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Research Article

A new species of *Trichogramma* (Hymenoptera: Trichogrammatidae) from South India

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ABSTRACT: *Trichogramma danaidiphaga* sp. nov., a new egg parasitoid of *Danaus chrysippus* (L.) on *Calotropis gigantea* is described. Particulars of other insect hosts and host plants are also furnished.

KEY WORDS: *Trichogramma danaidiphaga*, *Danaus chrysippus*, *Calotropis gigantea*

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INTRODUCTION

A new species of *Trichogramma* was discovered while surveying for *Trichogramma/Trichogrammatoidea* (Hymenoptera; Trichogrammatidae) in S. India. This species was collected almost always, in association with *T. danausicida* Nagaraja (Nagaraja, 1996) from the eggs of *Danaus chrysippus* (L.) (Lepidoptera: Nymphalidae: Danainae) on *Calotropis gigantea* as well as from the eggs of a pierid (? *Catopsilia pyranthe* L.) (Lepidoptera; Pieridae) on *Cassia* spp. The collections were made between 1971 and 2009 but no laboratory culture could be established as this species failed to parasitize the eggs of *Corcyra cephalonica* (Stn.) (Lepidoptera; Pyralidae). This species was collected from localities around Bangalore, Udupi (Karnataka) and Chennai (Tamil Nadu), and at earlier occasion from around Bangalore in the 1980s by the first author.

This paper describes this new species.

Trichogramma danaidiphaga Nagaraja & Prashanth sp.nov.

Male

Length 0.503 mm (0.38-0.72; N=20); width across head 0.20 mm (0.14-0.29; N=20).

Head light dull ochreous yellow, with occiput up to posterior pair of ocelli grayish; antennae light dull yellow; ocelli scarlet red; eyes deep scarlet. Thorax and gaster with ground colour dull light ochreous yellow with prothorax, mesoscutum and abdominal tergites grayish. Legs light ochreous yellow.

Antenna (Fig. 1) with scape 2.53 x the pedicel; flagellum with ring segment 1.8x the scape, with 33 (21-39) moderately long hairs, longest being nearly 2.2 x (2.0-2.4; N=17) the maximum width of flagellum.

Mesothorax with scutellum (Fig. 2) is having a pair each of anterior and posterior setae, the posterior one being 4 x the anterior one.

Fore wing (Fig. 3): length 2x the width with faint basal infuscation running up to stigma; recurrent veinlet with 3-5 setae; setae on tornus nearly 0.12 the width of wing. Hind wing (Fig. 4): length 12 x the width, with regular median and sparse posterior rows of setae; anterior row absent.

Genitalia (Fig. 5): length 2.7 x the width, with DEG broad at base, about 0.67x the width of genital capsule, with narrow anterior extremity having almost parallel sides; MVP short and sharp, reaching 0.5 or less the length of CS; CS below the level of GF; ventral tubercles far below the level of MVP; aedeagus with short apodemes (1.25:1.00), together as long as genital capsule and 0.83x length of hind tibia (Fig. 7).

Female

Length 0.57 mm (0.46-0.66; N=20); width across head 0.24 mm (0.19-0.28; N=20).

Head light ochreous yellow with grayish occiput; antenna light ochreous yellow; thorax and abdomen with light ochreous yellow base; thorax with grayish shade on prothorax and mesoscutum; legs light ochreous yellow. Abdomen with anteriormost two terga and the tip dark grayish.

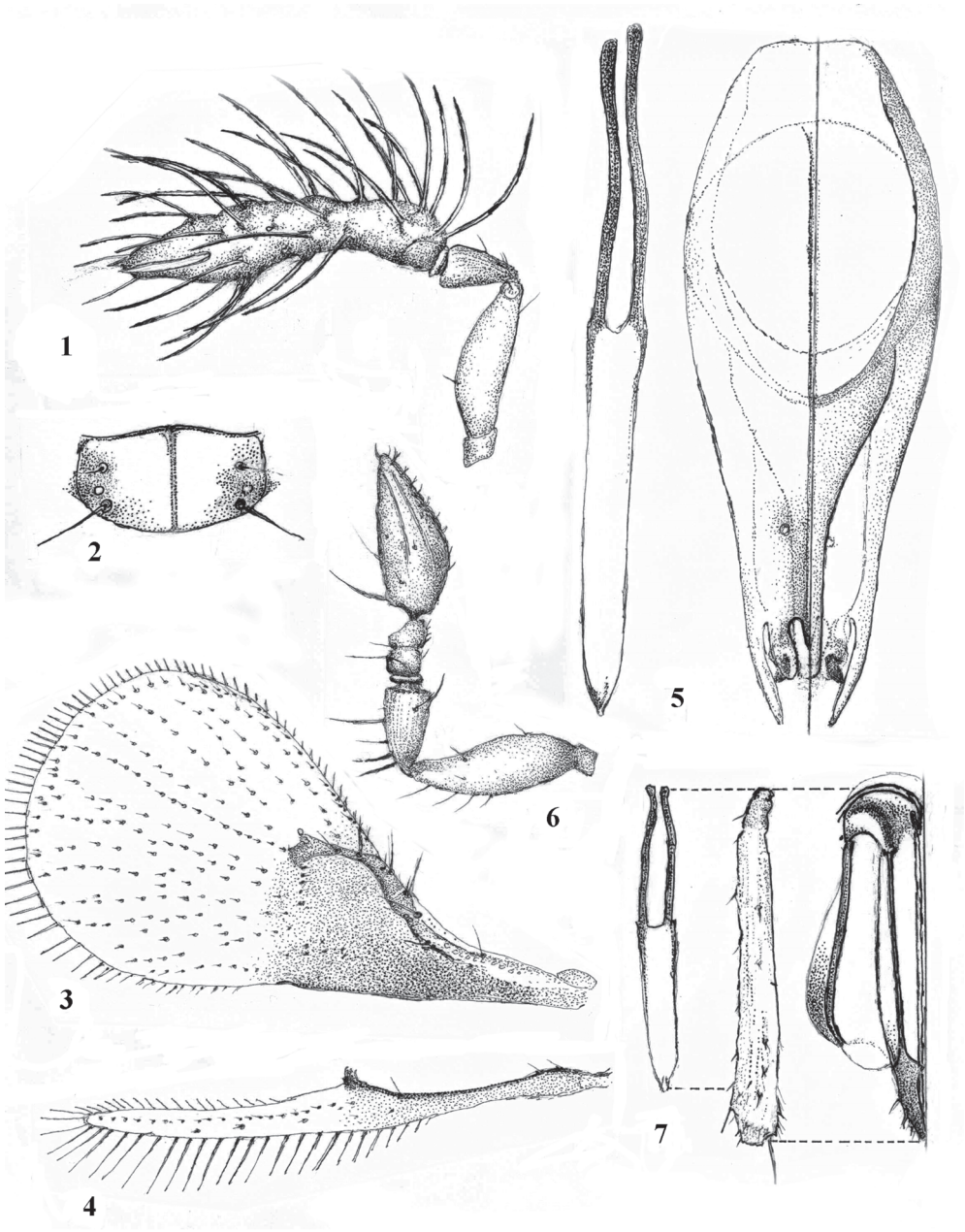

Fig. 1. *Trichogramma danaidiphaga* sp. nov. (1. male antenna; 2. mesoscutellum; 3. forewing; 4. hind wing; 5. male genitalia; 6. Female antenna; 7. Relative lengths of aedeagus + apodemes, ovipositor and hind tibia)

Antenna (Fig. 6): scape 2.4 x length of pedicel; pedicel slightly longer than funicle; club nearly 0.9 x the scape. Wings and mesoscutellum as in male. Ovipositor as long as hind tibia (Fig. 7).

Holotype. Male with following particulars: Ex. Eggs of *Danaus chrysippus* on *Calotropis gigantea,* from Hessaraghatta, (Karnataka, India). 12.10. 2009. Coll.: Prashanth Mohanraj and H. Nagaraja.

Paratypes. 2 Males and 2 Females with same host and host plants: Hessaraghatta, Mandya, around Bangalore, 2006-2009; Kamalashile (Udupi Dist.), 1971; Chennai, (Tamil Nadu, India), 1986.

Holotype deposited in collections of NBAII, Bangalore; Paratypes deposited in collections of NBAII, Indian Agricultural Research Institute, New Delhi.

A characteristic feature of *T. danaidiphaga* is that unlike *T. danausicida* it does not parasitize the eggs of *Corcyra cephalonica* Stn. (Lep., Pyralidae). A laboratory culture of this species could therefore not be established for conducting crosses with the other species. But at the same time both these are not sibling species since there are morphological differences between them (Table 1).

Etymology: The name *danaidiphaga* is derived from the name of the host insect, a danaine butterfly.

Table 1. Differences in genitalic and antennal characters of *T. danausicida* and *T. danaidiphaga*

	T. danausicida	*T. danaidiphaga*
Male genitalia	DEG narrow at base, distal part tapering	DEG broad at base, distal part narrow with parallel sides
Length of ovipositor	MVP longer, reaching above 0.5 of CS Longer than hind tibia	MVP shorter, reaching about 0.5 of CS As long as hind tibia
Male antenna	With 39-45 hairs (Mean 42)	With 22-39 hairs (Mean 33)

Remarks

T. danaidiphaga was largely collected from the eggs of *D. chrysippus* on *C. gigantea*. A few individuals were also collected from the eggs of an unidentified pierid on *C. auriculata* from Hessaraghatta, near Bangalore. This species was almost always found in association with *T. danausicida* as both were obtained from the same host, *D. chrysippus*. They were both found on the same host and host plant from different localities, *viz*., localities in Udupi District (coastal Karnataka) (1971) and Chennai (Tamil Nadu) (1986).

The differences shown above suggest that these two are morphologically distinct from each other. Their association with respect to their insect host and host plant shows that they are ecological homologues, as per our collections made in various areas since 1971. Further surveys have to be made to determine the extent of their togetherness.

T. danaidiphaga is a distinct species that closely resembles species occurring elsewhere (Sorokina, 1993). *T. thalanse* Pinto and Oatman (1985) for instance differs from the present species in having the tip of DEG not reaching CS. The MVP is very minute in *T. sugonjaevi* Sorokina, *T. elegatum* Sorokina, *T. lacustre* Sorokina, *T. parkeri* Nagarkatti and *T. vargasi* Oatman & Platner, while it is normal though short in *T. danaidiphaga*. CS is enlarged in *T. rossicum* Sorokina while it is not so in the present species. In *T. oleae* Voegelé and Pointel, CS is far behind the level of GF, in *T. danaidiphaga* it is nearer to GF.

Though it closely resembles some species of *Trichogramma*, *T. danaidiphaga* is a distinct species. It also attacks other hosts like an unidentified sphingid (Lepidoptera) on *Carissa carandus* and an unidentified pierid (Lepidoptera) on *Cassia fistula*.

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