

Restoration of Sandpit at Boherkill, Co Kildare

Ecology Report

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Report prepared for Michael Ennis

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1. INTRODUCTION

The site is a worked out sand pit on the north-western side of Dunmurry Hill. It has been active since about 2001 and has been extended from the gateway in a northerly direction.

It has been visited several times in this period, the most recent being May 2015.

2. ECOLOGY

The main habitat before development was tilled land (BC4 in Fossitt 2000) and the site is still surrounded by wheat fields and separated from them by hedgerows (WL1). Since excavation has occurred it now consists of active quarries and mines (ED4) and recolonising bare ground (ED3) where there is overburden storage. These habitats are seen on the aerial photograph (at end).

2.1 Flora

Quarry

The quarry is being worked to a small extent but there is little ground as yet with a plant cover. Much is taken over by piles of mixed or coarse till and there are substantial settlement areas also, in low places on the floor. Internally there is some colonisation by tolerant plants such as

<i>Tussilago farfara</i>	coltsfoot
<i>Medicago lupulina</i>	black medick
<i>Epilobium ciliatum</i>	American willowherb
<i>E.parviflorum</i>	hoary willowherb
<i>Senecio jacobaea</i>	ragwort
<i>Reseda luteola</i>	dyer's rocket
<i>Achillea millefolium</i>	yarrow
<i>Agrostis capillaris</i>	common bent
<i>Holcus lanatus</i>	Yorkshire fog

Towards the edges, additional grasses appear and there are occasional piles of topsoil yielding wild turnip *Brassica rapa*, nettle *Urtica dioica* and scutch *Elytrigia repens* but it is mainly the berms and piles of overburden along the western side that are vegetated.

A berm borders the northern edge of the quarry and it has a tall cover of

<i>Chamerion angustifolium</i>	rose-bay
<i>Elytrigia repens</i>	scutch
<i>Arrhenatherum elatius</i>	false oat
<i>Cirsium arvense</i>	creeping thistle
<i>C.vulgare</i>	spear thistle
<i>Senecio jacobaea</i>	ragwort

There are also a few willows *Salix cinerea* 2-3m high.

Overburden has been stored along the western side of the site where there is a considerable area of sparsely-covered banks and terraces, the vegetation constrained by drought. The first plants to grow on this material are wind-dispersed, especially mosses, though these are mainly seen in the winter. In general the cover includes,

<i>Tussilago farfara</i>	coltsfoot
<i>Medicago lupulina</i>	black medick
<i>Agrostis capillaris</i>	common bent
<i>Equisetum arvense</i>	field horsetail
<i>Hypochaeris radicata</i>	catsear
<i>Crepis vesicaria</i>	beaked hawkbeard
<i>Taraxacum officinale</i>	dandelion
<i>Centaureum erythraea</i>	common centaury

Flat, compacted areas in places accumulate water and allow additional species to grow such as

<i>Carex flacca</i>	glaucous sedge
<i>Cerastium glomeratum</i>	sticky mouse-ear
<i>Veronica serpyllifolia</i>	thyme-leaved speedwell
<i>Epilobium parviflorum</i>	hoary willowherb
<i>Juncus inflexus</i>	hard rush
<i>Ranunculus repens</i>	creeping buttercup
<i>Plantago major</i>	great plantain
<i>Salix cinerea</i>	grey willow

Hedgerows

The main hedges occur along the SE side and near to a house on the western side. The south-east hedge consists of ash *Fraxinus excelsior*, blackthorn *Prunus spinosa* and some spindle *Euonymus europaeus* which becomes frequent near the ringfort – where it is joined by hazel *Corylus avellana*. Hedge woundwort *Stachys sylvatica*, germander speedwell *Veronica chamaedrys* and field rose *Rosa arvensis* are additional species here. On the opposite side the trees are taller and there are large ash with hawthorn and elder. Growth is vigorous and ivy *Hedera helix*, hogweed *Heracleum sphondylium* and scutch grass *Elytrigia repens* are conspicuous.

Adjacent habitats

Other woody growth occurs around and covering the ringfort where hazel forms a canopy over cow parsley *Anthriscus sylvestris*, false brome *Brachypodium sylvaticum*, hartstongue *Phyllitis scolopendrium*, male fern *Dryopteris filix-mas*, shield fern *Polystichum setiferum*, primrose *Primula vulgaris* and barren strawberry *Potentilla sterilis*.

There is a small section of pit opposite the entrance and to the south of the main site. This is part of a former quarry and is sandy. Rose-bay *Chamerion angustifolium* is a major species but in exposed places there is also wild carrot *Daucus carota*, knapweed *Centaurea nigra*, field horsetail *Equisetum arvense*, dog daisy *Leucanthemum vulgare*, birdsfoot trefoil *Lotus*

corniculatus and black medick *Medicago lupulina*. A little sheep's sorrel *Rumex acetosella* shows that the deposit is slightly acid in places. Two introduced species also occur, the butterfly bush *Buddleja davidii* and prickly lettuce *Lactuca serriola*.

2.2 Fauna

There are no mammals in the quarry itself with the exception of a few rabbits in the NE corner. Around the margins however there are further burrows in the hedges while fox and hare may occur at times on the western side. There was no evidence of badgers on any visit though they are likely to be in the area. Some bats probably feed along the road and around the ringfort but the habitat elsewhere is not suitable for these animals and the pit would not be used.

There is no habitat available for frogs or newts as excavation does not reach the watertable and there are no long-lasting or permanent, vegetated ponds.

Recent excavation has revealed bands of sand within the deposit which are suitable for nesting sand martins. The birds now occupy two sections in the SW corner and there is a small population of 10-20 pairs. The bird is essentially an opportunist, finding and exploiting new nest sites as they become available because of erosion, either natural (riverbanks) or man-made (quarries).

A pair of peregrines attempted to nest in 2015 but abandoned the site in mid-May without success. The nest was on the western side close to active extraction and the birds were generally not disturbed by machinery. The reason for abandonment is not known. In general, sandpit sites are much less suitable for the species than rock quarries. Of 90 sites occupied by nesting birds in 2002, eighty-eight were in rock quarries and two in pits (Madden *et al*, 2009).

2.3 Evaluation

The habitats available on site are widely found in sand pits and have no significant ecological interest. The plant species also are quite common and widespread in Kildare (*cf* Preston *et al* 2002). A notable feature is the lack of diversity in the flora and this is probably caused by the short period of extraction as well as the characteristics of the material. A long-established site tends to accumulate more species which are either introduced by chance or by visiting vehicles. Allied to this at Boherkill is the absence of introduced species; only two plants, *Buddleja* and *Lactuca*, are of this category and they are restricted to the entrance.

The bird fauna contributes the only items of interest with the potential nesting by peregrine falcons and the current small colony of sand martins. As mentioned, sand quarries are not the most suitable sites for the peregrine and it is relatively unlikely that the pair would attempt to breed again, having failed in 2015. Their presence may be the result of a high local population.

Sand martins will probably continue to nest as long as there is a suitable lens of fine material to support their burrows.

2.4 Designations

The site is not included in any area with an ecological designation (Natural Heritage Area, Special Protection Area or Special Area of Conservation) and is unlikely to be so in the future. The nearest such areas are the Grand Canal pNHA (Code No. 2104), the Curragh NHA (Code No 392) and Pollardstown Fen (Code No. 396), a candidate SAC. The site has no ecological link with any of these.

The peregrine is an Annex I species under the Birds Directive 1979 (79/409/EEC) which means that it can be the basis for designation of SPA's. The sand martin has an amber listing amongst birds of conservation concern (Colhoun & Cummins, 2013) implying an unfavourable conservation status in Europe. However, the Irish population has increased since 1990 (Balmer *et al* 2013).

3. IMPACT OF DEVELOPMENT

3.1 Process

The main features of the development are the filling of the site with material from the overburden store and the import of additional inert fill. This will be a gradual process, working from north to south and the material will be subject to subsidence and settlement before being covered with topsoil from the berms and being restored to agricultural land

A small amount of extraction will continue during this process, making use of lenses of material still remaining but not adding to the extent of the pit.

3.2 Mitigation

The wheel-wash (with its closed water supply) will be retained during the period of filling to prevent loose material being left on the public road. There will be no escape of run-off as water will accumulate internally and will drain naturally through the remaining glacial material.

Restoration will include the removal of all machinery and structures and the smoothing of the contours to facilitate the establishment of grassland and grazing animals.

3.3 Actual impacts

During the filling process the site is likely to be covered by open vegetation similar to what occurs today on the south-western side. This will support an invertebrate fauna which will in turn allow feeding by sand martins and swallows.

Continuing extraction on the scale envisaged will not have any ecological effect on the habitat.

Restoration work will eventually remove suitable banks for nesting by the sand martins (and peregrines) but the species are flexible and will colonise new quarries as they become available.

The eventual restoration of the site will be to agricultural land suitable for grass or tillage crops.

4. CONCLUSION

The impact of inert waste disposal on this site will be considerable in local terms but will resemble the extraction process in the habitats it creates. It will not result in any loss of heritage values in the locality or, more widely, in the Natura 2000 network of protected sites.

The simultaneous small scale extraction will have no significant ecological effect except that it may give temporary nesting sites for sand martins.

References

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