THE FUNGI OF YNYSLAS SAND-DUNES
A Preliminary Survey

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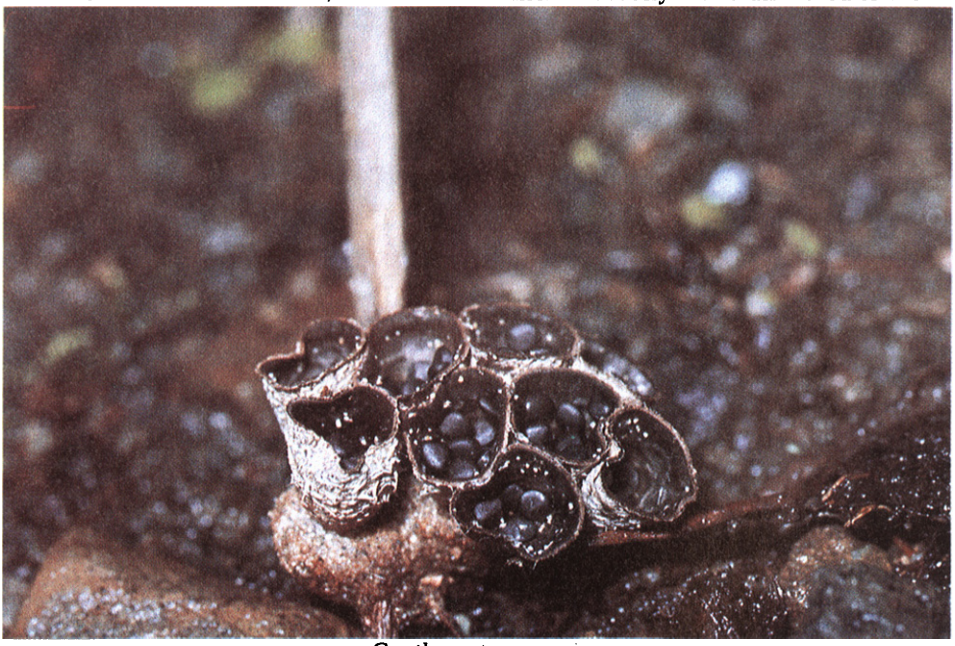
Coastal sand-dunes provide remarkably rich and varied habitats for fungi, yet, with some notable exceptions, their study has been neglected by field mycologists.

The year 1985 was abnormally cold and wet and most forayers at inland sites will remember it as being a particularly poor season for macromycete fruiting. This contrasted dramatically with the experience of the authors who were engaged in a preliminary survey of the larger fungi of Ynyslas nature reserve, a sand-dune system on the Dyfi estuary near Borth in Mid-Wales. Approximately fortnightly visits throughout the year (by M R) revealed an unexpectedly prolific fungus flora, embarrassingly so at peak periods when large numbers of unfamiliar species competed for identification. On one visit in October, 50 different agaric species were collected — which was one more than the total number of agarics previously recorded from the site.

The habitats at Ynyslas vary from the bare sand of mobile dunes next to the sea, through fixed and rabbit-grazed turf to the periodically flooded slacks.

Typical of the mycoflora of the mobile dunes are *Psathyrella ammophila* (Dur. & Lév.) Orton, which fruited almost continuously from April to November, often in troops, a number of *Melanoleuca* species, *Phallus hadriani* Vent.: Pers. and *P impudicus* L: Pers. and *Peziza ammophila* Dur. & Mont., a cup fungus with a rooting pseudostipe. Ynyslas was, until 1985, the only known British location for a coprophilous bird's nest fungus, *Cyathus stercoreus* (Schwein.) de Toni, which is usually found anchored to the



Cyathus stercoreus.

Miss Sally Pester, a summer warden at Ynyslas Nature Reserve makes a wish in a Fairy Ring of Sand-dune Earth Stars (*Geastrum nanum*), August 1985.

Geastrum nanum, Ynyslas Nature Reserve, August 1985.

bases of marram grass stems by aggregations of sand. It has now been found at three other Welsh dune systems.

Several agaric and gasteromycete species fruit in rings up to 20m in diameter on the fixed dunes and in slacks. The rate of growth of the rings can be as much as 0.5-1m in diameter per year. Abundant in these habitats were *Omphalina pyxidata* (Bull.: Fr.) Quél., in regular flushes throughout the winter and autumn months in 1985, and the fairy ring champignon, *Marasmius oreades* (Bolton: Fr.) Fr., from May to November.

Equally common in these areas were the pint-sized parasol mushroom, *Macrolepicta konradii* (Huijsm ex Orton) Moser, and, remarkably, a variety of the yellow-staining mushroom, *Agaricus xanthodermus* Gen. var *lepiotoides* R Maire, which is not in the British Check List. The latter was frequently collected by visitors to the reserve for culinary purposes — until the strongly chrome yellow bruising was pointed out. Among

11 species of *Hygrocybe* recorded, *H conicoides* (Orton) Orton & Watl. and *H conica* (Scop: Fr.) Kummer, often formed dense miniature forests in the slacks from July to November, while *H aurantiolutescens* Orton, *H langei* Kuehner and *H ochraceopallida* Orton, were recorded on a third of all visits.

The Bolbitiaceae are well-represented at Ynyslas, comprising about 12% of the total agaric flora. A fungus agreeing with *Agrocybe arenaria* (Peck) Singer, was found on four occasions in the semi-fixed dunes and several collections were made of a large-spored form of *A semiorbicularis* (Bull.) Fayod, which is widespread although it does not appear in the literature as such. This has sometimes been referred to as *A semiorbicularis* var *macrospora*.

Another species not in the Check List, *Inocybe vulpinella* Bruyl, was the second most frequent agaric recorded, being found on every visit from May to November, always adjacent to bushes of *Salix atrocinerea*. Uncommon species appearing towards the end of the year included *Lepista irina* (Fr.) Bigelow, *Melanoleuca cinereifolia* (Bon) Bon and *Tubaria pallidospora* J Lange.

Gasteromycetes abound on the fixed dunes, the protean *Vascellum pratense* (Pers.) Kreisel, being the most prolific and *Tulostoma brumale* Pers.: Pers., forming numerous colonies. The dune species *Geastrum nanum* Pers. was abundant and at one spot formed a fairy ring, 1.5 metres across, with successive fruit bodies appearing over a two-month period. A second earth star, *G badium* Pers., known previously from only west Cornwall and west Norfolk, was also recorded at Ynyslas for the first time during the survey.

Among the ascomycetes, several earth tongues fruit gregariously in dune slacks and slopes, including *Trichoglossum rasum* Pat., the only other British record of which is believed to be from Braunton Burrows.

The final recording visit, made on 27 December in icy conditions after two days of sub-zero temperatures, deserves special mention. The best collections of the survey of *Agaricus devoniensis* Orton were made on this occasion, whilst amongst the other 26 freshly fruiting but mostly frozen agarics noted were *Clitocybe barbularum* (Romagn.) Orton, *Cystoderma jasonis* (Cooke & Massee) Harmaja, *Laccaria striatula* (Peck) Peck, *Melanoleuca cinerasens* Reid and *M schumacheri* (Fr.) Singer, *Mycenella salicina* (Vel.) Singer and *Omphalina obscurata* Reid.

It was clear from this survey that Ynyslas, as well as other older dune systems where comparative collections were made, provides excellent opportunities for the investigation of less familiar species in a number of fungal groups. Those interested in sampling the delights of sand dune habitats will note that a BMS weekend workshop based at Aberystwyth has been arranged for this purpose in September this year (1987).

A complete list of species is available from the authors who are indebted to the Nature Conservancy Council for a grant towards travelling expenses and to David Pegler, Brian Spooner and Roy Watling for identification of critical species.

The survey continues and we hope to produce a more comprehensive account of the taxonomy and ecology of sand dune fungi in a few years' time.