

**Mary O' Connor**

Mary O' Connor is a qualified botanical ecologist with a special interest in habitat assessment. Her Ph.D. involved the detailed investigation of vegetation distribution, eco-hydrology, geochemistry and vegetation mapping of the Roundstone Bog Complex in Connemara, within the Connemara Bog Complex SAC.

She has worked as an independent ecologist since 1998 and has gained extensive experience working on ecological assessment projects for the public and private sectors. She has worked extensively on projects related to wetland ecology and restoration and translocation projects and has extensive experience working in riparian, peatlands, swamps, mires and fens.

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**Opinion on the proposed methodology for Translocation of Tall Herb Swamps (FS2), including the Annex I habitat (6430) Hydrophilous tall herb swamp communities at Ballycoskery Co. Cork**

**BALLYCOSKERY**

An area of Tall Herb Swamps (FS2), including the Annex I habitat (6430) Hydrophilous tall herb swamp communities was identified at the ecological assessment stage as occurring under the footprint of a new road that will facilitate level crossing closures at Ballycoskery Co. Cork. The assessment was conducted by Jacobs, Engineering Group, consultants on behalf of Iarnrod Eireann. This strip of tall herb swamp habitat was found to be associated with a wet ditch at the base of the existing railway embankment and covered an area of approximately 60m x 3m or around 200m<sup>2</sup> (Jacobs report). Tall-herb swamps are comparatively species-rich stands of herbaceous vegetation that often occur in wet areas where the water table is above the ground surface.

Species typical of the habitat found at the site include yellow iris (*Iris pseudacorus*), meadowsweet (*Filipendula ulmaria*), wild angelica (*Angelica sylvestris*) and great willowherb (*Epilobium hirsutum*) while other smaller vascular plants were recorded including water mint (*Mentha aquatica*), water forget-me-not (*Myosotis scorpioides*) marsh bedstraw (*Galium palustre*), hoary willowherb (*Epilobium parviflorum*), hemlock water-dropwort (*Oenanthe crocata*) and greater bird's-foot-trefoil (*Lotus pedunculatus*). Common spotted orchid (*Dactylorhiza fuchsia*) was rare within the sward while grasses and sedges were also present in lower densities including reed canary grass (*Phalaris arundinacea*), soft-rush (*Juncus effuses*) and sharp-flowered rush (*Juncus acutiflorus*).

This habitat was assessed in the Jacobs report as being of National Importance. It is a habitat of high conservation concern due to its correspondence to Annex I habitat (6430) Hydrophilous tall herb swamp communities.

The extent of habitat to be lost due to road construction for the level crossing is at Ballycoskery is approximately 40m<sup>2</sup>

**Mitigation of Loss of Habitat**

In the Jacobs report a proposed strategy to mitigate the loss of this valuable habitat from the footprint of the site was proposed.

This involved the proposed translocation of the habitat corresponding to Annex I habitat (6430) Hydrophilous tall herb swamp. The proposed receptor sites were identified and a draft method for translocation provided.

It was stated that with implementation of this mitigation there should be no residual impacts from the loss of this habitat.

## **PROPOSED METHOD**

The following proposed methodology for translocating the area of Hydrophilous tall herb swamp habitat due to be lost as a result of site development at Ballycoskery was put forward in the Jacobs Report as a specific mitigation action.

### **RECEPTOR SITE**

The Jacobs report stated that a suitable area has been identified as a potential receptor site that is contiguous with the existing habitat. The extent of the receptor site at Ballycoskery is based on a like for like area basis. The receptor site would increase the extent of the existing site westward (running east to west) into the adjacent field to mitigate for the loss of habitat at the northern end.

The Jacobs report continued to add these points of methodology as listed below.

### **PRE-CONSTRUCTION**

A detailed site inspection, including condition assessment, at donor and receptor site will be undertaken. Site will be surveyed by an experienced botanist in June and the existing habitat mapped in detail. The substrate will be assessed by digging soil pits to determine rooting depth to aid the design of the translocation. Any constraints present at the donor and receptor sites will be identified, e.g. soil testing to identify soil pH along with nitrogen, phosphorus and potassium (NPK) values for the soils. Each site will be assessed for any issues such as nutrient seepage and any issues that may carry implications for further management of this habitat. If a site is determined through the above assessment as being not-suitable as a receptor site, an alternative site will be identified and consultation/agreement with NPWS obtained.

### **BALLYCOSKERY**

At Ballycoskery an assessment by a hydrologist is also required to determine whether conditions at the receptor site would be suitable for habitat translocation. The drainage pattern will be assessed and whether alterations to drains may be required to support translocation at this site. Preparation of receptor site and translocation of turves (seed bank, above ground vegetation and below ground roots) should be undertaken in early autumn when vegetation is dying back and the ground is still dry enough to disturb. Turves will not be removed and stored prior to translocation to increase potential of success.

At Ballycoskery stock fencing will be installed to prevent grazing and poaching by livestock. Where present overhanging vegetation, scrub comprising small bushes and trees, will be trimmed back to reduce leaf litter. Depending on prevailing conditions, including extent of ground water, one of three options can be taken forward:

1. The fenced-off receptor site is left as is and allowed to generate naturally with no interventions. This will be the preferred option if the detailed site inspection results indicate that it is likely to develop into the target habitat without intervention.
2. The receptor site is enhanced through seeding using the existing seed bank at the donor site. This option will be advised by the site inspection and the findings of the botanist, given that seed banks can contain a high percentage of weeds and some target species may not have persistent seed banks.
3. The receptor site is cleared of all vegetation and turves (including seed bank) and replaced with all vegetation and turves (including seed bank) from the donor site.

For option 2 plugs or turves containing seed bank will be removed from the donor site and placed in pre-prepared plots within the receptor site. This will be advised by the findings of the site inspection.

For option 3 the entire donor site area will be removed to an appropriate depth, to be determined by detailed site inspection and pre-construction survey, and moved to the cleared receptor site. Under the direction of an experienced Ecological Clerk of Works (EcoW), turves will be laid by hand or with the use of specialist plant on the pre-prepared bare ground and staked-in to prevent movement. Turves will not be translocated when the ground is water-logged or frozen. Translocation of the habitat at Ballcoskery will be completed within one day where possible.

### POST-CONSTRUCTION

Receptor sites will be monitored for a period of three years. Corrective measures such as vegetation trimming or annual mowing may be required to maintain conditions at receptor sites.

### **Comment on Methodology re. Habitat translocation at Ballycoskery**

The accepted understanding of habitat translocation is as follows.

*Habitat translocation is the process of moving soils or substrates with their vegetation and any animals that remain associated with them in order to rescue or salvage habitats that would be lost due to changes in land-use, or to restore biodiversity to damaged, degraded or newly created sites (Box 2003).*

For translocation to be feasibly put forward as a mitigation for the loss of important habitat of high conservation value a high degree of site assessment of both the donor and receptor sites must be carried out prior to its proposal as a mitigation method.

According to (Anderson 2003) and (Box 2003, 2010, 2014) the following should be carried out at a minimum prior to any consideration of a proposal to utilise habitat translocation as a mitigation measure.

The receptor site should resemble the donor site as closely as possible in terms of aspect, slope, soil, drainage, soil nutrient status and hydrology.

The assessments of the environmental conditions at a donor site must be carried out in detail before any site is put forward as a potential suitable receptor site for translocation. Habitat translocation is never simple. Translocating plants is easy; spreading seed mixes easy. But a habitat is greater than the sum of its soils, plants and animals - it is the result of a complex and dynamic interaction between each component over a number of years.

In the methodology proposed for Ballycoskery it is clear that all eco-hydrological assessments of the proposed donor site have not been carried out and the proposed site has been selected without consulting with a hydrologist re. site drainage conditions or carrying out due investigation of the donor and receptor site soil parameters essential for any successful translocation. This is a failure to comply with best practice as these site assessments must be carried out prior to a site being put forward as a potential receptor site for habitat. It is critical that habitat conditions are extremely closely aligned if there is to be any success of such a mitigation measure.

The minimum that needs to be carried out prior to proposal of habitat translocation is to dig trial pits in the donor habitat, examine the soils in detail in each pit, check the water regimes or site hydrology in detail, the depths and variability of the soil layers, check for organic matter content and macro and micro-nutrient levels in each layer together with rooting depth of all the critical plants and then do the same at each of the possible translocation sites. It is clear that these investigations have not been carried out for the site at Ballycoskery.

It is my opinion that in this instance that the proposed mitigation measure of habitat translocation as a mitigation to the loss of Annex 1 habitat of high conservation value, (6430) Hydrophilous tall herb swamp, is inadequate due to the lack of prior assessment of both the donor and proposed receptor sites.

Dr, Mary O'Connor,

Ecological Consultant

Shanacloon Newtown, Kildare Town

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#### References

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John Box (2003) Critical factors and evaluation criteria for habitat translocation. *Journal of Environmental Planning and Management* 46: 839-856.

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