



## DUNE HEATH MANAGEMENT

### BEST PRACTICES MANUAL



It is beneficial, both in economic and practical terms, to carry out the clearing of Mountain pine (*Pinus mugo*) on dry heaths and in wet depressions using **heavy machinery on broad, non-profile tires**, and to use the same tracks and preferably drive in the slacks. In this way, damage to the often very vulnerable plant communities on the dry heath and in the relatively broad transition zone between the dry heath and the adjacent dune slacks. Dry heaths dominated by Crowberry (*Empetrum nigrum*), which are found on large parts of the heaths by the Wadden Sea, will on the contrary benefit from a temporary disturbance of the dense shrub cover through the use of heavy machinery. Introduction of cattle grazing may then ensure maintenance of the original, more species rich heath.

**Mosaic burning of dune heaths is particularly recommended in areas highly affected by nutrient deposition**, either from the sea, soil or nearby intensively farmed areas. Burning can counter the otherwise rapid development towards shrub and forest.

**For all management activities applies that it is very important to remove all plant materials from the dune heaths while they are fresh.** In this way, most nutrients are removed and the best effect is achieved.

Based on the recommendations given by University of Copenhagen and National Environmental Research Institute in connection with the LIFE dune heath project, the following guidelines for dune heath management have been developed:

**Management activities must be initiated as soon as possible after detection of a negative development trend.**

Clearing of invasive, non-native conifers, such as Mountain pine (*Pinus mugo*) and Contorta Pine (*Pinus contorta*) must be carried out as soon as possible. The trees are very competitive, and their presence will after only a short time change the conditions enough to impede the return of the original vegetation. **Clearing of the trees is a precondition for the development of a favourable conservation status.**





**Clearing of coniferous trees should always be a total removal of all above-ground biomass, including needles and cones.** Roots and tree stumps can be left. All above-ground materials must be collected and burned on selected spots on the dune heath, or alternatively chipped (for use in district heat plants). Burning of materials collected in piles on the heath is only recommended when the clearings take place in very big and relatively inaccessible areas.

Materials for burning should be placed in piles with a mutual distance of **at least 50 m**, and preferably on flat terrain. The burning spots should never be in the grey dune or in the sensitive transition zone between the grey dune and the flat terrain. Removal of the felled trees should be carried out manually or by using machines on broad, non-profile tires. The tracks left by the machines should be left unchanged.



**It is recommended to use the selected burning spots at 5-10 year intervals,** and as far as possible always to use the same spots.

**Manual removal of self-sown young conifers is necessary every year for at least 3 years after the initial clearing of plantations and dense overgrowth.** After this, manual clearing should take place every 3 years, until the seed bank in the soil is exhausted.

In some dune heath areas, **extensive grazing** (particularly by sheep, but also cattle may be used) is recommended as a means to maintain the open vegetation type dominated by herbs, after removal of the self-sown conifers. This is particularly recommended in areas close to moraine deposits covered by aeolian sands, for instance on the heaths by the Wadden Sea and Bulbjerg. Dune heath areas which were previously grazed but are now dominated by Crowberry (*Empetrum nigrum*) should be grazed, preferably by cattle.

**The use of mulching machines should be limited,** as this method does not remove enough nutrients to give a long-term effect, unless the area is burned immediately after being mulched.

