

Pembrokeshire Fungus Recording Network

Lichens

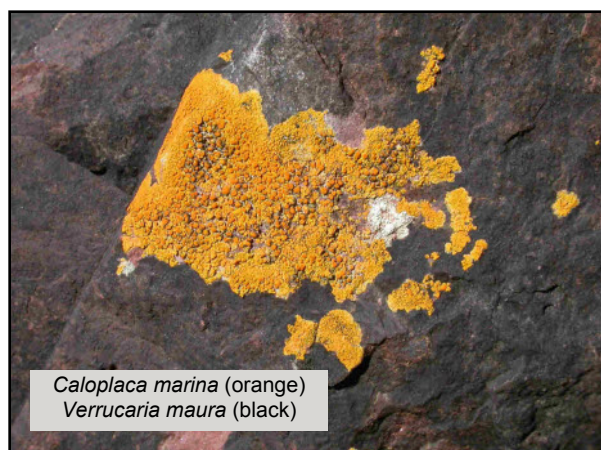
Dr. Robin Crump - January 2006

My own particular interest in fungi has been concentrated thus far on the 20% of fungi worldwide, which live in association with green algae or cyanobacteria as lichens. There are approximately 1800 species of lichen in Britain and over half of these are found in Pembrokeshire. Our mild, wet, maritime climate and a wide range of natural and man-made habitats provide substrates for a wide variety of truly beautiful and fascinating lichens.

Lichens are thought to be a mutual relationship (symbiosis) between a fungus (the mycobiont) and an alga or cyanobacterium (the photobiont). In most lichens the alga is located within the thallus of which over 90% is composed of the fungus. The alga is positioned so that it is best able to obtain light, moisture and other substances it requires to produce sugars by photosynthesis. Only a small number of algal species can survive being incorporated into a lichen (e.g. *Trebouxia* and *Trentepohlia*). Conversely every lichen has its own species of fungus and it is actually just to this fungus that we give the latin name. Nonetheless the fungus is entirely dependant on the alga for its survival and nourishment. It achieves this by causing the alga to leak much of the sugars it makes, which renders the alga incapable of sexual reproduction. The fruiting bodies of lichens are produced solely by the fungus and therefore only contain fungal spores. This means that when spores germinate they must quickly find a suitable algal partner or die. Many species of lichen get round this problem by producing asexual structures (soralia and isidia) which release soredia containing both algal and fungal components. There is still some debate whether lichens represent a truly symbiotic relationship or sophisticated parasitism. Whatever the truth of that, the algal partners are able to live in a much wider range of habitats together than alone. The great advantage of studying lichens is that there are good keys to most groups (notably; Lichens. An illustrated guide by F. S. Dobson), they are often brightly coloured and attractive and available for study all year round.

Being a marine biologist I have taken a particular interest in the lichens found on the sea shore and the cliffs above and I now have digital photographs of over 100 species from the littoral and supralittoral. Some of these are spectacular and will be familiar to most naturalists, such as *Xanthoria parietina*, the yellow leafy lichen found on bird perching rocks. *Xanthoria* like many other supralittoral lichens are nitrocoprophilous and need the nitrogen found in bird dung (or agricultural fertiliser).

When you go down to the shores of Pembrokeshire you can hardly fail to notice the dramatic colour zonation on the cliffs regardless of the rock type. Just above the 'barnacle line' the rocks are covered in a distinct black band of 'tar' like lichens of the genus *Verrucaria*. Long after the Sea Empress oil had disappeared the local authority was receiving complaints about the black band of 'oil' around Milford Haven, which in fact turned out to be the black pyrenocarp lichen *Verrucaria maura*. Above the black band is a zone dominated by the orange crustose lichens *Caloplaca marina* and *Caloplaca thallicola* which on the outer coast reach 20-30 m up the cliffs.

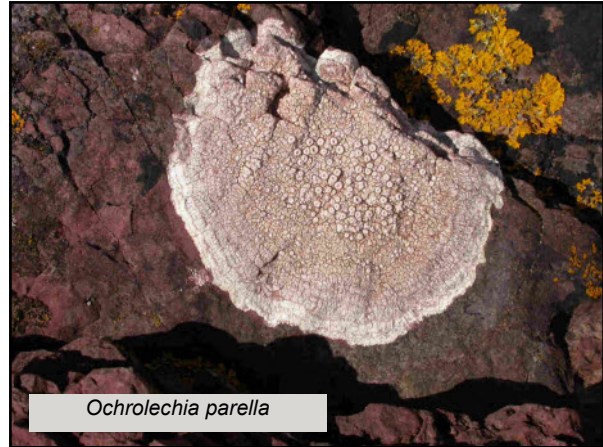


Xanthoria spp. come in at the top of this band particularly on bird perching rocks and are joined by the grass like pendant *Ramalina siliquosa*.

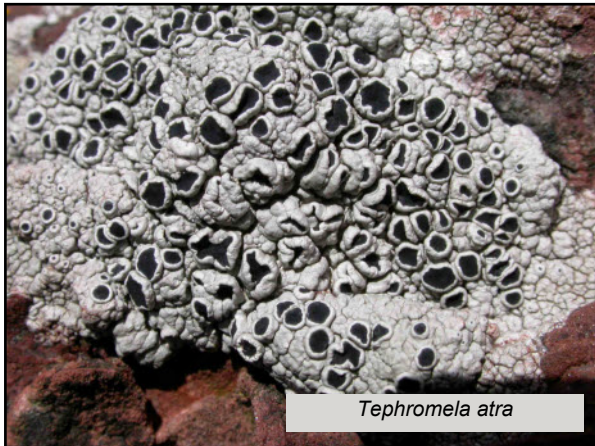
A bewildering variety of grey crustose lichens also come in at this level. Two common grey lichens are *Ochrolechia parella* with large grey cup like fruiting bodies and *Tephromela atra* which is whiter and the fruiting bodies have black centres with white rims which look like jam tarts.



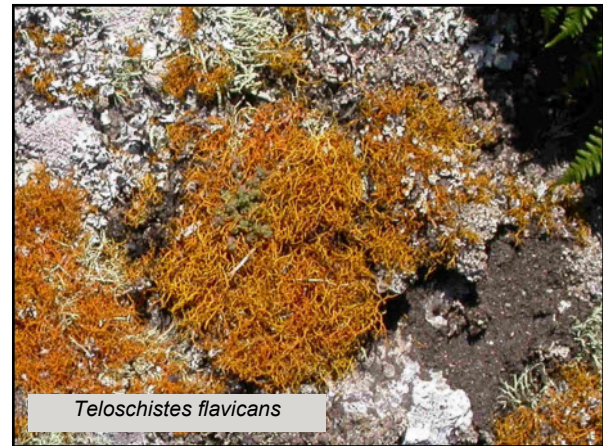
Ramalina siliquosa



Ochrolechia parella



Tephromela atra



Teloschistes flavicans

The prettiest *Caloplaca* (*viz.crenularia*) has a grey thallus with bright rust red fruiting bodies. Other leafy lichens doused by salt spray without ill effect are the khaki cloured *Anaptychia runcinata* and *Neofuscelia loxodes*. Several supralittoral rarities are found on Skomer including the Lusitanian *Ramalina polymorpha* and the golden hair lichen *Teloschistes flavicans*. *T.flavicans* also abounds on the grassy slopes on Ramsey Island where the mist rolls in off the sea and up the cliffs.

We have been monitoring lichen communities on the shores of Skomer and Milford Haven for the last ten years to look at the effects of the Sea Empress oil spill . Because the spill occurred on the highest spring tides many supralittoral lichens were quite badly affected and regressed or disappeared altogether. Foliose species like *Xanthoria parietina* and *Xanthoria ectanoides* have recolonised quadrats and grown back quite quickly to 'normal' size (patches 10 cm. across in 10 years). Conversely slow growing species like *Verrucaria maura* took up to six years to start recolonising bare rock and are growing at less than 1mm. per year. Interestingly recolonisation by lichens on shore quadrats cleaned with high pressure seawater hoses has been very poor compared with quadrats left to clean naturally with wave action even on sheltered shores within the Haven.

I could go on for ever about the amazing variety and beauty of maritime lichens in Pembrokeshire but for those that are interested in learning more I would be happy to show them to you on a field excursion in the spring.

Note: All lichen photographs © Dr. Robin Crump.

More of Robin's lichen photographs can be seen on the Field Studies Council site: www.theseashore.org.uk (navigate via **rocky shores** and **rocky shore creatures**).

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