

**Survey for protected species of whorl snails (*Vertigo* sp.)
at Lough Bawn pNHA (001819) and nearby drain,
west of Keenagh, Co. Longford.**

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(above) Vegetation at western side of Lough Bawn
(below) View along drain, showing emergent vegetation



Introduction

These is a proposal to build a wind farm at Derryadd, Co. Longford. This locality has large areas of cutover bog, and is centred roughly equidistant from the villages of Lanesborough, Killashee and Keenagh). Associated with this proposed development, a survey for protected whorl snails was commissioned, with direction to focus on two areas: (a) an infilling lake, Lough Bawn (pNHA, 001819) with an area of approximately 8ha, and, (b) a drain, approximately 500m in length, running south-west to north-east from raised bog towards the Royal Canal. In July 2018, molluscan specialist Dr Maria Long was commissioned by Pádraig Cregg, Senior Ornithologist, Tobin Consulting Engineers to carry out this work. The aim of the survey was to establish the presence and abundance of protected *Vertigo* species within these areas.

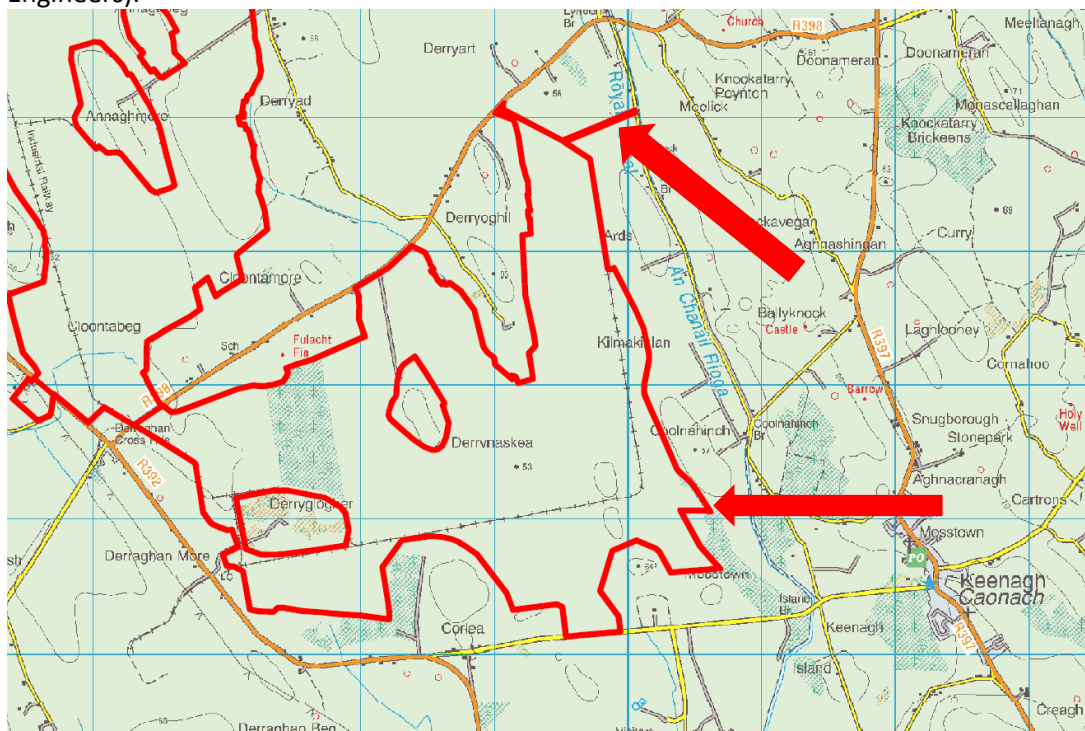
This report presents the findings of the field survey to identify and assess areas of potentially suitable habitat for protected *Vertigo* species, as well as the results of subsequent sampling.

Survey area

Both survey areas are marked on the map below (Figure 1). The survey areas lie across two 10km squares, N16 and N06.

Maps from the early 1900s show Lough Bawn as having substantial areas of open water, so it is clear that this is a recently infilling lake.

Figure 1. Survey area with site locations indicated by red arrows (map provided by Tobin Consulting Engineers).



Introduction to the protected *Vertigo* species

Three species of these tiny whorl snails which are found in Ireland are protected under the European Habitats Directive (listed on Annex II) and are usually indicators of high-quality habitat, with good continuity of habitat conditions over time. A number of recent studies have provided and collated detailed information on their status and distribution in Ireland (e.g. Moorkens and Killeen, 2011; Long and Brophy, 2017), and the recent Red List for non-marine molluscs gives information on their rarity in Ireland (Byrne, 2009).

Vertigo angustior

The narrow-mouthed whorl snail, *Vertigo angustior*, grows to less than 2mm in height and has a narrow, yellowish-brown shell. Unlike most other *Vertigo* species, its mouth opens to the left (Figure 2). In Ireland, this species is often found in sand dune habitats, but it is also found inland in wetlands. In these situations, the snail is associated with decaying vegetation in the litter layer or damp moss at the base of plant such as *Iris pseudacorus* and tall sedges, in open unshaded habitats. It is not tolerant of shading. Generally it occurs in open-structured, humid litter, but in very wet conditions can climb 10-15 cm up the stems of plants or onto damp decaying timber. In dry conditions it may be found in the soil, just below the litter layer. At many of its inland sites it is restricted to a narrow band, sometimes only a few metres wide (but of variable length), where there is an appropriate transition zone between wetland and terrestrial habitats. It normally occurs in association with permanently moist but free-draining soil, not subject to inundation. This lack of tolerance to flooding makes many potential habitat areas unsuitable.

Vertigo geyeri

Vertigo geyeri, Geyer's whorl snail, is small (<2mm high), with a glossy shell with fine, regular growth-lines (Figure 2). It has four simple, peg-like teeth in the mouth. *Vertigo geyeri* has very specific habitat requirements, being found at the bases of small sedges and mosses (often in the decaying leaf matter) in calcareous flushes and fens. This species requires stable hydrological conditions, needing the ground to be constantly saturated, yet it is not tolerant of flooding. It also requires quite open conditions, so light to moderate grazing levels are generally beneficial, though open conditions may also be maintained due to wetness. Tufa formation is a good indicator for the presence of this species, as is the presence of the so-called 'brown mosses' (e.g. *Campyllum stellatum*, *Drepanocladus* spp., *Scorpidium* spp.). A degree of small-scale habitat heterogeneity greatly benefits the long-term survival prospects of *Vertigo geyeri* (e.g. small tussocks of *Schoenus nigricans*, small moss hummocks or uneven terrain), as it allows them to shelter or escape in conditions caused by very wet or very dry weather.

Vertigo moulinsiana

Vertigo moulinsiana, Desmoulin's whorl snail, is the largest of the *Vertigo* species found in Ireland and reaches sizes of up to 2.7mm high. It is broadly egg-shaped and has a red-brown relatively glossy shell (Figure 2). It shows a preference for calcareous wetlands and needs tall-growing vegetation. As such it is often associated with reed-beds and swamps, and some types of fens (e.g. *Cladium* fens) and marshes. Suitable vegetation types are additionally often found bordering waterbodies such as canals, ditches, lakes and rivers. Examples include areas with *Glyceria maxima*, *Phragmites australis* and some tall or tussock-forming *Carex* species. This species, in contrast with other *Vertigo* species, can migrate considerable distances vertically during the year, climbing high in the vegetation in autumn, and remaining low during winter. It can withstand certain amounts of flooding, but appears to be relatively intolerant of drying out.

Figure 2. *Vertigo angustior* (left), *Vertigo geyeri* (middle), *Vertigo moulinsiana* (right). Photographs copyright Maria P. Long.



Existing records for *Vertigo* species

The website of the National Biodiversity Data Centre (biodiversityireland.ie) was checked for existing records of all three *Vertigo* species in the vicinity.

Vertigo angustior is not known from the vicinity.

Vertigo geyeri is known from nearby 10km square N07, where it has been recorded within the past 15 years from two wetland sites near the banks of the Shannon near Cloondara. These records are c.10km north of the current study area.

Vertigo moulinsiana is known from a number of areas in the vicinity of the proposed development, all on or closely associated with the Royal Canal. In square N16 there is a record from 1968 from the Royal Canal (marked as “Island Bridge”). In square N07 (the square directly to the north) there are three records:

- 1972; Cloondara – Termonbarry; Norris, Chatfield, Kerney (no further details)
- 2003; Savage Bridge, Killashee; in swamp in abandoned canal bed; Moorkens, Killeen
- 2006; Royal Canal, Cloondara; *Glyceria* swamp east of lock; Moorkens

Survey methodology

A field visit was undertaken on 17th October 2018. Each study area was visited and walked, and a decision was made on whether to sample (based on habitat suitability) and how many samples to take. Notes were taken on habitat and vegetation type, and grid references were taken at regular intervals.

The potential of each habitat area for supporting the target *Vertigo* species was rated as follows:

- N – not suitable for supporting target *Vertigo* species.
- L – low suitability, low chance of the target species occurring.
- M – moderate suitability, moderate chance of occurrence of species.
- H – high suitability, species may occur.

The equipment needed for *Vertigo* surveys includes:

- light coloured tray (onto which to beat vegetation, and onto which snails fall)
- muslin bags (approx. 3L; these are used to store vegetation and litter samples collected on site, for later lab analysis)
- jars (for storing molluscs collected in field which may need either further ID work, or to be kept as voucher specimens)
- hand lens (x10), and/or head-band magnifier
- GPS (handheld Garmin)
- mobile phone – for communication and photos
- weather writer and recording sheet for recording site notes, grid refs, etc.

Mollusc species found were identified with reference to Cameron (2003), Kerney & Cameron (1979) and other relevant works (e.g. Cameron *et al.*, 2003).

Results

Vertigo angustior

Based on the habitat walkover survey, the occurrence of *Vertigo angustior* anywhere within the study area was ruled out because of lack of suitable habitat to support it. This species is not considered further here.

Vertigo geyeri

The majority of the areas covered did not hold potential to support *Vertigo geyeri*. However, one small area at Lough Bawn (N 10287 64174) was considered to be of low potential suitability for *Vertigo geyeri*, and a short search was made in the field. The target species was not found.

Vertigo moulinsiana

Area 1 – Lough Bawn

Lough Bawn is an area of infilling lake, and the vegetation is quaking right up to the edge (even under the fringing woodland). The vegetation is quite acid-loving in nature, with species such as *Molinia caerulea*, *Aulacomnium palustre*, *Sphagnum* spp. being common. This indicates strongly that the water here is relatively acid in nature, and unlikely to be suitable for *Vertigo moulinsiana*, which is found in areas with lime-rich water (sometimes weakly so, but never acid). The vegetation becomes more sedge-rich towards the centre of the site, but these sedges are mostly low to medium-sized (e.g. *Carex diandra*, *Carex rostrata*, *Carex echinata*), rather than the tall-growing graminoid species preferred by *Vertigo moulinsiana* (e.g. *Cladium mariscus*, *Carex acutiformis*, *Glyceria maxima*, *Sparganium erectum*, etc.). Small pockets of taller graminoids such as *Typha latifolia* were present and these were inspected. None proved suitable for *Vertigo moulinsiana*.

Samples: no samples for *Vertigo moulinsiana* were taken at Lough Bawn due to lack of suitable habitat.

Area 2 – drain

The drain in question runs from an area of raised bog, north-east towards the Royal Canal. It drains into a small stream at its south-western end, and has substantial water with discernible flow. There are areas of emergent vegetation (see cover photo), some of which hold low potential for supporting *Vertigo moulinsiana*. The main emergent species is *Typha latifolia*, with *Mentha aquatica*, *Epilobium hirsutum* and *Glyceria fluitans* also common. Three samples were taken along the drain at the following grid references: S1 & S2 – N 09898 66986, S3 – N 09857 66969. All were negative for *Vertigo moulinsiana*.

Summary and Discussion

Lough Bawn is an excellent example of the Annex I habitat ‘Transition mire’. It is, however, largely unsuitable for supporting *Vertigo moulinsiana*. It holds very low potential, in pockets, to support *Vertigo geyeri*, and one sample taken in the field proved negative.

The drain does not hold habitat suitable for supporting *Vertigo angustior* or *Vertigo geyeri*, and it holds only low potential for *Vertigo moulinsiana*. Given that three samples were taken for this species, it can be said with relative confidence, that this species is not present at this location.

Thus Lough Bawn is the area of greatest conservation importance, and any changes in or near this location, or potentially affecting its hydrology, should be treated with extreme caution. It is a pNHA, and is an excellent example of an EU Habitats Directive Annex I habitat type (transition mire, 7140).

References

- Byrne, A., Moorkens, E.A., Anderson, R., Killeen, I.J. & Regan, E.C. (2009) *Ireland Red List No. 2 – Non-marine Molluscs*. National Parks and Wildlife Service, Department of the Environment, Heritage and Local Government, Dublin, Ireland.
- Cameron, R.A.D. (2003) *Keys for the Identification of Land Snails in the British Isles*. Field Studies Council, Shropshire, UK.
- Cameron, R.A.D., Colville, B., Falkner, G., Holyoak, G.A., Hornung, E., Killeen, I.J., Moorkens, E.A., Pokryszko, B. M., Proschwitz, T.V., Tattersfield, P. & Valovirta, I. (2003) Species Accounts for snails of the genus *Vertigo* listed in Annex II of the Habitats Directive: *V. angustior*, *V. genesii*, *V. geyeri* and *V. moulinsiana* (Gastropoda, Pulmonata: Vertiginidae). In: Speight, M.C.D., Moorkens, E.A. & Falkner, G., eds. *Workshop on Conservation Biology of European Vertigo species*, 2002 Dublin, Ireland. Friedrich-Held-Gesellschaft, Munchen, 2003.
- Kerney, M.P. & Cameron, R.A.D. (1979) *A Field Guide to the Land Snails of Britain and North-west Europe*. Collins, St. James's Place, London.
- Long, M.P. & Brophy, J.T. (2017) Monitoring of sites and habitat for three Annex II species of whorl snail (*Vertigo*). Volume 1: Final Report. *Irish Wildlife Manuals*, No. XX. National Parks and Wildlife Service, Department of the Culture, Heritage and the Gaeltacht, Ireland.
- Moorkens, E.A. & Killeen, I.J. (2011) Monitoring and Condition Assessment of Populations of *Vertigo geyeri*, *Vertigo angustior* and *Vertigo moulinsiana* in Ireland. *Irish Wildlife Manuals*, No. 55. National Parks and Wildlife Service, Dublin, Ireland.

Report submitted by email to Pádraig Cregg, Senior Ornithologist, and Siobhán Tinnelly, Associate Director - Energy & Environment, Tobin Consulting Engineers, by email, mid November 2018.