

## Appendix 16

### Note on Shell Marl

#### Marl and Calcareous Soils

Deposits of marl and calcareous mud in flat areas surrounded by limestone are often found beneath midland peats. Trees planted where the rooting zone is influenced by marl rarely thrive and there are no remedial measures known by which this condition can be overcome.

Marl is recognised when moist by its olive to pale olive colour, ranging through light grey to white, and its softness. When it is dry it is whitish in colour, of friable consistency and powdery. It effervesces strongly and audibly when treated with dilute (10%) hydrochloric acid (HCL). Marl varies in depth from around one centimetre to two metres and generally, but not always contains quantities of small shells. Marls have pH values in the region of 8. Marl occurs as deposits over calcareous silty clays or boulder till. It also occurs as layers or lenses (discontinuous layers) of varying thickness within peat horizons. Calcareous muds contain variable quantities of organic matter and because of this are usually darker in colour than the whitish coloured marls.

Marls and calcareous muds were formed in lime-rich post-glacial fresh water lakes through the precipitation of calcium carbonate by species of Characeae (stoneworts) and Potamogeton (pondweed). The plants became coated with calcium carbonate and with their death and decay the calcareous material accumulated on the lake bottom.

Where marl occurs within 70 cm of the soil surface the site is classed as unplantable. Marl may not always be detectable by means of the standard peat sampler, particularly where it occurs in the form of intra-peat layers or lenses, but is easily seen and identified in stream-banks, drains or other excavations.

Other mineral horizons, not being marl or calcareous mud, but which are to a greater or lesser extent calcareous, may be found under peat, or under various mineral soils. If such material, displaying vigorous effervescence when treated with 10% HCL, occurs within the rooting zone (50 cm approximately), then the surface and sub-surface horizons should be assessed for pH and CaCO<sub>3</sub>. Soil samples should be collected by an approved forester and assessed by a competent forest soils laboratory. Sampling should distinguish between visibly different soil horizons, and each sample for the laboratory should be made up of at least 12-15 sub-samples and should be fully representative of the site and horizon being sampled. A careful description of all aspects of the sampling procedure should be recorded. Consult the laboratory before collecting the samples. Subsequent selection of species should reflect the laboratory results.