Protopanteles obliquae* (Wilkinson) (Braconidae: Hymenoptera) is a potential larval parasitoid of *S. obliqua* which is occurring naturally on jute. This is the first record of natural parasitism of *P. obliquae* on *S. obliqua* on jute crop in India.

KEY WORDS: Jute, Bihar hairy caterpillar, larval parasitoid, *Protopanteles obliquae*, *Spilosoma obliqua*

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Bihar hairy caterpillar, *Spilosoma obliqua* Walker is one of the major pests and highly polyphagous which infests many economically important crops, often causing severe economic damage (Gupta and Bhattacharya, 2008) including jute. Both species of cultivated jute crop (*Corchorus olitorius* and *C. capsularis*) are highly susceptible to *S. obliqua* particularly during the active growth period of the crop. In jute, it causes yield loss up to 30% (Bandyopadhyay *et al.*, 2014). It also infests another bast fibre crop i.e. mesta (*Hibiscus* spp). However, jute is a more preferred host than mesta. Tossa jute (*C. olitorius*) is more susceptible to *S. obliqua* than the white jute (*C. capsularis*) (Pandit, 1985). *S. obliqua* earlier considered as a sporadic and irregular pest of jute, however, in recent years, outbreaks of this pest were reported from jute growing areas causing substantial loss to the fibre.

The female moths lay eggs in groups and a single female may lay up to 1000 eggs. Upon egg hatching, the larvae gregariously scrape the chlorophyll tissues of the leaves. Later they disperse to entire field and defoliate the plant. Timely management of this pest is very important as any delay may even lead to complete defoliation of crop in the field. The jute crop supports large number of natural enemies of crop pests (Rahman and Khan, 2009) which have tremendous potential as an entity in the integrated approach for management of pests of jute (Rahman and Khan, 2010).

Therefore, the role of natural enemies for management of this pest needs to be explored. Information on spectrum and type of native natural enemies is a pre-requisite for large scale inundative releases of biocontrol agents. Keeping this in view, a survey for natural enemies of jute pests was conducted in jute growing areas of North 24 Parganas district West Bengal during Kharif 2012. During the survey, different stages of *S. obliqua* larval population were collected and reared in Biocontrol Laboratory at ICAR-CRIJAF, Barrackpore. The larvae were grouped based on instars and further maintained in the laboratory in separate cylindrical glass jars (27cm ht x 24cm dia) provided periodically with fresh jute leaves as feed, covered with muslin cloth till pupation. The full grown *P. obliquae* larvae emerged out through the ventro-lateral body region of the host insect larva (mostly 2-3th instar). Immediately after exit from the host, each grub begins to spin a white cylindrical cocoon and soon compact mass of milky white cocoons appear on the side of the host larva (Fig. 1a). The pupal cocoon measures about 4 mm in length with a maximum width of 2-3 mm. The cocoons were immediately collected and placed in Petri dish (10 cm x 9 cm) inner lining with parafilm. The adult wasps emerged by cutting a circular lid at the end of the cocoon. Adult wasps were slender with long antennae and black in colour and emerged 4-6 days after pupation (Fig. 1b).



Fig. 1. Parasitoid of Bihar hairy caterpillar, *Spilosoma obliqua* Walker parasitized by a) Adult of *Protopanteles obliquae*, and b) parasitized cocoons along with host larvae

On the basis of the specimen identification report from National Coordinator, Network Project on Insect Biosystematics, Division of Entomology, ICAR- Indian Agricultural Research Institute (IARI), New Delhi, the parasitoid was identified as *P. obliquae* (Wilkinson) (Hymenoptera: Braconidae). It is a gregarious, endoparasitoid, specific to *S. obliqua*. The activity of this parasitoid was noticed from mid-May to mid-July during the cropping season. The preliminary studies indicated that, the early instars (up to third instars) of *S. obliqua* were more preferred by this parasitoid. Hence, insecticidal intervention may be avoided during the early instar stages as to the extent of 38% of the parasitization occurred during this stage. This parasitoid can be used as a potential biocontrol agent against jute hairy caterpillar through conservation, augmentation and mass multiplication. This report confirms the parasitization by *P. obliquae* as a larval parasitoid of *S. obliqua* in jute for the first time in India.

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