NOTE / NOTA

BIOLOGICAL AND ECOLOGICAL REMARKS UPON *DICESTRA TRIFOLII* (HUFNAGEL) (LEPIDOPTERA: NOCTUIDAE) FROM THE AZORES

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The occurrence and biology of the nutmeg moth, *Dicestra trifolii* (Hufnagel, 1766) (Lepidoptera, Noctuidae), from the São Miguel island (Azores) are discussed. The adult flight periods of this species were observed between January of 1992 and May of 1993, at Relva locality, using pheromone and Pennsylvania blacklight traps. *D. trifolii* was only captured from mid-March to the end of September, and was more abundant during Summer months. A survey of the host plants of *D. trifolii* was also undertaken.

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A ocorrência e algumas notas bioecológicas sobre a traça-do-trevo, *Dicestra trifolii* (Hufnagel, 1766) (Lepidoptera, Noctuidae), da ilha de São Miguel (Açores), são discutidas. A dinâmica de voo dos adultos foi observada na localidade da Relva, entre Janeiro de 1992 e Maio de 1993, usando uma armadilha sexual e outra luminosa. *D. trifolii* só foi capturada entre meados de Março e fins de Setembro, sendo mais abundante nos meses de Verão. Também foi elaborada uma lista das plantas hospedeiras de *D. trifolii*.

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The nutmeg moth, *Dicestra trifolii* (Hufnagel, 1766) (Lepidoptera, Noctuidae), with a holarctic distribution (BALACHOWSKY 1972; BRETHERTON et al. 1979; CALLE 1982; BERIO 1985), was first captured by the author in São Miguel, island of the Azores Archipelago (one female at Povoação and another at Arribanas), in 1989, but only confirmed during 1992, at Relva locality (VIEIRA & PINTUREAU 1993; VIEIRA & SÍLVA in press).

The description of *D. trifolii* (imago, ovum, larvae and pupa) is given by BRETHERTON et al. (1979) and BERIO (1985). Some variations on size of wingspan measures are remarkable: 30-40 mm (BALACHOWSKY 1972), 23-39 mm (BRETHERTON et al. 1979) and 34-38 mm (BERIO 1985). Wingspan of nutmeg moth from the Azores and anterior wing length measured respectively 37.3 ± 1 mm (n = 14; range: 36-39 mm) and 16.4 ± 0.9 mm (range: 15-17.5 mm). No important differences were observed between the sexes. However, very small differences seems to exist on valvae in relation to Spanish and Italian individuals. A study of live animals is needed to verify this.

The eggs are attached to the surface of the leaves, e.g. *Beta vulgaris* L. and *Atriplex patula* L. (Chenopodiaceae) (BALACHOWSKY 1972). When eggs are laid separately they are dispersed on the surface of the leaves (SUKHAREVA 1979).

The larvae of *D. trifolii* feeds on Chenopodiaceae and Leguminosae plants (SUKHAREVA 1979). It can be found by night,

specially on Chenopodiaceae such as goosefoot, *Chenopodium* spp. (BALACHOWSKY 1972; BRETHERTON et al. 1979; CALLE 1982; BERIO 1985) and orache, *Atriplex* spp. (BALACHOWSKY 1972; BRETHERTON et al. 1979; BERIO 1985), but onion (*Allium cepa* L.) (BALACHOWSKY 1972; BRETHERTON et al. 1979), knotgrass (*Polygonum aviculare* L.), yellow alison (*Alyssum saxatille* L.) (BRETHERTON et al. 1979), cotton (*Gossypium* sp.), beet (*Beta vulgaris* L.), tomato (*Licospersicon esculentum* Mill.), sweet potato (*Ipomoea batatas* (L.)), clovers (*Trifolium* spp) and various vegetables have also been recorded as host plants (BALACHOWSKY 1972). Moreover, the nutmeg moth was considered as a pest on young conifers in forecast nurseries (STYLES 1960 in BRETHERTON et al. 1979).

Sometimes the the nutmeg moth adults visit the flowers of ragwort (*Senecio* spp.), scabious (*Knautia* spp.) and knapweed (*Centaurea nigra* L.) which are their nectar source during daytime, but they are mainly nocturnal and are very attracted by flowers and light (BRETHERTON et al. 1979; BERIO 1985).

In S. Miguel island *D. trifolii* was found on plants of all the above mentioned genera, except for of *Gossypium* and *Knautia*, which do not occurr on the island (HANSEN 1988).*D. trifolii* is polyphagous, but until now it has not caused economic damage.

The adult flight periods of *D. trifolii* were studied between January 1992 to May 1993 (i.e. 68 weeks), at Relva (altitude 100 m) on the island of São Miguel, using armyworm pheromone trap (INRA 1988; VIEIRA et al. 1990) and an adapted Pennsylvania light trap.

The total number of *D. trifolii* males captured in a pheromone trap (Fig. 1) was relatively low (72 adults). This species was only captured from mid-March to the end of September, and was more abundant during Summer months (Fig. 1).

The low captures obtained might be related to the efficacy and type of trap. However, sex traps captured more than light traps (the latter caught only 20 adults during April, June, July, and August).

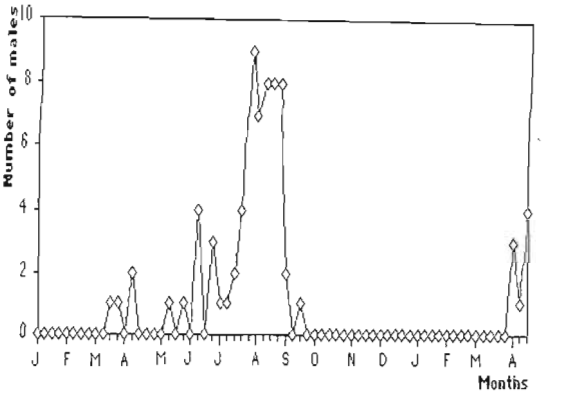

Fig. 1. Number of *D. trifolii* males captured weekly in a pheromone trap, at Relva, from January 1992 to May 1993.

The capacity for development in more than one generation is retained by *D. trifolii*: It is univoltine from the Midlands (U.K.), northwards (BRETHERTON et al. 1979), but is bivoltine in central Europe. Three generations were recorded in southern Europe (SUKHAREVA 1979). Moreover, in Spain it has been recorded flying from March to October (CALLE 1982), and in Italy from May to September (BERIO 1985). In continental Portugal it is bivoltine, flying April to July and July to September (CARVALHO 1983), and the same seems to be the case in the Azores.

The studies related to adult population dynamics should be continued, and if possible extended to other islands of the Archipelago. In parallel, there is a need for more research on larval population dynamics and hibernation, as well as on the phenomena of migration or sedentarism, in order to have a better knowledge of the biological cycle of this species.

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