



## RECORD OF *TELENOMUS CALIFORNICUS* ASHMEAD ON FALL ARMY WORM *SPODOPTERA FRUGIPERDA* (J E SMITH)

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### ABSTRACT

*Telenomus californicus* Ashmead (Hymenoptera: Platygasteridae), an egg parasitoid of *Spodoptera frugiperda* (J E Smith) is documented as a new record from Madurai in Tamil Nadu, India. This species has been reared from the field collections of parasitized eggs. The parasitoid was studied for its morphology and the species was distinguished by its dilated proximal four antennal segments.

**Key words:** *Spodoptera frugiperda*, maize, Madurai, egg parasitoid, *Telenomus californicus*, Platygasteridae, Hymenoptera, morphology, new record, description, diagnosis

The fall army worm *Spodoptera frugiperda* (J E Smith) (Lepidoptera: Noctuidae) is a highly destructive pest of cereals, and is a native of the tropical and subtropical regions of North, Central and South America (Sparks, 1972). It was first reported in 2018 in India (Ganiger et al., 2018; Sharanabasappa et al., 2018). Following the invasion of *S. frugiperda* into India, emergency responses have been geared towards the use of insecticides (Dehmuki et al., 2020). The frequent application of insecticides is unsustainable due to insecticide resistance, increased production costs, and other hazards. Under these circumstances, biological control may offer an alternative. Parasitoids are natural enemies widely used to manage insect pests, when these are mass multiplied under laboratory condition and field released. *Telenomus* Haliday of subfamily Telenominae (Hymenoptera: Platygasteridae) is a large cosmopolitan genus of egg parasitoids (Johnson, 1984). The hosts are mostly Lepidoptera and Hemiptera, but these are also known to attack dipteran and neuropteran eggs (Johnson, 1984; Johnson and Bin, 1982). Among parasitoids, egg parasitoids *Telenomus* spp., play a key role in the suppression of insect pests. *Telenomus remus* Nixon was identified as one of the natural egg parasitoids of *S. frugiperda* in Africa (Marc Kenis et al., 2019). The present study documents the occurrence of *Telenomus californicus* Ashmead reared from *S. frugiperda* eggs as a new record.

### MATERIALS AND METHODS

During *S. frugiperda* surveys, parasitized egg masses were collected from maize fields of Agricultural College

Research Institute, Madurai. The collections were reared under laboratory conditions. Adult parasitoids that emerged from egg masses were killed within 70-96% alcohol and stored in glass vials in 100% alcohol. Larvae from the non-parasitized eggs in the same egg mass were also reared until adult emergence to confirm the identity of the host. The samples of the egg parasitoids were sent to the Zoological Survey of India, Kolkata and got identified as *Telenomus californicus* and morphology details confirm this (Fig. 1a-d); it can be easily distinguished by its proximal four antennal segments dilated. Further, antennae ten segmented in female and eleven segmented in male. Tarsi four segmented with enlarged base tarsi. Male genitalia, however, provide fairly reliable characters.

### RESULTS AND DISCUSSION

Altogether 22 species of *Telenomus* are known from India (Rajmohana, 2006; Rajmohana et al., 2013a,b). Now, *T. californicus* has been observed to occur as an egg parasitoid on *S. frugiperda*. *Telenomus* spp., are solitary egg parasitoids and only a few species that attack larger eggs of different insect orders are gregarious (Margaría et al., 2007). This study records a new gregarious *Telenomus* sp. that parasitizes the *S. frugiperda* eggs (Fig. 1). *Telenomus californicus* had been known as endoparasitoid of lepidopteran eggs from Brazil (Loiácono and Margaría 2002). Further, it had been known to parasitize the eggs of the satin moth *Leucoma salicis* L. (Burgess 1921; Burgess and Crossman 1927; Thompson, 1958). It had also been reported to be host specific on the eggs of Douglas-fir

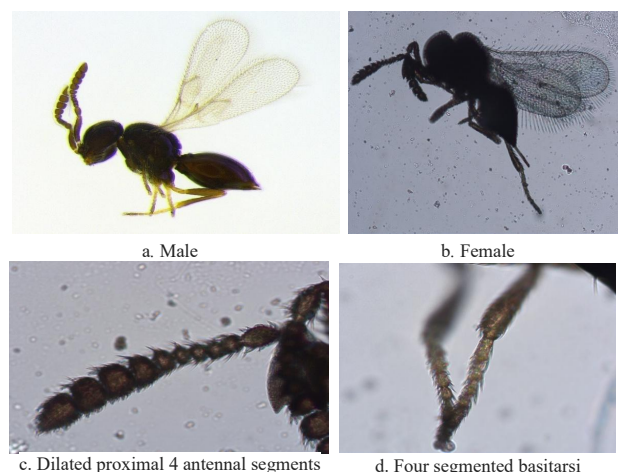


Fig. 1. *T. californicus*- adults, antennae, wings and legs

tussock moth *Orgyia pseudotsugata* (McDunnough) (Lepidoptera: Lymantriidae) (Torgersen and Rya 1981). The presence of *T. californicus* has important implications for the biological control of *S. frugiperda* in India.

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