# Reedbed creation through excavation of dry grassland and infilling of former gravel workings at Dungeness RSPB reserve, Kent, England

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**SUMMARY**

At a site in southeast England, transplanted reed *Phragmites australis* rhizomes, fenced from grazing waterfowl, became well established in the shallow areas of a newly created wetland three growing seasons after planting.

**BACKGROUND**

*Phragmites australis*-dominated reedbeds are a priority habitat in the UK. They support a characteristic bird fauna, including the UK Biodiversity Action Plan priority bird species bittern *Botarus stellaris*, together with marsh harrier *Circus aeruginosus*, common crane *Grus grus*, Cetti's warbler *Cettia cetti*, Savi's warbler *Locustella luscinioides* and bearded tit *Panurus biarmicus*. Reedbeds are also of high conservation value for a wide diversity invertebrates, particularly a number of reedbed-specialist moths. Prior to 2002, reed at Dungeness RSPB Reserve consisted of narrow fringe around a number of deep gravel pits and a small area of around a hectare of largely dry reedbed, at the site of a former gravel processing plant.

This case study describes the methods used to create reedbed and open water at Dungeness RSPB reserve, through excavation of dry grassland with low conservation interest and the partial infilling of adjacent deep gravel pits with the spoil, to create/enhance approx 25 ha of wetland habitat consisting of reedbeds, channels and open water.

**ACTION**

**Excavation:** Reed bed creation was undertaken at Dungeness RSPB reserve (National Grid ref: TR 067185), Kent, southeast England. In 2002, mechanical diggers (using 30 tonne dumpers to remove spoil) excavated an 11 ha area of dry grassland The 250,000 m³ of earth removed, lowered the former sheep pastures to below the water level, creating the correct ground/water height for reeds to grow. Topographical landform variation was created to introduce habitat variability, including deeper channels and drier ridges. The drier ridges provided areas for the reed to initially establish and helped to reduce wave action and erosion on the reed and other establishing vegetation. An external bund, round the outside of the field, as well as a central ridge, was maintained to allow machinery access to the entire site along suitably hard ground. The excavated material was transferred to the adjacent gravel pits and used to partially infill and shallow out sections of the deep water, creating an improved aquatic habitat in the process.

**Reedbed planting:** The reed vegetation used to seed the new area was sourced locally on the Dungeness RSPB reserve. Close to the proposed new reedbed was a small area of dry reedbed. Mainly due to natural succession, but also partly to the unusually low water levels experienced at Dungeness in recent years, this area had dried out and was beginning to show signs of scrub succession. Once the new area was suitably prepared, the diggers began excavating this old reedbed from late July to September. By digging out large clumps of reed rhizomes, the old site was lowered to set back succession and re-create wet reedbed. A suitable amount of established reed was left in place in order to allow re-colonisation of the disturbed areas within this reedbed.

The excavated reed (predominantly rhizome mass with some growing reed top) was moved to the new site in dumper trucks and deposited in big cumps at the water's edge the same day. This is a different method to traditional reedbed establishment, which tends to focus on the planting of individual reed seedlings. The rhizome masses were spread across the site, at reasonably thick coverage to ensure that the top of the rhizomes was not flooded and drowned out. If a suitable amount of rhizome surface, whilst damp, is not flooded, reed tends to recover very well from small amounts of rhizome.

The newly planted reedbeds were fenced from grazing birds such as coot *Fulica atra* and geese *Anser* spp. Around 300-400 feral greylag geese *Anser anser* use the reserve in June to August each year, and form a large grazing flock that would extensively damage new reed growth if left unprotected. Therefore, the spread reed was protected with chicken wire pens, supported on posts driven into the substrate. These were left in place until 2005 when most were removed. Only in those areas that the reed was still to fully establish were the pens left and maintained. In most areas, the reed is now out-competing any potential grazing pressure.

Further reed planting, reshaping of ditches and re-profiling open water margins was undertaken in the summers of 2003 to 2005.

**Figure 1.** Reed establishment area in 2006.

## CONSEQUENCES

Following three full growing seasons, the reed appears to be well established and has formed largely linear margins along the ridges and is filling in the gaps between rhizome deposits. Overall, reed covered probably less than 5% of the total area in 2006, but this has resulted in a varied mix of reed, open water and other emergent vegetation (Fig. 1). The rate at which reed expands further will probably depend largely on water levels and the intensity of wildfowl grazing. When water levels are low in summer, wildfowl cannot graze the reed from the safety of open water and the reed has a chance to expand. Because the site is a gravel pit, its water levels are dependent on ground water levels and cannot be controlled.

The most notable feature of this project was its scale, not necessarily in terms of the resultant reedbed, but with regards the methodology employed. Reedbed creation is often a labour intensive undertaking, with many man-hours spent on land forming and the planting of individual reed seedlings in small sections of ongoing projects. In this situation, everything was undertaken at a coarser scale, using large plant machinery and rhizome mass and large clumps of growing, but dry reed (rather than seedlings) to transform a relatively large area over a very short period of invested time. The technique was considered novel by the reserve staff when undertaken, so the outcome was unknown.

Certain conditions at Dungeness made use of this technique possible. Primarily there was a good source of reed rhizome available close (on reserve) to the new location in the form of a dry reedbed. Heavy plant machinery (excavators and dumpers) was also available on the reserve, therefore minimising costs. Atypically dry weather conditions were also beneficial as it provided suitable hard ground for the transport of materials across the site.