

**ESSEX EMERALD MOTH, *THETIDIA SMARAGDARIA MARITIMA*  
PROUT (LEP.: GEOMETRIDAE) — AN UPDATE**

P. WARING

*Nature Conservancy Council, Northminster House, Peterborough.*

FURTHER to my note in *Ent. Rec.* **101**: 231-232 concerning the captive rearing of the Essex Emerald moth, *T. smaragdaria*, in preparation for attempts to establish new colonies in the wild from 1990 onwards, I can report that the Nature Conservancy Council now has approximately 500 larvae (as at November 1989) which are currently overwintering out of doors on the haulms of their captive foodplants.

The developments since the previous communication are as follows. From 135 young larvae bred in July 1988, 86 adults emerged from pupae (48 males and 38 females). Emergences took place between 14th June and 21st July 1989 though on 14th June many larvae were still spinning and some were still feeding. The total mortality rate from eggs hatching to adult stage was therefore 36%. Over the same period in the wild 56 larvae were counted between 26th and 28th September 1988, 13 were found after the winter on 18th April 1989 and seven cocoons were discovered on 24th June 1989. A female was struggling to emerge from one of the cocoons but had evidently become trapped for her wings were already dried in a crumpled condition though she had not escaped the pupal case. All the other cocoons contained only empty pupal cases and appeared to have produced adults successfully. One female in perfect condition was seen at rest amongst sea wormwood *Artemisia maritima* nearby but no other adults were seen. No larvae or adults were removed from the wild this year. This is our only opportunity to study the moth in its native habitat and we are observing without interference. Sexing of the pupal cases showed that three had given rise to males and three to females. One pupal case was fragmented and the sex could not be determined. The known mortality rates were 77% between September 1988 and April 1989 and between 46 and 54% between April and June 1989 depending on whether the crippled female is included. The total mortality recorded between September 1988 and June 1989 of 88% is more than twice as high as in captivity at Peterborough and this figure does not include any mortality sustained in the early instars from July to September in the wild. The present generation in the wild numbered at least 27 larvae on 17th August 1989, which is only half the number counted the previous year, so the colony size has declined.

The captive-bred adults produced over 800 eggs. The egg-load of a female is approximately 80. This is based on the dissection of a freshly emerged female that was killed by a spider (*Enoplognatha ovata* det P. Kirby), only hours after emergence. Seventy-seven eggs were counted in her abdomen. The total egg outputs of five laying females kept in isolation from other females from mating to death were 62, 75 and 86 in 1988 and 71



and 82 in 1989 giving a mean of 75. On this basis many of the 37 females that emerged in June and July 1989 did not lay all their eggs. Ensuring that matings and eggs were obtained was extremely time-consuming on top of my other duties and arrangements are being made for assistance in 1990.

Just over 600 of the eggs hatched. Most of these were obtained by bringing the adults into unheated rooms where mating and egg-laying were more successful than when males and females were left together out of doors. The moths and eggs experienced a similar daylength but lower maximum daytime temperatures in these rooms than were recorded outside and every effort was made to put the larvae outdoors on netted potted plants in the first and second instars and all before the end of July. Nevertheless, by late July it was evident that some larvae had "bolted". They were already too large for overwintering. In all, three per cent of the brood produced a second generation of adults in 1989. These pupated from 10th August onwards and the adults emerged between 24th August and 15th September 1989.

This partial second generation resulted almost entirely from among the first larvae to hatch. Most of these bolted individuals were spotted and kept indoors in the hope that they would emerge in time to get their progeny to overwintering stage before the end of the growing season of the foodplant. However, one male emerged from 75 larvae that had been out of doors since 20th July and eight adults including at least four females emerged from 74 larvae that had been outdoors since 24th July.

The autumn emergence, of 21 adults, was spread over three weeks with individual life spans ranging from 1 - 7 days. Most of these moths were fed into a single mating cage containing a large potted *Artemisia abrotanum* as they emerged so that the freshest males and females were constantly able to encounter each other and older females also had access to males, but only about 40 eggs were laid in total and none hatched. In a second cage which I established in the last week of the emergence, the last four females to emerge were placed with three males, including one that had emerged that day. No eggs were laid at all so the partial second generation left no progeny.

My visit to the wild colony on 17th August 1989 was to find out if there was any evidence of a partial second generation taking place there too. From the size of the 27 larvae found, they had reached the third instar but none were large enough to indicate "bolting" and by this stage they should have been in the final instar if this was the case.

In southern Europe *T. smaragdaria* is bi-voltine and the occurrence of a partial second generation in Britain was recorded long ago both in captivity (eg Burrows, 1900, 1901) and in the wild (Turner 1895 a + b). The latter found "several dozen" larvae at a site on the Essex marshes on 31st August 1895, one of which was full grown and which pupated on 4th September, producing an adult on 26th September, 1895.



This year I have received an unusual number of reports of late specimens of other species with overwintering larvae that are normally univoltine, which may indicate that partial second generations occurred in the wild. These include the Small Emerald, *Hemistola chrysoprasaria*, 24th September, in Wiltshire, Lilac Beauty, *Apeira syringaria* 27th August and 5th September also in Wiltshire and Goldtail, *Euproctis similis* — several specimens, one as late as 26th October, in North Hampshire. Equally unusual was a report of a *full*-grown Garden Tiger moth caterpillar, *Arctia caja* in Essex on 1st October (J. Young. pers. comm.)

The five hundred Essex Emerald larvae now in captivity are being kept in similar conditions to those in the winters of 1987/88 and 1988/89 but some are now in Essex rather than Peterborough.

### Acknowledgements

I would like to thank my colleague Roger Key for looking after the livestock for the fortnight of my annual leave.

### References

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### *Epiphyas postvittana* (Walk.) (Lep.: Tortricidae) in Leicestershire

I read with interest Ted Hancock's account of *Epiphyas postvittana* in Wales (*Ent. Rec.* 101: 277). A single specimen of this moth was caught at mv light in a garden in Kirby Muxloe, Leicestershire (OS ref. SK 521 037) in September 1989. The moth was positively identified by Mr R. Barnett, Assistant Curator at the City Museum Bristol.

As far as I can determine, this is the northernmost record for *postvittana* in Great Britain. The moth was a very well marked male, apparently newly emerged. I would like to know of any further records of *postvittana* in Leicestershire so it may be established whether or not the species is breeding in the county.— JANE MCPHAIL, 7 Station Close, Kirby Muxloe, Leics LE9 9ES.

### Oak Eggar moth — Highflyer or upwardly mobile climber?

Whilst high-pruning branches from a Norway maple in my garden here on 1st November I found a first-year larva of the Oak Eggar lying along a branch well out into the tree crown at a height of sixteen feet from the ground (or as our Eurolepidopterists might have it 4.87 metres). It is not



Waring, Paul. 1990. "Essex emerald moth, *Thetidia smaragdaria maritima* Prout (Lep.: Geometridae) - an update." *The entomologist's record and journal of variation* 102, 71–73.

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