ISSN 0523 - 7904

BOCAGIANA

Museu Municipal do Funchal (História Natural)

Madeira 31.V.2004 No. 214

TRICHOGRAMMA GICAI PINTUREAU & STEFANESCU, 2000 (HYMENOPTERA: TRICHOGRAMMATIDAE) REARED AS AN EGG PARASITOID OF THE MADEIRAN ENDEMIC BUTTERFLY, *PARARGE XIPHIA* (LEPIDOPTERA: SATYRIDAE)

By M. GIBBS [1], G. R. BROAD [2] & A. POLASZEK [2, 3]

With 2 plates

ABSTRACT. Eggs of *Pararge xiphia* (Fabricius, 1775), a Madeiran endemic satyrid butterfly, and of the widespread *P. aegeria* (L., 1758), collected in August 2001, were found to be parasitised by a chalcidoid wasp, *Trichogramma gicai* (Pintureau & Stefanescu, 2000). This rearing record is of interest as the first known parasitoid of *P. xiphia*, and representing a significant geographical range expansion for *T. gicai*.

RESUMO. Colheram-se, em 2001, ovos satirídeos *Pararge xiphia* (Fabricius, 1775), um endemismo Madeirense, e de *P. aegeria* (L., 1758), parasitados pelo himenóptero Chalcidoidea, *Trichogramma gicai* (Pintureau & Stefanescu, 2000). O interesse desta citação reside no facto de este ser o primeiro parasitóide conhecido de *P. xiphia*, o que representa uma significativa expanção da dispersão geográfica de *T. gicai*.

[1] The University of Manchester, School of Biological Sciences, 3614 Stopford Building, Manchester M13 9PT, U. K. E-mail: melanie.gibbs@man.ac.uk

[2] Centre for Ecology and Hydrology, Monks Wood, Abbots Ripton, Hantingdon PE28 2LS, U. K.

[3] Department of Entomology, The Natural History Museum, Cromwell Road, London SW7 5BD, U. K.

INTRODUCTION

The senior author, whilst carrying out research into the competitive interactions of speckled wood butterflies (Lepidoptera: Satyridae; *Pararge*) on Madeira in August 2001, collected eggs laid by *Pararge aegeria* (L., 1758) and *P. xiphia* (Fabricius, 1775). Altogether, 32 eggs of *P. xiphia* and 46 eggs of *P. aegeria* were collected from the grass, *Brachypodium sylvaticum* (Huds.) Beav., 1762. The collections were made at Portela at an altitude of about 670 m. The eggs were collected without any response to parasitism, and at the time of collection no visible signs of parasitism were evident. These eggs were found to have a parasitism rate of 25% for *P. xiphia* and 26% for *P. aegeria*. The parasitoids that emerged were a single species of Trichogrammatidae (Chalcidoidea), a family of exclusively insect egg parasitoids. No other parasitoids were reared from any eggs collected. These specimens were identified by the junior authors as *Trichogramma gicai* (Pintureau & Stefanescu, 2000), a species only recently described as a parasitoid of another butterfly species, *Iphiclides podalirius* (L., 1758) (Lepidoptera: Papilionidae), in north-east Spain (PINTUREAU *et al*., 2000).

Identification of *Trichogramma gicai*

Trichogramma is a large genus with around 38 species in Europe (NOYES, 1998; PINTUREAU *et al*., 2000). Identification of specimens to species level is rendered difficult by the tiny size of the adults and their rather uniform appearance. Dorsal-ventral slide mounting of specimens is recommended so as to observe critical characters such as the ovipositor to hind tibia ratio, the form of the male genitalia and the form of the male funicular setae of the antennae (PINTO, 1997). Specimens can be identified to the genus *Trichogramma* using the keys of DOUTT & VIGGIANI (1968) or PINTO (1997). PINTUREAU *et al*. (2000) described and illustrated *T. gicai*; here we present photographs of slide mounted material (Plates I & II) that will further facilitate identification of this species. *Trichogramma gicai* can be identified amongst the western Palaearctic *Trichogramma* species by the following combination of characters.

1) Ovipositor to hind tibia ratio: 1.3 (Plate I, B). The only other species in the *perkinsi* group with a ratio exceeding 1.2 (PINTUREAU *et al*., 2000) are *perkinsi* Girault, 1912, described from Hawaii, *lenae* Sorokina, 1991, and *sericini* Pang & Chen, 1974, both described from Asia.
2) Wings infumate at the base (Plate I).
3) Dorsal lamina of male genitalia reaches almost to the end of the parameres (Plate II).

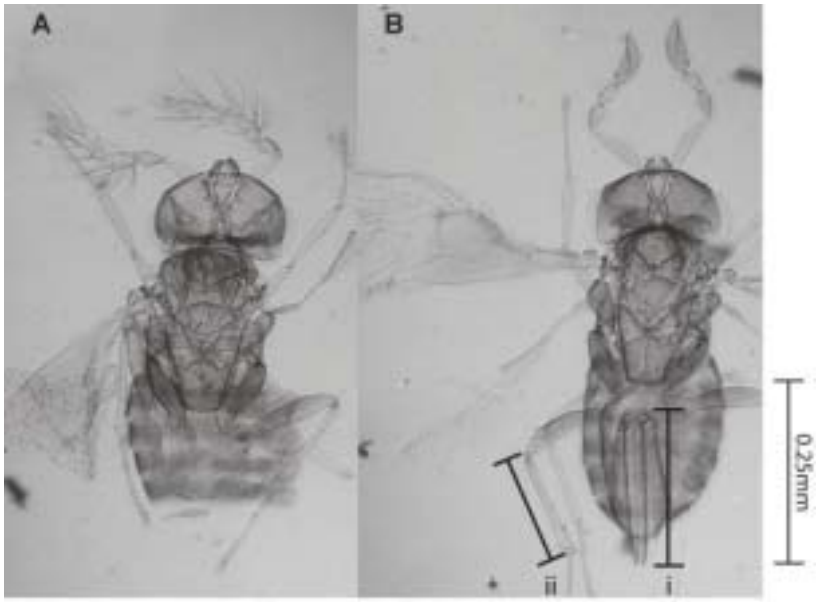

Plate I - Slide-mounted specimens (ventral views) of *Trichogramma gicai*. A: male (genitalia removed, see Plate II); B: female, showing relative lengths of the ovipositor (i) and hind tibia (ii).

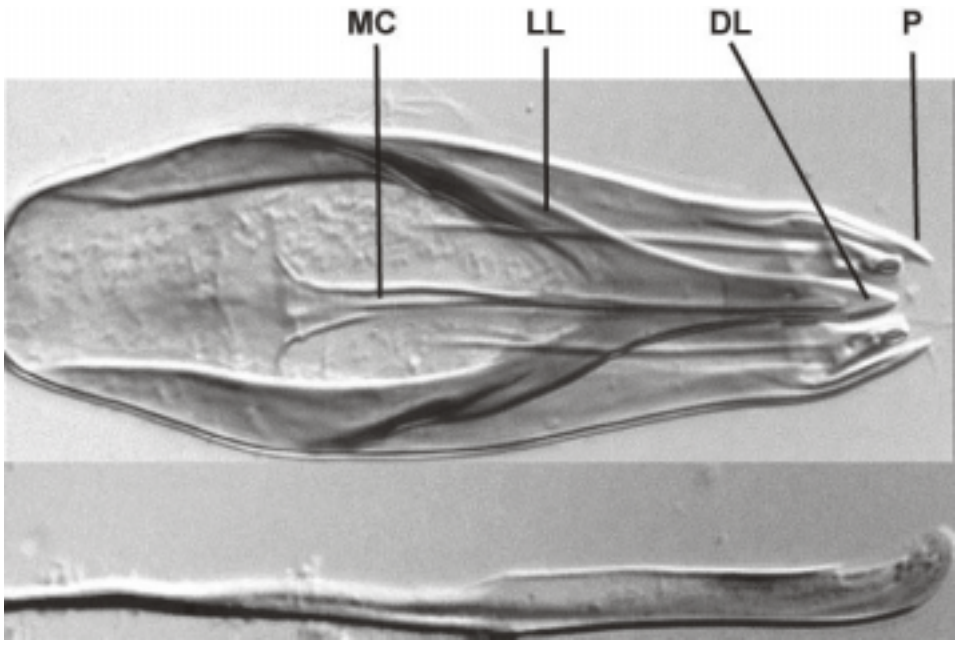

Plate II - Male genital capsule of *Trichogramma gicai*. Dorsal view above, showing relative positions of the tips of the dorsal lamina (DL) and the parameres (P), also the medio-ventral carina (MC) and lateral lobes of the dorsal lamina (LL); lateral view below.

The following key should separate *T. gicai* from other trichogrammatids so far recorded from Madeira, but note that other species are likely to be present and unrecorded. The characters separating *T. cordubense* Vargas & Ceballo, 1985 and *T. evanescens* Westwood, 1833 are taken from CABELLO (1986).

1. Antennal clava two or three-segmented *Oligosita*
[*one species recorded*, O. subfasciata Westwood, 1879]
- Antennal clava one-segmented **2** (*Trichogramma*)
2. Male: dorsal lamina of male genitalia reaches almost to the end of the parameres
Female: ovipositor to hind tibia ratio 1.3 *T. gicai*
- Male: distance between the tip of the dorsal lamina of male genitalia and the end of the parameres greater than or equal to the distance between the tips of the parameres
Female: ovipositor to hind tibia ratio 1.0-1.2 **3**
3. Male: lateral lobes of the dorsal lamina (Plate II) expanded to reach the borders of the genital capsule; end of the medio-ventral carina (Plate II) reaching to the end of the dorsal lamina *T. cordubense* Vargas & Ceballo, 1985
- Male: lateral lobes of the dorsal lamina not expanded, not reaching to the borders of the genital capsule (*c. f.* Plate II); medio-ventral carina not reaching to the end of the dorsal lamina (*c. f.* Plate II) *T. evanescens* Westwood, 1833

Specimens have been deposited in the Natural History Museum, London.

We anticipate that, with further rearing of butterfly eggs in southern Europe and north Africa, *T. gicai* may well prove to be rather widespread, given the disjointed range as presently understood. Therefore, further investigations are recommended to determine the distribution of *T. gicai*, and to identify other butterfly species that may be parasitised.

ACKNOWLEDGEMENTS

The senior author was funded by The Department of Biological Sciences at Manchester Metropolitan University and is happy to acknowledge the assistance of Lesley Lace and Martin Jones for assisting with egg collecting, together with Paulo and Louisa Oliveira, and their families, for their help and support during her stay on Madeira. We would also like to acknowledge Allen Moore for his helpful comments on an earlier version of this manuscript.

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Date received: 27-12-2002.