

COASTAL LICHENS

What are COASTAL LICHENS?

A lichen is a self-supporting association of a fungus and an alga or cyanobacterium. They are able to colonise a vast range of habitats including the coast. At the extreme high water mark, just above the splash zone, lichens are the dominant plants on rocky shores. Unlike marine algae, they are land plants and their distribution down the shore is determined by the amount of submersion they can tolerate; the majority are restricted to the splash zone. Many shore lichens are encrusting, such as *Verrucaria* species, which looks like black tar, whilst others are foliose. Some species survive inland as well as on the coast whilst others are restricted to the coast. They can clearly be seen on cliffs and rocks as bands of colour and shape, generally grading through grey to orange to black. Occasionally the uppermost layer is white.

Why are coastal lichens of CONSERVATION IMPORTANCE?

Lichens are generally poorly understood, but they are an important part of the coastal ecosystem. They provide homes for small invertebrates and start the process of rock breakdown and soil formation. They are also important indicators of pollution levels and environmental health. The presence and role of lichens in some coastal habitats such as sand dunes, posts and man-made structures in salt marshes and mudflats, unprotected soft cliffs and shingle, is still not well understood.

COASTAL LICHENS IN THE DURHAM AREA

The prime habitats for coastal lichens are hard, acid rocks. The coast along the Durham area consists of outcrops of Magnesian limestone or soft cliffs, and the rocks in the supralittoral and littoral fringe are often too friable to support lichen-dominated communities. Along the Durham coast the historical dumping of colliery waste until 1993 led to beaches being covered in spoil making it difficult for lichens to colonise.

A variety of lichens do occur along the coast of the DBAP area. Three species of *Caloplaca* have been



STATUS: *There are no species of lichen occurring along the coast of the DBAP area which are protected under the 1981 Wildlife and Countryside Act or are listed in the UK National Biodiversity Action Plan. All coastal lichens which occur in the areas designated as SPA, SSSI or cSACS are protected.*

COASTAL LICHENS

recorded. *Caloplaca citrina* is the most frequent whilst *C. luteoalba* is rare and confined, on the coast, to Blackhall Rocks. Along with *Caloplaca* species, the *Xanthoria* species form the distinctive orange band seen on the rocky shore. Two species have been recorded in the Durham area - *Xanthoria parietina* and *X. candelaria*. Above the orange band can be seen a band of grey lichens. *Lecanora* species form rough grey crusts along the coast of the Durham area. Below the orange lichens the black *Verrucaria* lichens are found. Four species have been recorded in the DBAP area. Other records include *Cladonia chlorophaea* and *C. macilenta*. These species frequent spoil heaps and the latter is also occasionally found on sand dunes. Most of the lichens found along the coast of the Durham area are also found inland. However one species, *Verrucaria striatula*, is found only at the coast.

The appearances of *Caloplaca marina* at Seaham in 1997, and *Caloplaca ochracea* south of Nose's Point in 1997, are almost certainly connected with the clearance of spoil from the Durham coast.

Pyrenocollema halodytes was recorded along the Durham coast in 1997 on Magnesian Limestone rocks, concrete piers and limpet shells, except in areas where dense algal growths were present. *Pyrenocollema sublitorate* was recorded in 1997 on a hard ridge of Magnesian Limestone boulders below H.W.M. at Trow Point.

Coastal lichens are at RISK from:

MARINE AND COASTAL POLLUTION - lichens are very susceptible to oil pollution and to emulsifiers used to disperse oil.

AGRICULTURAL POLLUTION - colonies of lichens growing at the base of cliffs are vulnerable to pollution from nearby agricultural land including fertiliser and herbicide drift and runoff.

DECLINING AIR QUALITY AND ACID DEPOSITION.

DUMPING OF WASTE ONTO BEACHES e.g. former colliery spoil.

Coastal lichens BENEFIT from:

MEASURES TO REDUCE MARINE POLLUTION, particularly oil.

THE PRESENCE OF HARD, CLEAN SUBSTRATES FOR COLONISATION.

THE RE-CREATION OF SEMI-NATURAL HABITATS along the coast and the subsequent reduction of the adverse effects of agriculture.

FURTHER RESEARCH AND MONITORING.

SUGGESTED ACTIONS:

- Raise general awareness of marine and coastal lichens as part of an integrated coastal interpretation strategy.
- Instigate a programme of monitoring to study the effects of spoil clearance on lichen communities.
- Instigate surveys of other coastal habitats where lichens are present.