Micro-fungi in Pine Litter

Although a certain amount of work has been carried out on the microbiological characteristics of horizons in podzol soils, there is as yet little relating to the subdivisions of the A_0 horizon. In any such work there are obvious advantages in studying litter derived from a single species. Plantations of *Pinus sylvestris* have the added advantage that slow decomposition of the litter leads to the accumulation of a considerable A_0 horizon readily divisible into distinct layers. The A_0 horizon of forest soils can be subdivided in the following way: *L* layer, undecomposed litter; *F* layer, decomposing but still recognizable litter; *H* layer, amorphous humus. In cases of considerable accumulation the *F* layer may be further subdivided into *F*1, needles dark in colour, often still intact, and *F*2, needles greyish, fragmentary, compressed[1].

Samples of the *L*, *F*1 and *F*2 layers of the A_0 horizon of the podzol at Delamere Forest, Cheshire, were selected by inspection and transported to the laboratory in separate, sterile containers. Preliminary work with the standard dilution plate technique proved unsatisfactory, and records of the fungi on the needles were made therefore by two methods: (1) direct observation of freshly sampled needles; (2) observation of needles rigorously washed to remove surface-borne spores and maintained on a nutritive medium for two weeks. The type of result obtained is shown in Table 1. The abundance of the different fungi is expressed as the percentage of the total number of needles on which each fungus was observed.

Table 1 demonstrates both qualitative and quantitative differences in the fungal populations of the three subhorizons investigated. Direct observation showed maximal fungal activity to occur on needles of layer *F*1. Numerous fruiting structures of several fungi not represented on nutritive media were also seen in this layer. In layer *L* only *Lophodermium pinastri* was regularly observed, but in layer *F*1 three species other than *Lophodermium* occurred with very high frequency. *Verticicladium trifidum* has been recorded by Hughes[2], but the *Helicoma* species will be described elsewhere as a new species, and isolate 1/6 will be described elsewhere as a new genus. The two new forms are darkly pigmented, and produce reticula on the needle surface from which the conidiophores arise. Layer *F*2 showed mutilated remains of these fungi, a result of the activities of mites and other microfauna. Basidiomycete mycelium was, however, observed most frequently in this layer.

The cultural method of isolation revealed several fungi not seen by direct observation. Certain of these, that is, *Antennularia*, sterile dark isolate 3/10 and *Fusicoccum* were seen to occur with decreasing frequency from layer *L* to layer *F*2, while there was a corresponding increase in the occurrence of *Trichoderma* and *Penicillium* species. Little indication of this clear-cut succession was obtained by the use of the dilution plate technique. The above data are based on isolations carried out in March 1957, but comparable differences between the subhorizons have been recorded for all other months.

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[1] Kubiena, W. L., "The Soils of Europe" (London, 1953).
[2] Hughes, S. J., Mycological Papers, No. 43 (Commonwealth Mycological Institute, Kew, Surrey, 1951).

Table 1

Method	Layer *L*		Layer *F*1		Layer *F*2	
	Spp. recorded	Frequency (per cent)	Spp. recorded	Frequency (per cent)	Spp. recorded	Frequency (per cent)
Direct observation	*Lophodermium pinastri*	35	*Helicoma* sp.	92	*Basidiomycete* mycelium	55
			Verticicladium trifidum	89		
			Isolate 1/6	89		
			Lophodermium pinastri	40		
			Basidiomycete mycelium	12		
Washing and plating on nutritive agar	*Antennularia* spp.	75	*Trichoderma viride*	75	*Trichoderma viride*	100
	Isolate 3/10	60	*Antennularia* spp.	40	*Penicillium* spp.	45
	Fusicoccum bacillare	35	*Penicillium* spp.	25	*Antennularia* spp.	5
	Trichoderma viride	35	Isolate 3/10	10		
			Fusicoccum bacillare	10		

Protogynous Hermaphroditism in *Coris julis* L.

Coris julis L. and *C. giofredi* Risso have long been regarded as separate species, although Steindachner[1] claimed *julis* to be the male and *giofredi* the female individuals of the same species. In the Bay of Naples Lobianco[2] found mature male and female individuals both in *C. julis* and in *C. giofredi* and therefore rejected Steindachner's hypothesis of sexual dimorphism in *Coris*.

Work on this subject was resumed in the summer of 1956 following reports of transformation of *giofredi* into *julis* individuals in the basins of the Leghorn Aquarium (Razzauti). As hermaphroditism has been shown to be widespread among teleosts[3], researches were undertaken upon the hypothesis of the existence of false gonochorism[4] in *Coris*.

Statistical and histological investigations were conducted on 329 samples taken during August 1956–January 1957 from populations living at a depth of between 8 m. and 30 m. in the vicinity of Leghorn.

Typical, fully grown individuals in the *julis* livery have a mean length of $14{\cdot}81 \pm 0{\cdot}32$ cm. and they are distinguished by a marked prominence of the first three rays of the dorsal fin and by a prominent tooth at the proximal end of each upper jaw. Their colours are very bright: the dorsal region is blue-green, a long deep orange band runs from the opercular region to the tail and a short black strip extends under it from the attachment of the pectoral fin to a region below the eleventh dorsal ray. The sides of the ventral region are white or shaded with light blue.