SAND DART *AGROTIS RIPAE* HB (LEP.: NOCTUIDAE) IN GLAMORGAN—A STRANDLINE SPECIALIST

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Abstract. Larval searches for *Agrotis ripae* Hb were carried out on most beaches of West Glamorgan during the autumn of 1999. The results indicated that, although the species was widespread, there were substantial stretches of beach that were not populated. There appeared to be a strong relationship between actively accreting beaches, which supported characteristic strandline flora and fauna, and the presence of sand dart larvae. Local threats to strandline ecosystems are discussed.

INTRODUCTION

Glamorgan is blessed with some of the UK's finest beaches, most of which are backed by extensive dune systems of international importance. Strandlines mark the mobile boundary between dunes and intertidal sands and are characterised by accumulations of seaweed and other organic matter that have been deposited high up the shore by spring tides. This material provides the nutrients upon which a number of specialist plant species thrive, notably prickly saltwort (*Salsola kali*), sea rocket (*Cakile maritima*) and species of *Atriplex*. These in turn provide food and a habitat for one of Glamorgan's most specialised moths, the sand dart (*Agrotis ripae*). The sand dart is classified by Waring (1999) as a Notable/Nb species due to its restricted distribution. It is strictly coastal, occurring only on sand dunes and occurs as far north as Aberdeen. In Glamorgan, the species was first noted at Neath in 1866 (Llewellyn, 1866). Hallet (1917) then listed records for Port Talbot, Penarth and Porthcawl prior to 1917 and Rothamsted surveys carried out during the late 1970s at Oxwich and Whiteford also produced records of the species (Hughes, M.R., unpublished data). Thus it is evident that the species has long been established and is probably to be found on most of the county's dune systems.

Tutt (1994) stated that "*beneath the plants of* Atriplex littoralis *and* Salsola kali *the larvae of* Agrotis ripae *may be obtained in large numbers . . . They are best obtained from the middle to the end of August, when they are nearly full-grown, and can generally be found simply by passing the fingers through the sand*". Fig. 1 shows a full-grown larva obtained by this method. This useful advice enabled the author to conduct a survey of most of the beaches within West Glamorgan during a relatively short period of time in autumn 1999, brief details of which are described below.

A total length of approximately 21 km of dune/beach interface was examined with each stretch being categorised as accreting, stable dune cliff or eroding. Where beaches were found to be eroding, there was no strandline flora, those that were stable occasionally supported populations of the known foodplants, and those that were accreting always supported some foodplant species. These were then sampled as described by Tutt (1994) and larval presence/absence was noted. As one of the main objectives of the survey was to record the current distribution of the species, the 1km squares of the National Grid were used as sampling units. Fig. 2 shows the results of the survey, with larval records being represented by square symbols. All other records predate the survey and are of adult moths, which are shown as circles. Those recorded before 1980 are depicted as open circles. Figure 2 also shows those beaches that were sampled and the erosional/depositional state of each is indicated. Larval distribution was found to be closely associated with actively accreting beaches.

Figure 1. Sand dart—Final instar larva.

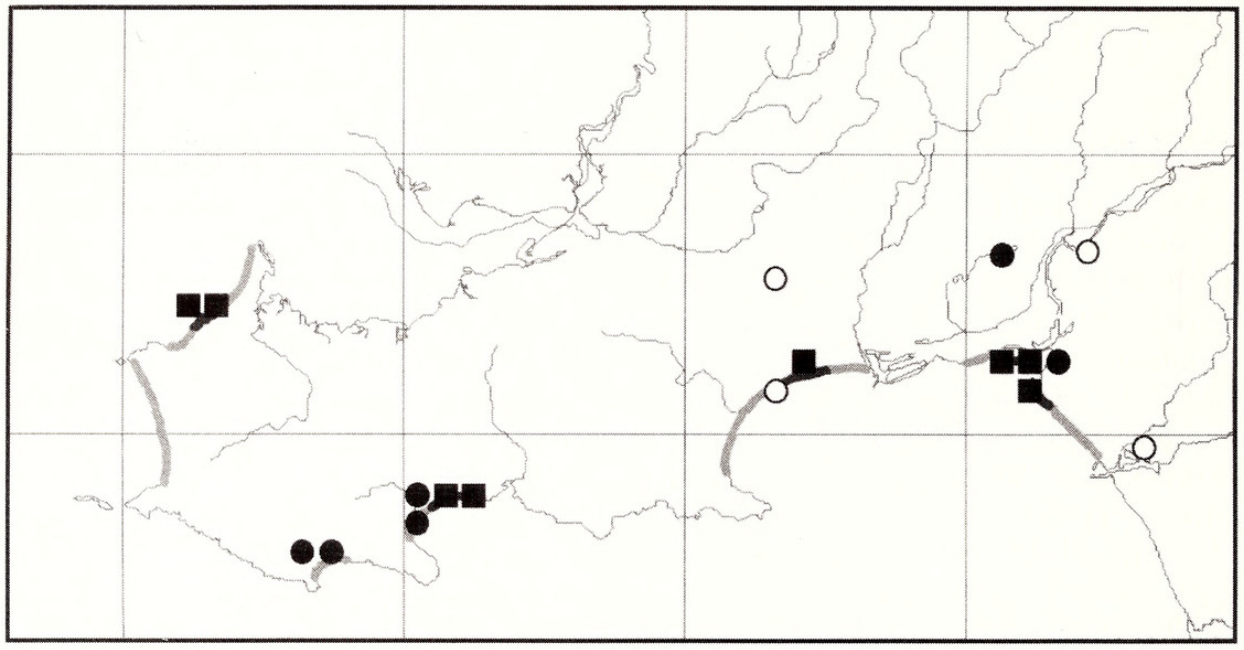

Figure 2. Distribution of sand dart on the Gower Peninsula (square symbols = larvae, round symbols = adults, open circles = pre 1980) and beaches covered by survey (grey = stable dune cliff or eroding dune, black = actively accreting dune).

There has been much concern in recent years over the effects that beach-cleaning operations have on the native flora and fauna of the strandline, and also how such operations may be affecting natural processes. Some evidence suggests that the removal of organic debris prevents the natural development of embryo dunes which provide a natural defence to winter storms. Furthermore, in addition to supporting unique communities of plants and animals, they also form the first stage in dune succession and prevent over-stabilisation, a common problem in many areas.

The sand dart could be described as literally living on the edge of the terrestrial environment and is well adapted to great environmental stress. However, the mandatory standard of the Bathing Directive 76/160/EC, and the prestige of gaining a 'Blue Flag Seaside Award', is resulting in an increase in the number of local authorities undertaking mechanical beach-cleaning operations. This may be one of the greatest threats to date for the sand dart and other co-inhabitants of the strandline, but there is optimism.

Following a period of extensive mechanical beach-cleaning operations within Swansea Bay (SSSI), which resulted in the virtual extinction of many strandline invertebrates (Llewellyn, 1996), these operations were replaced by hand-cleaning

methods during 1999. This enabled small populations of sea rocket and prickly saltwort to colonise areas where residual algal deposits were left undisturbed. The result was that sand dart larvae recolonised almost immediately and were found to be abundant, even in areas where only a few plants had colonised the strandline.

However, such rapid recolonisation is only likely to occur where there are extant populations close by, in this case the population at Crymlyn Burrows undoubtedly facilitated rapid recolonisation. This example does demonstrate that with sympathetic management, it is possible for local authorities (and other land-managers) to accommodate both human interests and those of the strandline fauna without compromising health and safety, tourism and other key issues. Sensitive areas elsewhere in the UK should be identified and damaging activities minimised if sustainable populations of the sand dart and other scarce species are to remain features of our beaches.

References

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SHORT COMMUNICATION

More observations of dotted chestnut moths.—I recently reported finding adult dotted chestnut moths, *Conistra rubiginea* D & S., in the nest of the ant *Lasius fuliginosus* (Latr.) (Formicidae); see Denton (1998. An unusual encounter with dotted chestnut moths *Conistra rubiginea*. *British Journal of Entomology and Natural History* **10** (4): 209). I revisited the same nest on Thursley NNR, Surrey on 4.ix.1998, and found two lepidopteran pupae next to the nest carton, c.40 cm below ground inside the base of a hollow oak. I took these home and adult *C. rubiginea* emerged on the 25. & 29.ix.

L. fuliginosus is a fairly large ant, but workers rarely bring large insects to the nest. However, it does defend its nest against intruders, and the caterpillars must have a way of pacifying or avoiding the workers on their way down into the nest. The adults found within the nest in 1997 were completely ignored by the ants, which were agitated by my presence.

Further investigation of this colony in 1999 revealed several old pupae deep in the nest chamber but no evidence of larvae. The caterpillars of *C. rubiginea* are very hairy, unlike others in the genus and it is tempting to suggest that it might be myrmecophilous, as its range is within that of *L. fuliginosus*. Both favour woodland, and wooded heaths. In captivity the larvae are not very fussy about their food plant, and will eat withered leaves. Perhaps the caterpillar is somehow protected by the ants, which offsets the need for a continual supply of fresh vegetation. It is surprising that others, especially the arch ant-nest investigator Horace Donisthorpe, didn't come across this moth in the many nests examined across the country.—JONTY DENTON, 2 Sandown Close, Alton, Hants GU34 2TG