Never mind the weather, we're Lichen it

Noel Coward's mad dogs and Englishmen had nothing on the intrepid band of Fair Islanders who braved the persistent rain on Saturday morning, 24th February in search of lichens. Fair Isle Wildlife Club stalwarts, Tommy, Liz, Henry and Rachel were joined by first timers Mati, Sebastian and Donna. We started at South Light and immediately made our way across treacherous rocks to our colony of that special rarity mentioned in my last missive, *Anaptychia ciliaris mamillata*, in one of its two known sites in Scotland. Demonstrating my in-depth knowledge of lichen ecology I answered the intelligent question why does it occur here and nowhere else with an erudite "don't know"! What *is* special about those particular rocks and not other coastal outcrops on Fair Isle, or indeed in other parts of northern Scotland?

There is no doubt that many lichens are very sniffy as to where they grow. Lichens which seemed to be just as happy elsewhere on the isle included black shields *Tephromela atra*, which we saw just about everywhere, orange shields *Xanthoria parietina*, sea ivory *Ramalina siliquosa*, the dark smoky green *Anaptychia rucinata* (formerly known as *Anaptychia fusca*) – dark brown when dry - and the crab's eye lichen *Ochrolechia parella*. They shared the coastal rocks with lichens which are largely or exclusively maritime. Maritime in much of Britain means within a few metres of the shore, but not on Fair Isle where winter gales carry salt-laden spray to the very centre of the island. Nevertheless, we found the orange discs of *Caloplaca marina* to be restricted to rocks close to the shore, whilst the dark green *Verrucaria mucosa* was growing largely on rocks which are submerged twice a day by the tide. Just above high tide it shared its space with the slightly paler *Lecanora helicopis*. Rachel showed a level of knowledge unequalled by more than 99% of the world population by recognizing the black "tar" on all the coastal rocks as another lichen, *Verrucaria maura*. Now we know why the Skerries are black.

Leaving the South Light rocks and pool of Muckle Uri Geo behind we made for the Chapel Brae, then on to the Plantation. At both sites we met more sea ivory, *Anaptychia fusca* and orange shields. These lichens, along with *Caloplaca marina*, dominate on some of the cliffs in bands of orange, blue-grey, orange-yellow and brown, extending upwards the zonation long recognised amongst seaweeds on the shore. The sea ivory and *Anaptychia fusca* especially, though considered maritime, bear witness to the amount and extent of winter salt drenching every corner of the isle. Just look at the clustered locks of sea ivory on every part of the hill dyke.

The rocky outcrop north of the Chapel path is a magnificent site. Be-decked with flowers in spring and summer, it is also home to some fascinating lichens. Exposed south-facing rocks support a range of lichens, including copious crottle *Parmelia saxatilis,* whilst on the north side the leafy fronds of the dog lichen *Peltigera canina* poke through a canopy of grasses at the edge of the road. Vegetation is less luxuriant on the south side and, between the rocks, thin dry soils offer a substrate for *Cladonia portentosa* (formerly known as *Cladonia impexa*), narrow, tangled, spikey strips of blue-grey overlying and entwining the heather. This is a classic and abundant lichen of all good quality heaths, and could be used as an indicator of quality as it is declining elsewhere in Britain. Cross the summit of the Chapel Brae outcrop and the *Cladonia* on the northern slope looks bigger, bushier, and has all the spikes pointing in one direction. This is another species - the reindeer lichen *Cladonia arbuscula*. A

few years ago I was taken by Kery Dalby, the Shetland and Orkney lichen recorder, to a heath in the south of mainland Shetland. This, he declared was the last great lichen heath left in Shetland and the jewel in the crown was *Cladonia arbuscula*. After some searching we found a few moderate specimens. In no way could they compare, in size, structure or abundance with the magnificent colony which clothes the northern slope of the Chapel Brae outcrop. When next you pass, breathe in the luxurious carpet and the splash of colour it gives to a dull winter's day. And walk on it if you like, it doesn't mind – it likes to be appreciated.

Arriving at the Chapel Brae, my mind was focused on introducing folk to this Shetland treasure. However, we were briefly distracted by two small vertical posts by the path. They only fulfill their primary objective, pointing the way to the Museum, in summer but still serve a purpose now. They have become colonized by a fine collection of lichens. There were some old familiars, such as sea ivory…and others. Lichens can be picky, remember, and some will only grow on wood. On Fair Isle that means posts because trees are hard to come by. Mati drew my attention to a whitish splash densely crowded with raised black spots. This was *Buellia punctata* and the spots were its fruiting bodies, known as ascocarps (that's another word Jimmy won't be able to use next time he plays "call my bluff"). Further up, fruiting bodies on a green background indicated *Lecanora chlarotera* – another wood specialist.

Also on the post were a few small, blobs of orange jelly, or so it seemed. These were the fungus *Dacrymyces deliquescens*. We found *Lecanora chlarotera* and the *Dacrymyces* again at the Plantation, along with *Ramalina subfarinacea*. There was an abundance of both, but no diversity – even though many of the trees (or stumps) have been there since 1954! The trees are also poor in insect life. The ecological interest is always low when non native plants are used; Sitka Spruce is from western North America and has not brought its ecosystem with it. By contrast, the roadside wall opposite displayed an amazing diversity – and a lot of competition as *Pertusaria corallina* competed with black shields, sea ivory, *Lecidea* and *Lecanora* species, *Rhizocarpon reductum* and the hieroglyphic scribbles comprising the fruiting bodies of *Opegrapha confluens*. We found a small amount of Monk's hood lichen *Hypogymnia physodes* too. This is more frequently found growing on the heather.

Our final port of call was the Vaadal gully behind the Plantation. Mosaics of lichen decorated the vertical surface of smooth exposed rocks. Several species occupied the niche, all fighting for space. The mosaic pattern is caused by black lines dividing one individual from the next – a kind of narrow war zone. Territorial competition is real and constant in the lichen world. Henry demonstrated that even loose rocks and pebbles have their lichen community. Foremost on this rolling habitat is *Lecidea macrocarpa*. "Macrocarpa" means large fruits and the large, somewhat swollen black ascocarps make this one of the more straightforward of the crustose lichens to recognize. We could not finish our trip into the Vaadal without deviating briefly from our target group. After a short search, the characteristically down-curled, dark green, slightly translucent (or "filmy") fronds and black veins of the curious little Wilson's filmy-fern *Hymenophyllum wilsonii* were discovered tucked into wet overhangs, barely visible amongst a mass of mosses, liverworts and grass tufts. This is one of our speciality plants, which many a visiting botanist yearns to see. I know it from four sites on the isle but the north-facing bank of the Vaadal is easily the most accessible, for all ages.

A few things you may not have known about lichens: First, throw away your notions about the species concept. Lichens are a *combination* of two entities: an alga and a fungus. This is a symbiotic relationship. The alga does the photosynthesizing, the fungus gives the alga protection and probably gains some nutrients and trace elements from the substrate. Only a few lichens have English names. I found some on an American website. This gave me a few extra names to use in this article, and some alternatives to ones I had already. My favourite was for the one I know as orange shields. The American version is "maritime sunburst". Isn't that sweet! The website also informed me that the Potawatomi use Monk's hood lichen as a cure for constipation and that it is easily damaged by sulphur dioxide. So overdosing on eggs can be sorted provided they're not "off". Many lichens, especially the foliose ones (those with "leaves") are very sensitive to pollution. In agricultural areas, lichens have disappeared from hedgerow trees because of wind-drift from modern chemical or muck-spreading machines. During the years of smog, London became a no-go area for many lichens, but they are beginning to come back with cleaner air. "Dr Nick" assures you that the diversity and abundance of lichens on Fair Isle denotes a clean bill of health for Fair Isle air, and our lungs. Delving into the internet, I also learned that *Anaptychia ciliaris* is used in northern Europe and Russia to make brandy. Perhaps that is why this lichen is so rare in Scotland? Before you rush out to decimate our colony, please note that *Cladonia rangiferina* is also needed and we do not have that species on the isle.

Lichens do not like pollution but a number of species thrive on nutrient enrichment. Fair Isle is generally nutrient poor, but the colourful cliffs, the wafts of lichens on fence posts and tops of dykes all bear witness to nutrient enrichment. And that comes from the birds. Seabirds on the cliffs, breeding birds singing from posts and prominent dyke tops, transient migrants - wheatears, whinchats and all who flit from post to post in spring and autumn – leave their deposit, which benefits the lichens.

Conservation: diversity, abundance, rarities - this does not mean that all is well in the Fair Isle environment. I draw your attention to a conservation issue which I am not sure anyone has recognized. The lichen-encrusted post has become an endangered habitat. Modern fence posts are "treated" to last longer. The sensitivity of lichens to chemicals, and pollution generally, means that it takes many years before colonization takes place – by which time the fence posts have probably been replaced. We should be doing all we can to conserve the "old fashioned" posts so that the habitat and their lichen community are not lost for ever. I do not suggest that we return to untreated posts, but I would urge all who are replacing posts to consider retaining the old posts – perhaps as a feature in the garden if leaving them *in situ* is not a feasible option.

More conservation: the role of lichens as a source of dyes is well known. Amongst those we saw, the crab's eye lichen produces violet, orange shields yellow, and crottle a deep red-brown or rusty-orange. But, before you rush out to collect some, remember that lichens are very slow growing – one millimetre or less per year. They are also long-lived. We can age some of them. Look at the sea ivory on the top of the wall where it crosses the Vatstrass burn. The hill dykes were built by or in the 1880s. So on undisturbed tops, the sea ivory will be over 100 years old – almost as old as me!

Nick Riddiford – 28th February 2007