ON THE DISTRIBUTION OF SOME SATYRID (LEP.) LARVAE AT A COASTAL SITE IN RELATION TO THEIR ICHNEUMONID (HYM.) PARASITE

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On the night of 5.vi.1975 I made a collection of lepidopterous larvae from the fixed dunes and immediately adjoining slacks at Ainsdale National Nature Reserve, Lancashire, in order to rear parasitic Hymenoptera. In addition to marram grass (*Ammophila arenaria* (L.)) the plateau of these dunes supports lesser growths of other grasses which replace marram grass progressively on the inland sides and completely on the adjoining flat slacks.

The larvae of three species of satyrid were found, each having a substantially different pattern of distribution bearing a close relationship to the incidence of parasitism by the ichneumonid *Ichneumon caloscelis* Wesmael (see Table I.) Larvae of *Hipparchia semele* (L.) were found only on the summit plateau of the dunes where they appeared to be feeding exclusively on marram grass; those of *Pyronia tithonus* (L.) were virtually confined to the adjoining flat slacks where the grasses were less coarse; while larvae of *Maniola jurtina* (L.) were apparently more or less evenly distributed over the entire site, although probably not feeding on marram grass. The larvae of the first two species were, although synchronous, very clearly ecologically isolated and allopatric. This is of some interest since the adults overlap considerably in both time and space later in the year.

Table I

Distribution and parasitism of satyrid larvae collected at Ainsdale N.N.R., 5.vi.1975.

	Numbers of larvae found			Total Nos. of *I. caloscelis* reared			
	Dune plateau	Dune sides	Flat slacks	male	female	Not em.	%
H. semele	19			3	2	6	58
M. jurtina	4	2	3	2		1	33
P. tithonus		1	14		1		7

All the larvae collected were in their final instars and, since no species was markedly nearer pupation than any other, it is reasonable to assume that the differing incidences of parasitism by *caloscelis* were not merely the result of its timing of attack with respect to host development. Oviposition must at least sometimes be into hosts fairly early in their final instars since several of the parasitised larvae continued to feed for over two weeks before pupating. The density of *semele* larvae on the dunes was roughly comparable with that of *tithonus* larvae on the slacks.

I. caloscelis is by no means a purely coastal species and it is of interest that at Ainsdale it is so clearly associated with the marram zone. It is a known parasite of *semele* (e.g. Meier, 1968) and, although *caloscelis* occurs in places where this butterfly is not found, the present results suggest that it specialises on *semele* when the latter is available. The difference in the proportions of *semele* and *tithonus* larve parasitised is significant ($\chi^2=7.52$, $P<0.01$) and the data are consistent with the view that searching for hosts is confined to the area in which *semele* occurs, and hence that *caloscelis* is not particularly attracted to sites supporting only the other satyrid species.

Marram grass does not seem to have been emphasised previously as a foodplant for *semele*. It is interesting to speculate that the predominantly coastal distribution of *semele* in Britain (Heath & Skelton, 1975) may be partly connected with a particular affinity for marram grass although, of course, the plant is absent from many sites at which *semele* flourishes.

ACKNOWLEDGEMENTS

I would like to thank the Nature Conservancy for permission to work at Ainsdale National Nature Reserve, and Mr. J. P. Brock for help with the determination of *I. caloscelis*.

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Reprinted from *ENTOMOLOGIST'S GAZETTE* Vol. 28, May 1977
V. B. Pike, Printers, Canon Street, Kettering, Northamptonshire.