

APPENDIX F.5

KERRY SLUG SURVEY AND ASSESSMENT

Grousemount Wind Farm, County Kerry

Kerry Slug Survey and Assessment

Preliminary Report

Prepared for

ESBI

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of



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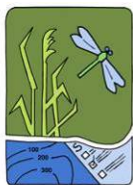
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1 INTRODUCTION

Wetland Surveys Ireland Ltd were commissioned by ESBI to undertake a survey for Kerry Slug (*Geomalacus maculosus*) within a proposed wind farm site at Grousemount, County Kerry. The aim of the survey is to determine whether Kerry slug is present within the wind farm site and to gain an understanding of its abundance and distribution throughout the site. The survey will inform the assessment of potential ecological impacts of the proposed wind farm and devise appropriate mitigation as may be required.

The occurrence of the wind farm within the known range of Kerry Slug (*Geomalacus maculosus*) together with the presence of suitable habitat throughout the site suggests the likely presence of the species.

1.1 KERRY SLUG - CONSERVATION STATUS AND DISTRIBUTION

The Kerry slug (*Geomalacus maculosus*) is protected by the Wildlife (Amendment) Act 2000. It is listed under Annex II of the Habitats Directive and seven Special Areas of Conservation (SACs) have been designated for the species with a combined total area of approximately 95,337 hectares. The Kerry slug is also listed in Annex IV of the Habitats Directive and as such is strictly protected from injury, or disturbance / damage to their breeding or resting place wherever it occurs.

Historically, the Kerry Slug has been considered to be restricted to Devonian Old Red Sandstone areas of Kerry and West Cork where it occurs most commonly in either of three distinct habitats:

- deciduous woodlands in particular those with rocky outcrops or boulders;
- rock outcrops associated with heath or blanket bog; and
- lake shores

Within these habitats, the species tends to only be present if there is outcropping Devonian Old Red Sandstone, humid conditions and lichen, liverwort and / or mosses in which the species shelters and feeds (Platts and Speight 1988).

However, the species has also been recently discovered on both granite outcrops within blanket bog and from a Conifer plantation in County Galway (Kearney 2010). Further records of the species from Conifer Plantations suggest that this may also be a suitable habitat for the species (McDonnell *et al.* 2013). A possible explanation put forward to explain the recent discovery of the species in County Galway is an inadvertent introduction (during forestry operations) (McDonnell *et al.* 2013). However this has not yet been determined (Reich *et al.* 2012).

The overall conservation status of the species has been reported as favourable and it is not currently considered threatened within its range¹.

A review of data held by the National Biodiversity Data Centre (August 2015) confirms that the species has previously been reported from all four 10km squares that the site intersects (W07; W17; W06; W16). However, none of the records held by the NBDC relate to the wind farm site itself. The wind farm is not located within any site designated for nature conservation. The nearest site designate for the protection of Kerry Slug is the Killarney National Park, Macgillycuddy's Reeks and Caragh River Catchment SAC (NPWS Site Code: 0365).

Based on the habitats recorded during the ecological assessment of the wind farm, the following potentially suitable habitats have been identified:

- wet heath and rock outcrop habitat present throughout much of the site.

2 METHODOLOGY

2.1 DESKTOP REVIEW

2.1.1 Known distribution of Kerry Slug

A desktop assessment including a review of previous records of Kerry Slug within and surrounding the study area was undertaken, the results of which are presented in section 1.1 above.

2.2 FIELD SURVEYS

There are three main survey approaches that are used to survey for Kerry Slug. These include hand searching techniques (diurnal or nocturnal) and live refuge trapping (metric traps). The method used during the current survey is live refuge trapping as recommended for use by McDonnell et al. (2013). This method is favoured over other techniques because it enables quantitative sampling (McDonnell and Gormley 2011a,b). In addition, it removes the requirement of undertaking searches during wet weather (in the case of diurnal searches), and the health and safety risks associated with nocturnal searches in remote locations. The metric trap method involves the following:

- Metric traps. This is a refuge trap technique. The metric traps (0.25 m²), manufactured by De Sangosse (Pont du Casse, France), are made up of absorbent material covered with a reflective upper surface and a black perforated plastic on the underside. They are wetted in advance of being laid out and are baited with Carrot. Traps are secured to rock outcrops (outcrop metric traps) or on surface vegetation (in the case of heath)

¹NPWS (2013). *The status of EU protected habitats and species in Ireland. Overview Volume 1. Unpublished Report, National Parks and Wildlife Service.*

using stones, tent pegs, or nails as appropriate. They can also be wrapped around tree trunks (banded metric traps) when undertaking surveys at wooded sites (not relevant to current survey). Traps are checked weekly for a period of up to six weeks. If required, traps are re-wetted during site visits using a watering can.

In all, 31 metric traps were set out amongst potentially suitable habitat within the wind farm site during early August 2015 (see Figure 1; Plate 1; Plate 2). In addition to checking the metric traps, incidental observations of Kerry Slug were recorded during each site visit. A summary of the dates, methods, and weather conditions of each site visit undertaken to date are presented in Table 1.

Table 1: Details of site visits undertaken as part of the Kerry Slug surveys to date.

Date	Methods	Weather
04/08/2015	Setting of metric traps Incidental observations during site visit	Frequent showers; Light south-westerly wind; Mild; Complete cloud cover
05/08/2015	Setting of metric traps Incidental observations during site visit	Constant drizzle with intermittent heavy showers; Light south-westerly wind; Mild; Complete cloud cover
13/08/2015	Checking of metric traps Incidental observations during site visit	Dry with sunny spells; Warm Light southerly breeze; 20% Cloud cover



Plate 1: Outcrop metric trap at Grousemount Wind Farm site.



Plate 2: Metric trap laid on wet heath habitat in proximity to exposed outcropping rock at Grousemount Wind Farm.

3 RESULTS

Preliminary results of the metric trap surveys are presented in Table 2 below. It is intended to undertake five more repeat visits during the period August - September 2015. Details of incidental observations of Kerry Slug recorded during site visits are presented in Table 3 below.

In summary, a total of 7 individual Kerry Slugs were recorded in metric traps (four traps had individuals present) during the first site visit following traps being laid (see Table 2). All records were from traps laid on outcropping rock. A further 5 individuals (four observations) were recorded from outcropping rock elsewhere on the site during site visits (see Table 3; Figure 1).

Table 2: Results of metric trap survey for Kerry Slug at Grousemount wind farm.

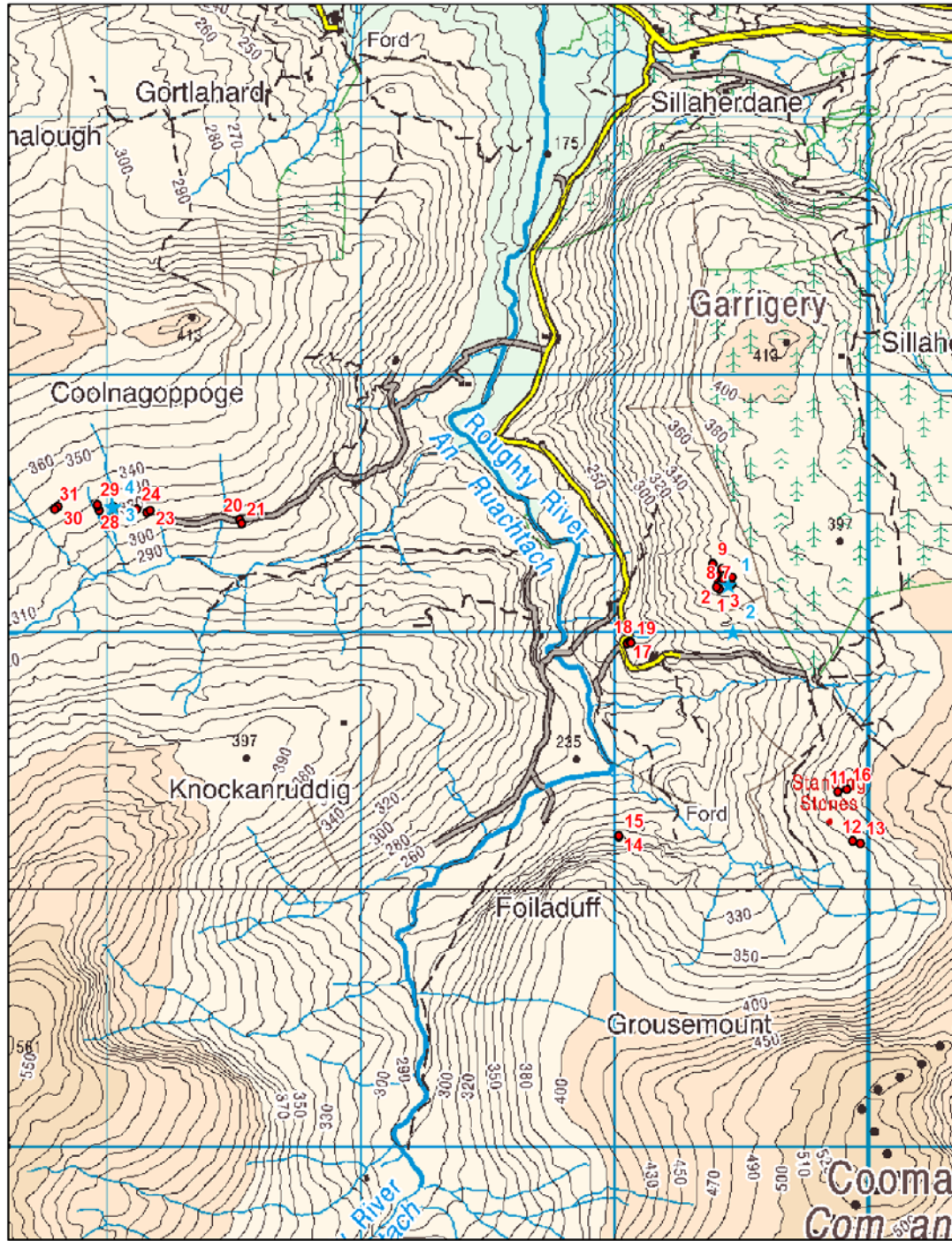
Trap Number	Easting (IG)	Northing (IG)	Date trap set	Type	Habitat	13/08/2015 Kerry Slug Records ²
1	109410	71169	04/08/2015	Outcrop metric traps	ER1 Exposed siliceous rock	None
2	109399	71176	04/08/2015	Metric traps on vegetation	HH3 Wet heath	None
3	109457	71186	04/08/2015	Outcrop metric traps	ER1 Exposed siliceous rock	None
4	109460	71215	04/08/2015	Metric traps on vegetation	HH3 Wet heath	None
5	109424	71208	04/08/2015	Metric traps on vegetation	HH3 Wet heath	None
6	109398	71213	04/08/2015	Outcrop metric traps	ER1 Exposed siliceous rock	1
7	109400	71224	04/08/2015	Metric traps on vegetation	HH3 Wet heath	None
8	109420	71248	04/08/2015	Metric traps on vegetation	HH1 Dry siliceous heath	None
9	109385	71267	04/08/2015	Outcrop metric traps	ER1 Exposed siliceous rock	2
10	109385	71266	04/08/2015	Metric traps on vegetation	HH1 Dry siliceous heath	None
11	109877	70381	05/08/2015	Metric traps on vegetation	HH3 Wet heath	None
12	109936	70190	05/08/2015	Metric traps on vegetation	HH3 Wet heath	None
13	109966	70181	05/08/2015	Metric traps on vegetation	HH3 Wet heath	None
14	109013	70207	05/08/2015	Outcrop metric traps	ER1 Exposed siliceous rock	None
15	109014	70211	05/08/2015	Outcrop metric traps	ER1 Exposed siliceous rock	None
16	109912	70391	05/08/2015	Outcrop metric traps	ER1 Exposed siliceous rock	None
17	109047	70958	05/08/2015	Outcrop metric traps	ER1 Exposed siliceous rock	None
18	109058	70965	05/08/2015	Outcrop metric traps	ER1 Exposed siliceous rock	None
19	109063	70960	05/08/2015	Outcrop metric traps	ER1 Exposed siliceous rock	None
20	107520	71438	05/08/2015	Metric traps on vegetation	HH3 Wet heath	None
21	107527	71422	05/08/2015	Metric traps on vegetation	HH3 Wet heath	None

² Weather conditions were dry and warm. Many outcrop metric traps were dried out and subsequently re-wetted during site visit.

Trap Number	Easting (IG)	Northing (IG)	Date trap set	Type	Habitat	13/08/2015 Kerry Slug Records ²
22	107155	71465	05/08/2015	Metric traps on vegetation	HH3 Wet heath	None
23	107167	71475	05/08/2015	Outcrop metric traps	ER1 Exposed siliceous rock	2
24	107113	71479	05/08/2015	Outcrop metric traps	ER1 Exposed siliceous rock	None
25	107023	71490	05/08/2015	Outcrop metric traps	ER1 Exposed siliceous rock	None
26	107022	71484	05/08/2015	Outcrop metric traps	ER1 Exposed siliceous rock	None
27	106967	71475	05/08/2015	Metric traps on vegetation	HH3 Wet heath / GS4 Wet grassland	None
28	106959	71492	05/08/2015	Outcrop metric traps	ER1 Exposed siliceous rock	2
29	106959	71497	05/08/2015	Metric traps on vegetation	GS4 Wet grassland / ER1 Exposed siliceous rock	None
30	106804	71488	13/08/2015	Outcrop metric traps	ER1 Exposed siliceous rock	NA
31	106791	71480	13/08/2015	Metric traps on vegetation	GS4 Wet grassland / HH3 Wet heath	NA

Table 3: Incidental observations of Kerry Slug recorded during the course of site visits to Grousemount wind farm.

Incidental Record No	Date	Easting (IG)	Northing (IG)	Comment
1	04/08/2015	109449	71184	1 KS recorded on sheltered east facing rock outcrop.
2	04/08/2015	109467	71001	1 KS recorded on south facing rock outcrop.
3	05/08/2015	107023	71490	2 KS recorded on large boulders with good lichen cover (south facing), surrounded by wet heath.
4	05/08/2015	107022	71484	1 KS recorded on south facing boulder, good lichen cover. Individual was recorded within a crevice on the boulder.



Legend

- ★ Incidental Records
- Metric Trap Locations



Figure 1: Map showing the location of metric traps (labeled according to number). Incidental Kerry Slug records are also indicated.

4 DISCUSSION AND RECOMMENDATIONS

Initial results from the current survey confirm the presence of Kerry Slug within the wind farm site. These results also suggest a preference for exposed siliceous rock. This is in line with previous surveys undertaken amongst similar habitat complexes (McDonnell and Gormley 2011a). The species is thought to be widespread throughout suitable habitat within its known range (NPWS 2013).

The development of the wind farm could potentially impact on the local population of Kerry Slug due to loss and disturbance of suitable habitat. Based on the likely extent of habitat loss throughout the wind farm site, this impact is likely to be minor and localised as only a very small proportion of suitable Kerry Slug habitat within the site will be impacted. During construction, works could also result in the death of low numbers of Kerry Slug due to machinery movements in areas of suitable habitat.

The following measures are recommended to minimise the above potential impacts on the local Kerry Slug population:

- Areas of suitable habitat that occur outside of the footprint of the development should be avoided during the course of construction thereby minimising the loss and disturbance of Kerry Slug habitat.
- Immediately prior to undertaking works in areas of suitable habitat, the project ecologist will check for the presence of Kerry Slug. Should slugs be discovered then they will be transferred to suitable habitat in the surroundings. Similar on-going monitoring of suitable habitat within works areas should continue throughout the construction phase. Such monitoring should be undertaken during periods of wet weather when slugs are most active and feeding on the surface and therefore at greater risk of impacts by movement of machinery.
- Due to the unavoidable disturbance to Kerry Slug habitat, a derogation license will be sought from the NPWS prior to the commencement of construction. Works will be carried out in compliance with any conditions set by such the license.

5 BIBLIOGRAPHY

- Kearney, J., (2010). Kerry slug (*Geomalacus maculosus* Allman 1843) recorded at Lettercraffroe, Co. Galway. – Irish Naturalists' Journal 31: 68-69.
- Mc Donnell, R., O'Meara, K., Nelson, B., Marnell, F., and Gormally M. (2013). Revised distribution and habitat associations for the protected slug *Geomalacus maculosus* (Gastropoda, Arionidae) in Ireland. *Basteria* (Journal of the Netherlands Malacological Society) 77 (1-3): 33-37.
- Mc Donnell, R.J. and Gormally, M.J. (2011a). Distribution and population dynamics of the Kerry Slug, *Geomalacus maculosus* (Arionidae). Irish Wildlife Manuals, No. 54. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht, Dublin, Ireland.
- Mc Donnell, R.J. & Gormally, M.J. (2011b) Identification of a live trapping method for the protected European slug, *Geomalacus maculosus* Allman 1843 (Arionidae). *Journal of Conchology* 40: 483-485.
- NPWS (2013). The status of EU protected habitats and species in Ireland. Overview Volume 1. Unpublished Report, National Parks and Wildlife Service.
- NRA (2009). Ecological Surveying Techniques for Protected Flora and Fauna during the Planning of National Road Schemes.
- Platts, E.A. and Speight, M.C.D. (1988). The taxonomy and distribution of the Kerry Slug *Geomalacus maculosus* Allman, 1843 (Mollusca: Arionidae) with a discussion of its status as a threatened species. *Irish Naturalists' Journal* 22: 417–460.
- Reich, I., O'Meara, K., Mc Donnell, R.J. and Gormally, M.J. (2012). An assessment of the use of conifer plantations by the Kerry Slug (*Geomalacus maculosus*) with reference to the impact of forestry operations. Irish Wildlife Manuals, No. 64. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht, Ireland.