

Preliminary notes on the early stages of *Isturgia pulinda* (Walker, 1860) (Lepidoptera: Geometridae)

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ABSTRACT. The early stages, larval hostplant and voltinism of *Isturgia pulinda* in the Maltese Islands are documented.

KEY WORDS. Lepidoptera, Geometridae, *Isturgia pulinda*, early stages, biology, Malta.

INTRODUCTION

On August 8, 2007, during one of the activities to identify, document and monitor the lepidopterofauna of the Mellieha Ridge area as part of an ecological survey for an EU funded project entitled “EU Life Project LIFE06 NAT/MT/000097 SPA Site and Sea Actions Saving *Puffinus yelkouan* in Malta”, an unusually large number of both sexes of *Isturgia pulinda* (Walker, 1860) were recorded using mercury vapour lamps. During the same month, the site was revisited three times and each time *Isturgia pulinda* was common. A female was also collected from it-Torri l-Ahmar, also along the Marfa Ridge, on the 20th August. These findings were recently published in SAMMUT *et al.* (2008). Prior to these findings, this species was known for the Maltese Islands from a single female collected from Rabat on May 3, 1987 but incorrectly recorded as *Idaea manicaria* (Herrich-Schäffer, 1851) (SAMMUT, 2000), from a male specimen collected from Armier in 2000 and a female specimen collected from Naxxar in 2001 (SAMMUT *et al.*, 2008).

Isturgia pulinda was originally described from Sri Lanka (Ceylon). It is also known from the Oriental and Afro-tropical Regions, North Africa, Saudi Arabia and Yemen. In Europe it has been recorded from the Canary Islands, mainland Spain and Portugal and the Cape Verde Islands (HAUSMANN *et al.*, 2004). The species probably became established in the Maltese Islands during the late 1970s when extensive afforestation projects using mainly *Acacia* and other exotic trees were underway (SAMMUT *et al.*, 2008). Very little information is available on the early stages or larval host plant of this species. *Acacia nilotica* (L.) Willd. ex Del., has been recorded as a hostplant and the species is definitely an *Acacia* feeder (WILTSHIRE, 1990).

MATERIAL AND METHODS

Voucher specimens of this species were deposited in the collections of the authors and the National Museum of Natural History (Mdina) and a few live females were kept for breeding purposes. Following field collection of specimens, each female was placed in a separate plastic container measuring 40 mm x 30 mm and in less than 3 hours these were again separately

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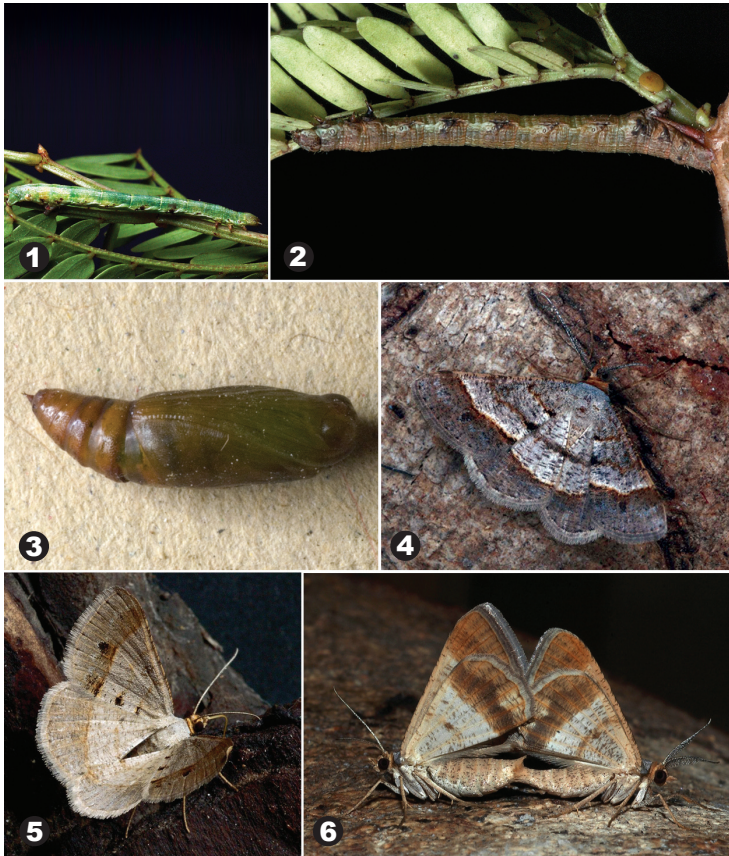
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placed in 1 litre plastic containers. Cotton dipped in a weak sugar solution was offered to the moths and was readily accepted. By the following morning some had already laid eggs and egg laying was continued for just over a week. As soon as larvae started to hatch, *Acacia* leaves were provided in the same container. Observations on egg laying, larval hatching and other relevant data were recorded. All observations were carried out in 2007.

OBSERVATIONS

Each female moth laid between 25 and 75 eggs in total. Eggs were either laid on the sides of the plastic container or on leaves of *Acacia karoo* Hayne which were placed in the container. Eggs laid on 20th August hatched after five days. When freshly laid, eggs were greyish green in colour, but just before hatching they turned into an olive green colouration. The young larvae were provided with leaves of both *Acacia cyanophylla* Lindley, the dominant *Acacia* species from where the specimens were collected, and *Acacia karoo*. The larvae ignored *A. cyanophylla* leaves but fed and rapidly grew on those of *A. karoo*, passing through all larval instars in ten days. Larvae were of two colour forms, green with white lateral markings (Fig. 1), or brown with lighter lateral markings (Fig. 2).



Figures 1 – 6: *Isturgia pulinda*. 1 & 2 – larvae; 3 – pupa; 4 – male; 5 – female; 6 – male and female in copulation.

Pupation (Fig. 3) took place loosely on the bottom of the mentioned containers or in a soft cocoon amongst the leaf litter which accumulated during larval feeding. The pupal stage was short, with adults hatching in seven days. Males (Fig. 4) emerged before the females (Fig. 5) and copulation (Fig. 6) could be observed a few hours after hatching. The first pupa formed on the 4th September. Three male specimens emerged on the 11th and four on the 12th of September, while two females emerged on the 13th September and mated with the males on the same night. From a female collected from it-Torri l-Ahmar, also along the Marfa Ridge, on the 20th August three generations were obtained with no diapause in between. In captivity, one complete generation was completed in twenty-two days.

The third generation females laid eggs on the 19th of November but these did not hatch. This may be due to the fact that the species overwinters as an egg which will hatch in favourable warm conditions.

ACKNOWLEDGEMENTS

Thanks are due to the National Museum of Natural History, Malta, partner of the EU LIFE project mentioned in the present work, for inviting us to the site for sampling purposes. Special thanks go to Mr Paul Sammut of Rabat, Malta for reviewing the present work.

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ISSN : 2070-4526

Date of Publication : 31st August 2008

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Received: April 20, 2008

Accepted: June 9, 2008