

Mosses and lichens at Cocklawburn.

On Saturday 21st March Berwick Wildlife Group took part in their first summer walk or 2009 – and a summer-like day it was with blue skies and calm conditions. Unfortunately, as our leader Janet Simkin told us, the dry weather of the last few weeks has shrivelled the mosses and lichens and made them much harder to identify. What's more, because these organisms need plenty of water, sand dunes are not the ideal place to find lots of different species. In many ways this was a good thing. Janet eventually discovered 25 moss species and 22 lichen species at Cocklawburn (she kindly provided a list), more than enough for beginners to get their heads round.

Janet began by explaining the differences between mosses, liverworts and lichens. Bryophytes (mosses and liverworts) are primitive plants, without internal "plumbing" or proper roots, which is why they are small and sensitive to drought. They reproduce by means of tiny spores which blow about in the wind. Moss leaves are arranged all around the stems, whereas leaves of leafy liverworts appear to be arranged in two ranks, or the whole plant is a flat leathery plate.

Lichens, on the other hand, are not plants at all, but are stable and identifiable combinations between algae and a fungi, an arrangement which benefits both (symbiosis). The algae are protected within the tough fungal outside layer, and the fungi gain nutrient from the algae which are green(ish) and use sunlight to manufacture food from simple chemicals.

Berwick Wildlife Group were then introduced to a number of mosses. There was plenty of Common Feather-moss (*Eurhynchium praelongum*), which forms loose masses of delicate feathery growth; Whitish Feather-moss (*Brachytecium albicans*), which has longer, much "stringier" stems; Big Shaggy-moss (*Rhytidiadelphus triquetrus*) which is upright and forms large clumps; and its smaller relative Lawn Moss (*Rhytidiadelphus squarrosus*) which is characteristic of shaded lawns and grasslands. Sandhill Screw-moss (*Syntrichia ruralis ruraliformis*) is an important plant stabilising dunes and forms big moisture-retaining mounds in the dry environment.

Lichens were abundant on the walls of the lime kiln. Lichens are extremely fussy about their substrate – each species is found only on rocks of the correct chemical composition, so the rock type gives a great clue to the species of lichen. (Or, you could say that the lichens, in a churchyard for example, give good clues as to the type of stone used for the memorial).

Even so, many lichens in the same habitat look very similar. Luckily some change colour in the presence of certain chemicals (such as potassium hydroxide or bleach), so lichenologists carry round a small battery of chemicals for testing the lichens. Janet showed the Group how potassium hydroxide brought out a bright red colour in the orange lichen *Caloplaca citrina*, whereas the very similar *Candellaria* species don't have this reaction.

As limestone is comparatively soft and easily dissolved, many lichens on limestone live within the outer layers of the rock, only a coloured stain and the spore-producing

bodies emerging at the surface. On harder acid rocks like sandstone and granite the lichens are mostly outside, in frilly round patches. Lichens also grow on soil and on trees. They depend entirely on rainwater, so they are very vulnerable to pollution which slows their growth. However the growth rate of some lichen species in a particular locality is remarkably constant, so lichens can be used for dating in archaeology or for events like floods on river banks.

After examining lichens at the lime kiln and spoil heaps, the Group discovered different species on a sandstone wall. The whole top of the wall was covered by two lichens which almost always grow together, *Lecanora sulphurea* (greenish) and *Tephromela atra* (grey). Further on, in a dune slack where there have been recent fires, a "Pixie-cup" lichen, *Cladonia chlorophaea* was found. Nearby were lots of Dog Lichens, flattish leathery discs of grey and white. The name "Dog Lichen" comes from its likeness (not very obvious these days) to the froth produced by rabid dogs. This led to its use as a cure for rabies – for which it was totally ineffective. Most of the Dog Lichens at Cocklawburn were *Peltigera membranacea*, but a related species *Peltigera canina* was also present. Janet explained that this is only the fifth record for this species in Northumberland, and the first from this site.

Both mosses and lichens are usually known by their Latin rather than English names, mostly because the English names are not precise enough or there are several English names for one species. Conventionally species are known by the name first allocated to them, and as many older collections of mosses and lichens still survive in dusty museum drawers, discoveries of earlier names are sometimes made. This means the Latin name is changed, experts need to learn the new name and identification books become out of date. Geneticists are also delving into the family tree of lichens and mosses – two may look like closely related species but their genes say otherwise. This can cause more confusion.

Only don't let this academic wrangling put you off. The study of lichens and bryophytes is fascinating. It may be difficult at first, but the Group were assured it is no harder than birders getting to grips with little brown jobs, or botanists learning to identify grasses. These days there are websites to help, the British Lichen Society (www.thebls.org.uk), or the British Bryological Society (www.britishbryologicalsociety.org.uk) which has an excellent on-line field guide. The list of the mosses and lichens found at Cocklawburn will be on the BWG website (www.berwickwildlifegroup.org.uk), together with further information about the Group.