

Freshwater Pearl Mussel Survey Report

Lowerymore River, Co. Donegal



Planning & Environmental Consultants

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1 INTRODUCTION

1.1 Survey Background

McCarthy Keville O’Sullivan Ltd. were appointed by Planree Ltd., to conduct a Stage 1 and 2 Survey for Freshwater Pearl Mussel (*Margaritifera margaritifera*) in the Lowerymore River (Eask catchment) upstream of Lough Eske, Co. Donegal.

Freshwater Pearl Mussel (*Margaritifera margaritifera*) is a scheduled species under the Wildlife Act and is also listed on Annex II of the EU Habitats Directive [92/43/EEC]. The range and extent of the species is under threat across Europe and the aforementioned legislation affords protect to the species and its habitat. Any action that is likely to have an adverse impact on the species, including surveys, requires a license. The current survey work was carried under license number C067/2014. All survey work in relation to Pearl Mussel in Ireland must adhere to the protocol set out in *Margaritifera margaritifera* Stage 1 and Stage 2 Survey Guidelines produced by the NPWS (Irish Wildlife Manual No. 12).

Margaritifera margaritifera is large bivalve mollusc (up to 140mm), with an oval shaped heavy black shell often eroded at the umbone (apex). The species is native to Ireland. Pearl Mussel are positively correlated to salmonids and are partially parasitic on juvenile salmonids during their early life cycle (Glochidia stage). Pearl Mussels are long-lived filter feeders and consequently are sensitive to pollution and may be affected by impacts occurring at considerable distances upstream from their populations. In a pearl mussel river, the effects of such an incident can range from loss of the salmonid fish which are essential to the mussel’s life cycle, to long term stress and death of adult and young mussels from oxygen deprivation, to immediate death of the entire mussel population from toxic poisoning (E.A. Moorkens, 1999)¹.

The survey work was conducted by suitably qualified ecologists, Dr. Chris Peppiatt B.Sc., M.Sc. PhD MCIEEM and Ms. Danielle Aherne B.Sc. (Hons), MRes.

1.2 Methodology

The survey was conducted, in accordance with the *Margaritifera margaritifera* Stage 1 and Stage 2 Survey Guidelines produced by the NPWS (Irish Wildlife Manual No. 12), by ecologists from McCarthy Keville O’Sullivan Ltd. under licence numbers C014/2014 and C127/2015 from the NPWS. Copies of the licences are provided in Appendix 1 of this report.

In accordance the protocol set out in the *Margaritifera margaritifera* Stage 1 and Stage 2 Survey Guidelines, 500m sections out of each 1km of river was surveyed (Phase 2 Survey) for Pearl Mussel. Nine survey sections/transects, were selected using OSI mapping and orthophotography. Field maps with OSI mapping and aerial photography as well as transect start and end point grid references were provided to surveyors.

In order to determine suitable survey days a variety of meteorological websites were analysed (i.e. www.met.ie; www.yr.no). Ideally survey should be undertaken on sunny days which aids and increases underwater visibility. Survey works should not be conducted during overcast days i.e. (more than 60% cloud cover) or at dawn or dusk

¹ E. A. Moorkens (1999) Conservation Management of the Freshwater Pearl Mussel *Margaritifera margaritifera*. Part 1: Biology of the species and its present situation in Ireland. Irish Wildlife Manuals, No. 8.

(*Margaritifera margaritifera* Stage 1 and Stage 2 Survey Guidelines produced by the NPWS, Irish Wildlife Manual No. 12).

The survey was carried out from the 2nd to the 10th of September 2015. Weather conditions including cloud cover and sun hours were recorded. Weather conditions on each survey date were either bright and sunny or there was a mixture of cloudy and sunny intervals. There was little wind with little breeze and little precipitation. Cloud cover varied between 10-60%.

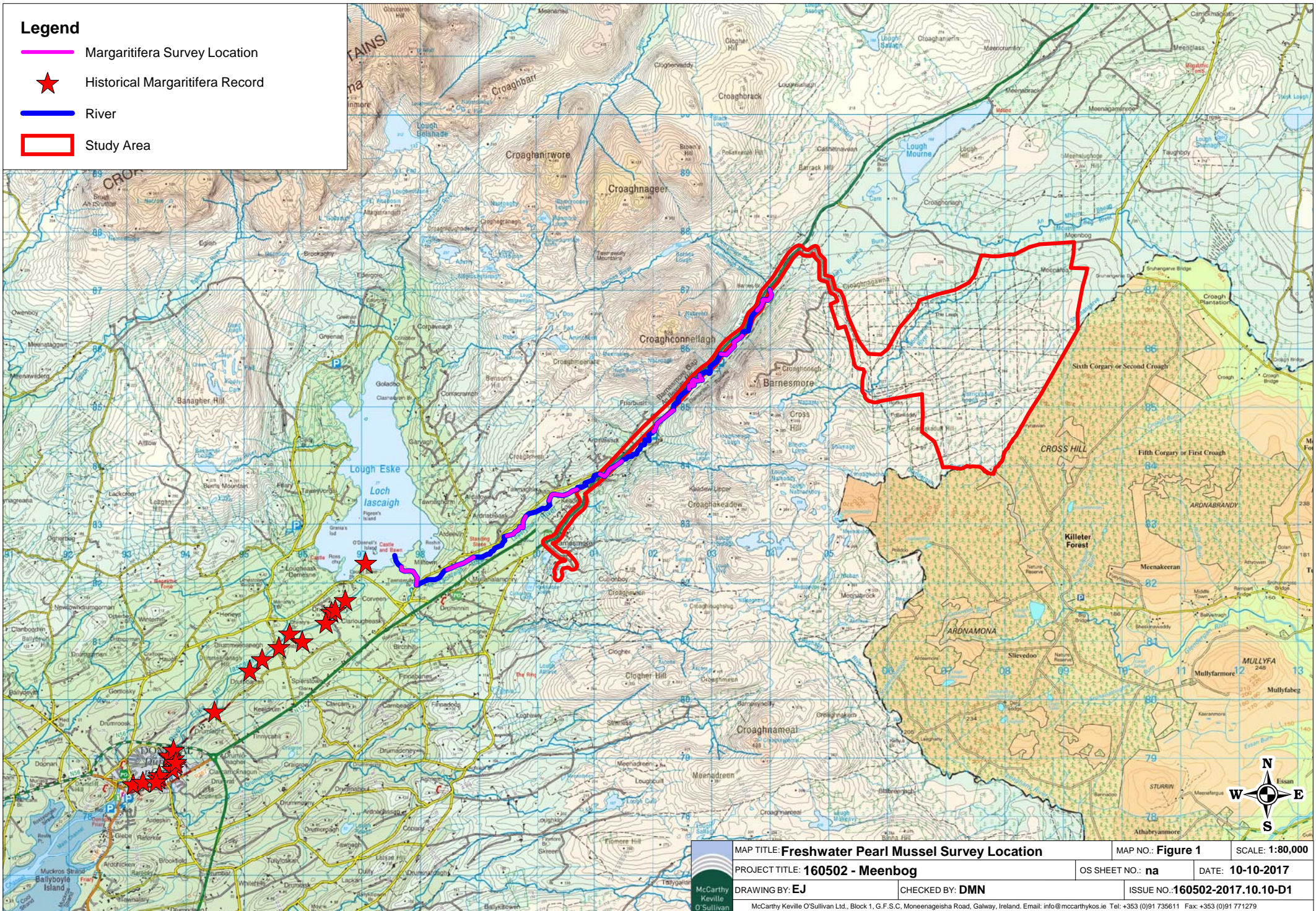
The surveys were undertaken using a bathyscope as snorkeling was deemed unnecessary given the depth of the water (generally less than 50 cm in the Finn tributary streams and between 50 and 75 cm in the Lowerymore River). A survey team of two people systematically searched the river proceeding upstream.

A separate survey sheet was filled out for each 0.5km section surveyed. A Garmin GPSMAP64 GPS was carried to record the position of any mussels or empty shells or other points of interest.

Figure 1 provides a site location map showing the location of the survey transects in the Eske catchments.





Legend

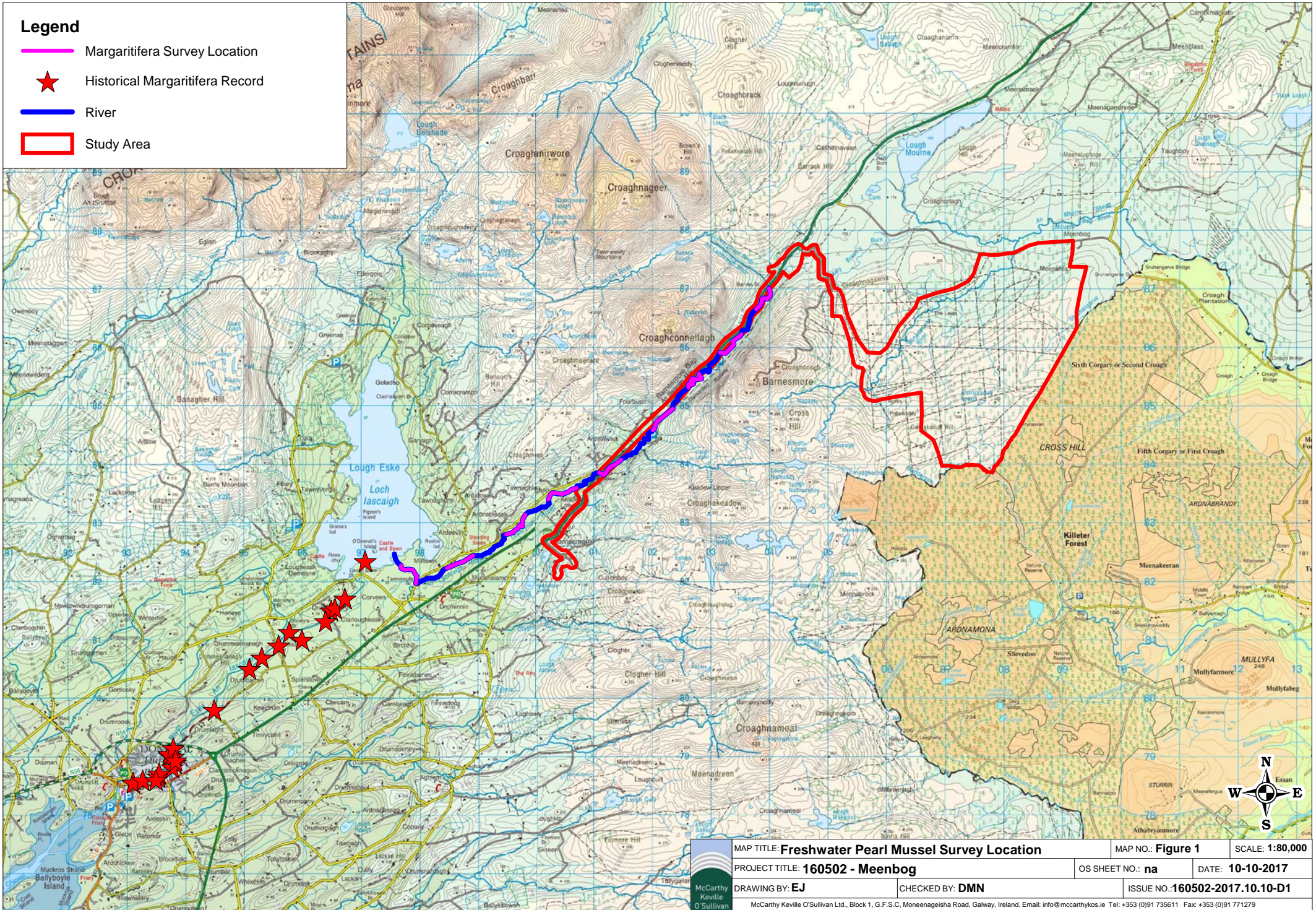
- Margaritifera Survey Location
- ★ Historical Margaritifera Record
- River
- Study Area



MAP TITLE: Freshwater Pearl Mussel Survey Location	MAP NO.: Figure 1	SCALE: 1:80,000
PROJECT TITLE: 160502 - Meenbog	OS SHEET NO.: na	DATE: 10-10-2017
DRAWING BY: EJ	CHECKED BY: DMN	ISSUE NO.: 160502-2017.10.10-D1

Legend

-  Margaritifera Survey Location
-  Historical Margaritifera Record
-  River
-  Study Area



MAP TITLE: **Freshwater Pearl Mussel Survey Location** MAP NO.: **Figure 1** SCALE: **1:80,000**

PROJECT TITLE: **160502 - Meenbog** OS SHEET NO.: **na** DATE: **10-10-2017**

DRAWING BY: **EJ** CHECKED BY: **DMN** ISSUE NO.: **160502-2017.10.10-D1**

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2 RESULTS

The following sections outline the findings of the field surveys. No freshwater pearl mussels or empty shells were recorded during the survey work.

2.1 Lowerymore River

Nine sections (each approximately 500 metres long) were surveyed for pearl mussels in the Lowerymore River in the section that flows westwards through Barnesmore Gap in the direction of Lough Eske (into which the river discharges).

The Lowerymore River in the area in which the search sections were located has a relatively low gradient, although it is just downstream of the point at which the river descends rapidly from height into its valley at Barnesmore Gap. The upper section of the river (Sections 1-4) had a substrate that was predominantly rock and large boulders with cobbles and there was little gravel of a suitable size for pearl mussels between these. The river in the section had a very upland feel and there were banks of deposited cobbles/gravel in some areas. The water depth here was generally 50-75 cm at the time of the surveys (September- autumn), although there many areas where the water was much shallower over rocky riffles. In many places there were riffles over large boulders or solid rock faces, with occasional pools and glides. This river is classified as an eroding/upland river (FW1) and was between 5 and 10 metres wide here. The underwater visibility was good along the whole length of the river, with an estimated visibility of greater than 50 cm in all places. The upper part of the river ran through open countryside with bog/heath habitats, wet grassland and willow scrub flanking the river, so were unshaded. There was evidence of bank erosion at some bends and in some areas large blocks of stone or concrete had been used for anti-erosion armour. In this part of the river aquatic macrophyte cover was mostly absent and only Bulbous Rush and *Fontinalis antipyretica* were observed. Further downstream, the river ran through pastureland and the banks were thickly wooded, although the river was generally wide enough that there was not a closed tree canopy over it. The water depth here was also generally between 50 and 75 cm, but there were not so many shallows as there were upstream. The river substrate here was again solid rock, boulders and cobbles in many places, but there were many more pockets of gravel suitable for pearl mussels. As with the Finn tributary streams, there were drains discharges from some pastures into the river and in some of the middle survey sections there was evidence of pollution in the form of sewage fungus. Instream macrophytes were still sparse, but more frequent than further upstream: *Fontinalis antipyretica*, Broad-leaved Pondweed (*Potamogeton natans*), Alternate Water-milfoil (*Myriophyllum alterniflorum*), Shoreweed (*Littorella uniflora*) and Water-starwort (*Callitriche* sp.) were recorded. Small brown trout appeared plentiful along the whole of the stretch of the river that was investigated and larger specimens (i.e. greater than 10-15 cm) were observed further downstream close to Lough Eske.

No mussels or shells were observed within any of the nine 500-metre stretches of stream bed. In the opinion of the surveyors and notwithstanding some signs of poor water quality, there was an appreciable amount of good potential pearl mussel habitat in the Lowerymore River, especially in the downstream sections (30-34).



Plate 1 Lowerymore, Eske Catchment, Survey Section 1



Plate 2 Lowerymore, Eske Catchment, Survey Section 2

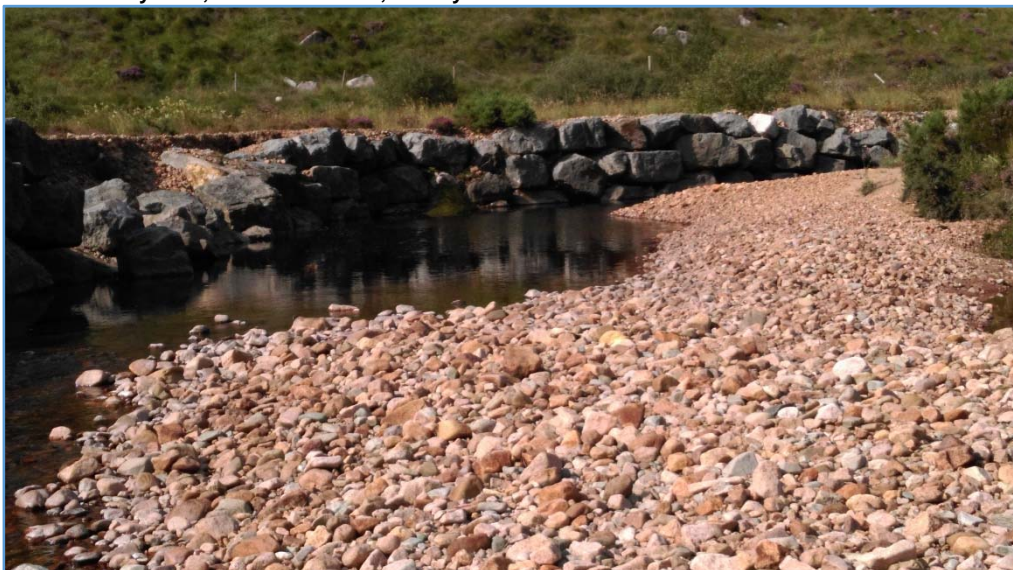


Plate 3 Lowerymore, Eske Catchment, Survey Section 3



Plate 4 Lowerymore, Eske Catchment, Survey Section 4



Plate 5 Lowerymore, Eske Catchment, Survey Section 5

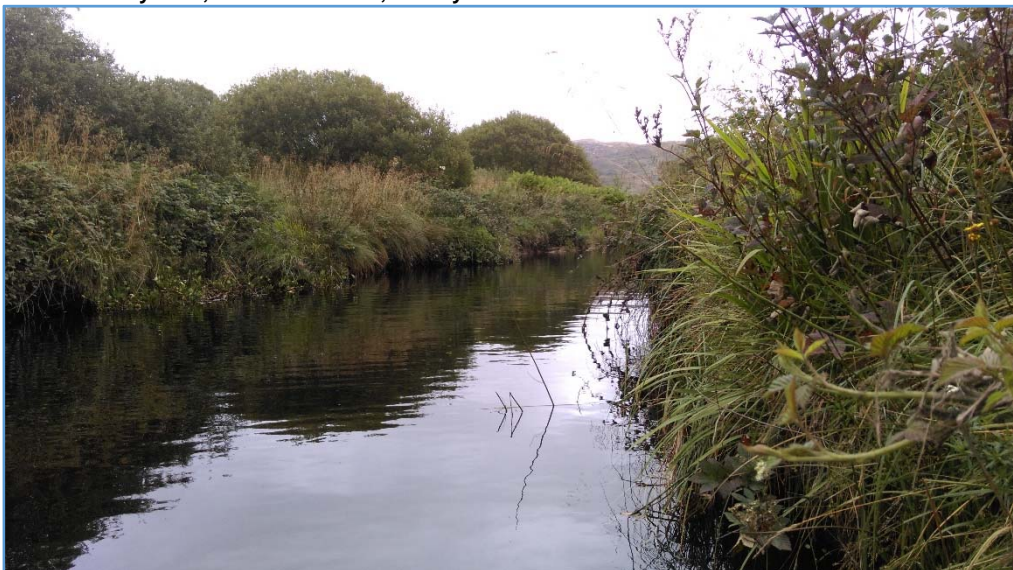


Plate 6 Lowerymore, Eske Catchment, Survey Section 6



Plate 7 Lowerymore, Eske Catchment, Survey Section 7



Plate 8 Lowerymore, Eske Catchment, Survey Section 8



Plate 9 Lowerymore, Eske Catchment, Survey Section 9

3 CONCLUSIONS

Approximately 4.5 kilometres of the Lowerymore River were surveyed. The survey was conducted in accordance with the methodology set out by the NPWS in its Stage 1 and Stage 2 survey guidelines (Anon, 2004). No sign of mussels, living or dead was recorded during this survey over a period of nine days in September 2015. Weather conditions throughout the survey period were acceptable for this type of survey and on some days they can be said to have been ideal.

Conditions in the Lowerymore River (with regard to shading and water visibility) ranged between acceptable to (in the majority of cases) ideal. Freshwater pearl mussels are known to be present downstream of Lough Eske towards Donegal town and the surveyors assessed much of the lower part of the river (i.e. sections 5-9) as having potential as pearl mussel habitat. However, no signs (living or dead) of pearl mussels were recorded by the surveyors. It would be expected that such exhaustive survey work would have either detected live mussels, or at least a few empty shells if there was anything other than either a very small population or no mussels present in the Lowerymore River.

References

Anon. (2004) *Margaritifera margaritifera* Stage 1 and Stage 2 survey guidelines. *Irish Wildlife Manuals*, No. 12. National Parks and Wildlife Service, Department of Environment, Heritage and Local Government, Dublin, Ireland.

E. A. Moorkens (1999) Conservation Management of the Freshwater Pearl Mussel *Margaritifera margaritifera*. Part 1: Biology of the species and its present situation in Ireland. *Irish Wildlife Manuals*, No. 8.

Appendix 1

Copies of Licenses to Survey Freshwater Pearl Mussel



Licence No. C0140/2014

NATIONAL PARKS & WILDLIFE SERVICE

Wildlife Acts 1976 to 2012 – Sections 9, 23 and 34

LICENCE TO CAPTURE PROTECTED WILD ANIMALS FOR EDUCATIONAL, SCIENTIFIC OR OTHER PURPOSES

The Minister for Arts, Heritage and the Gaeltacht in exercise of the powers conferred on her by Sections 9, 23 and 34 of the Wildlife Acts 1976 to 2012 authorises:

**Dr Chris Peppiatt, Pat Roberts, Dervla O'Dowd,
C/O McCarthy Keville O'Sullivan, Block 1, GFSC, Moneenageisha Road, Galway**

To disturb specimens of the species specified in Column 1 of the Schedule hereunder in the area specified in Column 2 by the means specified in column 3 for scientific educational or other purposes during the period **beginning on the 1st day of December 2014 and ending on the 31st of December 2015**, subject to the conditions listed overleaf.

SCHEDULE

1 Species	2 Area	3 Means of capture
Freshwater Pearl Mussel <i>Margaritifera</i> <i>Margaritifera</i>	Finn and Derg catchments, Co. Donegal	No specimens will be captured or killed. Stage 1 & 2 survey by bathyscope or snorkelling for inclusion in EIS for proposed development submitted in November 2014.

Dated this the day 2nd of December 2014

For the Minister for Arts, Heritage and the Gaeltacht



Conditions

1. This licence shall be produced for inspection on a request being made on that behalf by a member of An Garda Síochána or any person appointed by the Minister for Arts, Heritage and the Gaeltacht under Section 72 of the Wildlife Acts 1976 to 2012, to be an authorised person for the purposes of the Acts.
2. On completion of the stage 1 survey, returns must be made to the NPWS using the standard forms in IWM 12 and using the attached **MS Excel template**. Returns should also include any reports on the stage 1 survey, including distribution maps and maps and assessments of habitat condition.
3. Returns (including nil returns) should be made to Dr Áine O Connor, the National Parks and Wildlife Service, 7 Ely Place, Dublin 2.
4. Any query in relation to this licence should be addressed to National Parks and Wildlife Service, 7 Ely Place, Dublin 2. Telephone: (01) 888 3275.
5. The local NPWS District Conservation Officer or Conservation Ranger must be contacted prior to the activity commencing under the terms of this licence.

Note: This licence does not confer right of entry onto any lands.



Licence No. C127/2015

NATIONAL PARKS & WILDLIFE SERVICE

Wildlife Acts 1976 to 2012 – Sections 23 and 34

**LICENCE TO CAPTURE PROTECTED WILD ANIMALS FOR EDUCATIONAL, SCIENTIFIC
OR OTHER PURPOSES**

The Minister for Arts, Heritage and the Gaeltacht in exercise of the powers conferred on her by Sections 9, 23 and 34 of the Wildlife Acts 1976 to 2012 authorises:

Danielle Aherne, Cregaree, Cong, Co. Mayo

To disturb specimens of the species specified in Column 1 of the Schedule hereunder in the area specified in Column 2 by the means specified in column 3 for scientific educational or other purposes during the period beginning **3 July 2015** and ending **31 December 2015**, subject to the conditions listed overleaf.

SCHEDULE

1 Species	2 Area	3 Means of capture
Freshwater Pearl Mussel (<i>Margaritifera margaritifera</i>)	Finn, Derg and Eske catchments, Co. Donegal	Visual Survey Only, Stage 1 and Stage 2. Bathyscope and/or snorkelling

Dated 3 July 2015

For the Minister for Arts, Heritage and the Gaeltacht

Bryanda Maguire



Conditions

1. This licence shall be produced for inspection on a request being made on that behalf by a member of An Garda Síochána or any person appointed by the Minister for Arts, Heritage and the Gaeltacht under Section 72 of the Wildlife Acts 1976 to 2012, to be an authorised person for the purposes of the Acts.
2. The local NPWS District Conservation Officer or Conservation Ranger must be contacted prior to the commencement of each survey under the terms of this licence.
3. On completion of the stage 1/2 survey, returns must be made to the NPWS using the standard forms in IWM 12 and using the attached MS Excel template. Returns should also include any reports on the stage 1/2 survey, including distribution maps and assessments of habitat condition.
4. On expiry of this licence a return stating the work carried out must be provided to Dr Áine O'Connor, National Parks and Wildlife Service, 7 Ely Place, Dublin 2. Any subsequent applications for Section 23 & 34 licence in relation to the Freshwater Pearl Mussel will be judged against the full, proper and timely submission of returns under the licence.
5. This licence covers Stage 1 and Stage 2 Survey of the Freshwater Pearl Mussel, only. It does not cover in-stream, riparian or other works. It does not cover handling mussels, juvenile searches, or removal, movements or translocation or adult or juvenile mussels.
6. The licence holder must use the established methods described in the following manual, or any future modification of that manual: Anon (2004) *Margaritifera margaritifera*. Stage 1 and Stage 2 survey guidelines. Irish Wildlife Manuals, No. 12. National Parks and Wildlife Service, Dublin, Ireland. <http://www.npws.ie/publications/archive/IWM12.pdf>
7. Any query in relation to this licence should be addressed to National Parks and Wildlife Service, 7 Ely Place, Dublin 2. Telephone: (01) 888 3275.

Note: This licence does not confer right of entry onto any lands.

