

KELP BEDS

What are KELP BEDS?

Kelps are some of our largest native algae. They are large brown seaweeds which may reach several feet in length. There are several species of kelps which include tangle or oarweed (*Laminaria digitata*), sugar kelp (*L. saccharina*) and rough kelp or curvie (*L. hyperborea*). Tangle and rough kelp occur in the Durham area. If conditions are right, kelps can form extensive forests at the sublittoral fringe. Prior to the formation of a kelp forest, beds of kelp may form as the plants become established. Kelps can often be seen exposed at low tide, e.g. the kelp beds at Featherbed Rocks, Seaham. If wave energy is high, such as occurs in storms, then kelp plants may be torn from the rocks and wash up on beaches where they form part of the strandline. Large amounts may be washed up on beaches during spring and early summer.

Why are kelp beds of CONSERVATION IMPORTANCE?

Kelp beds can form extensive forests which provide shelter and food for a rich variety of marine wildlife. They are the undersea equivalent of rainforests. Like a rainforest, several layers can be recognised within kelp beds and forests. The rocks to which the kelp attach are encrusted with seaweeds, seamats, tubeworms and barnacles. The holdfast and lower stipe may have red seaweeds (epiphytes) attached as well as hydroids, bryozoa and sea anemones. Sponges and sea squirts grow all over red seaweeds and kelp holdfasts. Holdfasts also provide an ideal nursery for many creatures. Small fish, crabs and lobsters lurk amongst the holdfasts. Young fish, such as herring and mackerel, swim in the canopy. It has been estimated that up to 90,000 juvenile fish may hide in an acre of kelp forest; kelps are clearly important for maintaining stocks of commercial fish.

KELP BEDS IN THE DURHAM AREA

Between Sunderland and South Shields, at a depth of 3 to 6 m, a lower infralittoral zone of sparse kelps *L. hyperborea* and *L. digitata* is present. The heavily silted and pitted rock here is characterised by sparse red algal



STATUS: *Between Seaton Sluice and Marsden Bay there are five exposures of oarweed (Laminaria digitata). Kelp-dominated sublittoral fringe is present at Souter Point and Whitburn where the algal cover is sparse. Upper infra-littoral kelp forests are recorded from South Shields to Salterfen Rocks although they become less dense towards Salterfen Rocks.*

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species (mostly *Plocamium cartilagineum*) and coralline crusts, occasional hydroids, dahlia anemones, tubeworms *Pomatoceros triqueter* and grey topshells *Gibbula cineraria*. South of Salterfen, the sublittoral rock outcrops are heavily silted and scoured by sand which severely reduces algal growth.

Further south, along the coast of Durham, there are moderately exposed rock reefs on the lower shore at Featherbed Rocks, north of Seaham where oarweed (*L. digitata*) is present. This is currently the only place on the County Durham coast where the water is sufficiently clear and the rocks are not too silted to allow the growth of kelps. Currently, it is not clear to what extent kelp communities will change as the spoil clears on the Durham coast.

Kelp beds are at RISK from:

HEAVILY POLLUTED WATERS that are turbid with poor light penetration - fine silts and mud which enter coastal waters, reducing the penetration of light. Some of the silt/spoil settles upon the sea bed, covers rocks and may smother plants and other organisms. This is of particular relevance to the Durham coast in areas where colliery spoil has previously been tipped.

BIOACCUMULATION OF HEAVY METALS - kelp is a primary producer and is grazed by many animals. Metals may build up in tissues and seriously affect the health of animals further up the food chain.

COLONISATION BY OPPORTUNIST SPECIES - some areas along the Durham coast are extensively covered in mussels. This is quite usual for areas with sediment-laden water. The mussels may inhibit seaweed recolonisation. On some parts of the Durham coastline extensive spongy mats of filamentous red seaweed *Audouinella floridula* have formed; it is likely that suspended solids in the water have promoted their formation. These extensive spongy mats may exclude other species of seaweed from colonising the rock surface.

Kelp beds BENEFIT from:

CLEAR WATER - this allows plants to photosynthesise and thereby producing energy for food and growth.

CLEAN ROCK SURFACES - which enable holdfasts to attach firmly to the rocks.

LOW LEVEL OF POLLUTION IN SEA WATER.

SUGGESTED ACTIONS:

- Monitor the development of underwater plant communities along the coast of Durham as the coal spoil gradually clears. Compare with parts of the DBAP coast that have been unaffected by the tipping of colliery waste.
- Do not collect live specimens of kelps from the sea.
- Leave washed up kelp and other seaweed on the strandline.