

Re-colonisation of wetland plants following scrub removal at the Open Pits, Dungeness RSPB reserve, Kent, England

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SUMMARY

Wetland depressions in coastal shingle at a site in southeast England the 'Open Pits', once had a *Carex*-rich marsh vegetation, which included many locally scarce species, but following lowered water levels and increasing willow *Salix* scrub invasion, much of this community disappeared. Scrub removal and summer sheep grazing was introduced in 1997. Seven scarce wetland species reappeared and another two previously unrecorded species of conservation interest colonised.

BACKGROUND

Dungeness, a coastal site in southeast England, contains the largest area of vegetated shingle in the UK, if not in Europe. The 'Open Pits' are a series of 13 wetlands situated in natural depressions in the coastal shingle, producing a unique habitat. Originally, the pits were hydrologically linked with the sea. However, further shingle deposition over the last millennium, has left them isolated and they are now fresh water rather than brackish or saline. Over time, these pits developed an important and regionally unique *Carex*-rich marsh vegetation.

Until the 1950s, the pits contained a vegetation sequence from open water through to sallow *Salix* carr including reedswamp and sedge-fen, maintained by sheep grazing. The botanist Francis Rose (Rose 1953) first described the vegetation of the Open Pits and nearby 'Fossil' Pits in 1953. At that time they supported a diverse range of plants, including many species that are uncommon in Kent and more typical of the north and west of Britain. These included carnation sedge *Carex panicea*, small-fruited yellow sedge *C. viridula* subsp. *Viridula*, shoreweed *Littorella uniflora*, and lesser water plantain *Baldellia ranunculoides*. One of the pits, the 'Cladium Pit' supported a single specimen of the rare crested buckler fern *Dryopteris cristata* in the 1950s. Some of the smaller pits have acidified (pH 5.3) with the mosses *Sphagnum squarrosum*, *S. palustre* and *S. recurvum* present in 2002, and *S. subsecundum* and *S. fimbriatum* recorded in the past 50 years (Waters 1985).

The fall in the average water level by more than 1 m in the early 1970s due to water abstraction and gravel extraction, and a change in grazing pressures, led to the loss of the fen habitat and an increase in scrub (willow) successional habitats. Between 1953 and 1983 Henderson (1983) summarised the main changes in the vegetation of the pits as: an increase in swamp communities at the expense of open water (with the latter habitat declining by 50%); the appearance of species more typical of a higher nutrient species, such as common reed *Phragmites australis*, sea club rush *Scirpus maritimus*, reed-mace *Typha latifolia* and bur-reed *Sparganium erectum*; an increase in sallow carr at the expense of fen; a large loss of fen to drier habitats; and the loss of 34 plant species from the pits.

Debate followed as to whether to clear out the scrub in an attempt to re-establish the marsh flora or whether to allow natural succession to continue.

ACTION

Willow removal: In 1997, the RSPB and English Nature selected two willow *Salix* covered pits to attempt restoration work. The willow trees were removed and their stumps treated with herbicide. All work had to be undertaken by hand, as the sites are protected under a variety of conservation legislation. Efforts were made to minimize the disturbance to the shingle bed and to maintain the integrity of the sedimentary record within the pits. All

material had to be removed from site rather than burnt to protect the existing peat layer. Late summer grazing, primarily by sheep but also occasionally by goats, was re-introduced to help control and limit the establishment of reedmace *Typha* and other dominant and potentially invasive species. When the water level is high, the sheep cannot graze the deep-water areas and so reed *Phragmites australis* establishes. This has been controlled by brush cutting and removal when necessary.



Figure 1. Part of the Cladium Pit in 2006.

CONSEQUENCES

Low water levels in the region since 2003 have effected pit management. The sheep can graze the whole of the site more effectively with the low water levels (in January 2006 the water level was an estimated 45cm lower than the expected average), being able to reach the centre of the pits. If this situation continues, then new management options may be necessary to prevent over-grazing which may potentially affect scarce species.

The vegetation in the restored pits has been monitored by Brian Banks of English Nature. Fen vegetation has recovered well in the areas from which scrub has been removed. In the 'Cladium Pit' (Fig. 1) it has been possible to compare changes in the flora between 1953, 1983 and 2002.

Eight vascular plant species that are scarce in Kent have apparently been lost from this pit since 1983 and have not re-appeared following scrub clearance. These are adder-tongue fern

Ophioglossum vulgatum, crested buckler-fern *Dryopteris cristata*, bogbean *Menyanthes trifoliata*, lesser tussock-sedge *Carex diandra*, carnation sedge *C.panicea*, oval sedge *C.ovalis*, marsh arrowgrass *Triglochin palustre* and heath grass *Danthonia decumbens*.

Seven species of wetland plants that are scarce in Kent have re-appeared following clearance, presumably having regenerated from the seedbank. These are black sedge *Carex nigra*, bottle sedge *C. rostrata*, star sedge *C.echinata*, bog speedwell *Veronica scutellata*, blue water speedwell *V. anagallis-aquatica* and bog pimpernel *Anagallis tenella*. Bog pondweed *Potamogeton polygonifolius* (not recorded by Rose or Henderson but noted as present in the same 10 km square prior to 1970) has appeared in one patch of shallow open water. Two other plant species of interest have also colonised, whose origin is unknown but is probably not connected to clearance of the pits. These are the nationally rare jersey cudweed *Gnaphaleum luteoalbum* (which now has its largest UK population at Dungeness) and lesser centaury *Centaurea pulchellum*.

This improvement in the quality of the fen vegetation, though, has to be set against localised damage to the surrounding lichen flora of the pits caused by sheep grazing. Although no species have been lost as a result of this grazing by 2001, the cover of two lichens (*Cladonia ciliata* and *C. rangiformis*) have been substantially reduced. Since then stocking levels have been reduced on the shingle, and some of the fen vegetation in the centre of the pit has been cut by hand.

REFERENCES

- Henderson A. (1983) *Vegetation survey of natural and artificial pits, Dungeness 1983*. Unpublished report, RSPB .
- Rose F. (1953) *Dungeness*. Unpublished report, Nature Conservancy Council.
- Waters S.J.P. (1985) *Vegetation of natural wetlands Dungeness, ecology and conservation. Nature Conservancy Council Focus on Nature Conservation No.12* (eds. Ferry B.W. & Waters S.J.P.). Nature Conservancy Council, Peterborough.