

Appendix H

A Survey of Selected Rivers for
the Galway City Transport
Project with Potential for
Margaritifera (Moorkens, 2014a)

H1

A SURVEY OF SELECTED RIVERS FOR THE GALWAY CITY TRANSPORT PROJECT WITH POTENTIAL FOR *MARGARITIFERA*

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1.0 Introduction

A survey for the freshwater pearl mussel *Margaritifera margaritifera* was undertaken in County Galway within and downstream of the scheme study area for the N6 Galway City Transport Project. The survey concentrated on stream areas with potential to support *Margaritifera Margaritifera*, species that is protected by Annex II of the Habitat's Directive, and under the Irish Wildlife Act.

The survey was carried from out from 11th August to 24th August 2014.

2.0 Scope of the study

The scope of the study was to carry out a comprehensive freshwater pearl mussel survey within and downstream of the scheme study area for the N6 Galway City Transport Project, to inform the constraints survey within the following remit:

- To assist in the provision of sufficient data from a molluscan perspective to identify the least damaging option, not only in terms of impacts on Special Areas

of Conservation (SACs)/ Special Protection Areas (SPAs) but also on non-designated habitats for Annex II species;

- To determine if there are any currently undesignated populations of Annex II species which would qualify for SAC designation; and
- To determine if there are any undesignated areas of habitats of Annex II species which could qualify as 'damage' under the Environmental Liability Directive if impacted by the road.

3.0 Methodology

3.1 Habitat identification

The level of survey undertaken was determined by the potential for the presence of the freshwater pearl mussel *Margaritifera margaritifera* from maps (Discovery Series, Bedrock Geological Map of Ireland) according to the current *Margaritifera* survey manual (Anon., 2004). Potential was considered in areas of acid rock and with sufficient gradient to have the potential for good flow, including riffle habitat.

The River Corrib and east of the River Corrib were discounted through not having the appropriate geology to support *Margaritifera*. Streams west of the Corrib were included in the study.

In total, 9 waterbodies were surveyed as follows:

- The Lough inch Stream (Tributary of Knock River)
- The Bearna Stream
- An Sruthán Dubh
- The Trusca Stream
- Five other unnamed streams

3.2 Methodology

In each stream a rapid assessment was undertaken of river stretches identified from a desk assessment following the current standard methods for *Margaritifera* survey (Anon., 2004). As the streams were small, survey was carried out by wading in an upstream direction using a bathyscope according to Stage 1 survey techniques (Anon., 2004). The survey was carried out by Evelyn Moorkens and Ian Killeen under licenses from the Department of Arts, Heritage and the Gaeltacht (National Parks and Wildlife Service).

4.0 Results

The streams surveyed are shown in Figures 1, and described in Table 1. No pearl mussel individuals were found in the survey.

5.0 Discussion

There were no populations or individuals of the freshwater pearl mussel *Margaritifera* found in this survey.

The small streams were found to be poor habitat for the species, and although the Bearna Stream had good potential, no mussels were found. While the Lough Inch River had poor habitat and was impacted by various pressures, the stream is upstream and in direct connectivity with the Knock River, and the confluence of the Lough Inch River and the Knock River is upstream of living mussels. The Knock Catchment is shown in the *Margaritifera* Sensitive Areas map on the NPWS website.

The scope of the study was to carry out sufficient *Margaritifera* survey within and downstream of the scheme study area for the N6 Galway City Transport Project, to inform the constraints study within the remit defined in Section 2. From the remit, the following conclusions can be drawn:

- There is sufficient data to state that there will be no direct impacts on *Margaritifera* within the scheme study area. There is sufficient data to state that there is a risk of indirect impact on *Margaritifera* in the non-designated Knock River habitat downstream of the Lough Inch River where this Annex II species lives;
- It is confirmed that there were no currently undesignated populations of *Margaritifera* found which would qualify for SAC designation; and
- It is confirmed that indirect and immediate damage to the Knock River, or damage to the Lough Inch River such that it could in the future work its way down to the Knock River could qualify as 'damage' under the Environmental Liability Directive if caused through impacts by the construction or operation of the road.

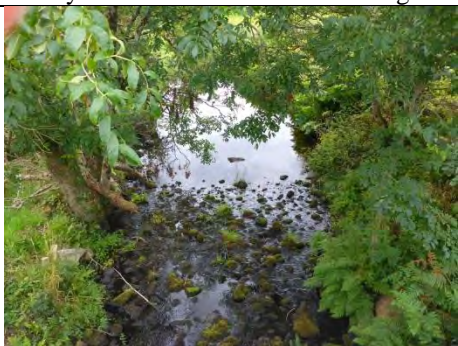




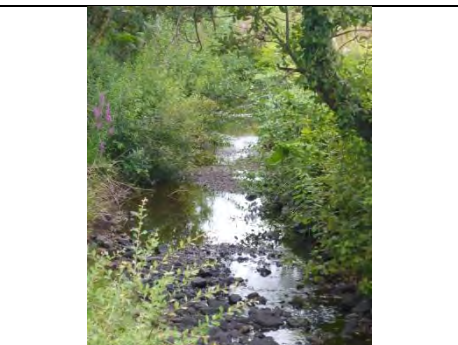



6.0 References




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.






Figure 1: Survey site locations

Table 1 Details of survey sites and results			
Site 1		Flat gradient, ponded river coming from Lough Inch. Extensive Typha and reed beds within the channel. Very muddy, organic substrate. Several muddy drains entering the main channel at intervals. No potential pearl mussel habitat and likely damage to habitats further downstream through sedimentation	
Lough Inch River			
M21386 24558 at bridge			
Surveyed 200m u/s and d/s bridge			
			
Upstream of bridge		Upstream of bridge	Downstream of bridge
			
Muddy drain entering river		Muddy drain entering river	
Site 2		Very shallow water with black cobble and gravel substrate, extensive covering of filamentous algae in places. Virtually no flow - water still beneath bridge.	
Lough Inch River			
M18890 23883 at bridge			
Surveyed 50m u/s and d/s bridge			
			
Upstream of bridge		Downstream of bridge	Downstream of bridge - algae


Site 3		Bridge recently remortared. Very shallow and almost dry d/s of bridge. Upstream the habitat is in very poor condition with filamentous algae throughout. Highly disturbed environment with wind turbines, high density housing, peat cutting, high nutrients, boulders removed from riverbed.	
Lough Inch River			
M18924 23962 at bridge			
Surveyed 100m u/s and 25m d/s bridge			
			
Downstream of bridge		Upstream of bridge	Upstream of bridge
Site 4		River very dry at bridge with very little flow. Filamentous algae covering to substrate. Habitat tunnelled upstream.	
Lough Inch River			
M19199 24101 at bridge			
Surveyed 50m u/s and 50m d/s bridge			
			
Downstream of bridge		Downstream of bridge	Upstream of bridge
Site 5		Cattle access area with very muddy poached banks and muddy water. Small gorge upstream created by granite outcrops. Solid overhanging woodland both sides.	
Lough Inch River			
M18857 23559			
Surveyed local area			
			
Cattle access to stream		Heavily poached banks	Turbid water resulting from cattle access



Site 6	Rocky boulder crossing, dry and widened (may be old ford). Dry mossy rocks and <i>Sparganium</i> stands downstream	
Lough Inch River		
M18874 23799		
Surveyed local area		
		
View downstream	View downstream	View upstream

Site 7	Generally shaded habitats with scrub. Very little flow or depth of water. Mixed substrates, some places with mix of gravels and cobble. Overall, very little potential for mussels.
Lough Inch River	
M19295 24099	
Surveyed for c. 300m u/s	


Site B	Temporary stream, runs dry, no <i>Margaritifera</i> habitat	
Small stream		
M20060 22752		
		
View downstream	View downstream	View upstream


Site C	Dry in places, high gradient, no <i>Margaritifera</i> habitat
Small stream	
M21080 22507	

Site D	Stream located on map at M21555 22629 must be culverted off but so temporary it is not evident entering the sea at any stage. However, there is a swampy habitat with <i>Berula</i> and some standing water on the sea side of the road. Upstream it is all absorbed in gardens.	
Small stream		
M21555 22629		
		
View downstream of main road		



Site E	Old tree line marks where the stream was. It is now dry and absorbed into the surrounding land through drainage. No <i>Margaritifera</i> habitat	
Small stream		
M22088 23187		
		
View upstream	View downstream	



Site F	Remnants of old stream, now dry. No potential habitat. Flows down to be culverted under the Twelve Hotel in Barna and then joins the Trusca Stream	
Small stream		
M22716 23284		

Site G	At the quay in Barna, tidal influence, no habitat	
Trusca Sstream		
M23265 22735		
		
Beneath bridge		



Site H	Too small and shallow for <i>Margaritifera</i> , dense filamentous algae	
Trusca Stream		
M23243 22814		
		
View downstream		

Site I	Slow peaty drain flowing through reedbed. No <i>Margaritifera</i> habitat	
Trusca Sstream		
M23128 24271		
		



Site J	Very low flowing water in flat area in reed bed. No <i>Margaritifera</i> habitat	
An Sruthan Dubh		
M22459 27033		
		
View downstream	View upstream	




Site K	Good gravel substrate but no significant flow and very tunnelled. No <i>Margaritifera</i> habitat	
An Sruthan Dubh		
M23477 26284		
		



Site L	Stagnant water u/s of bridge, tunnelled downstream. No <i>Margaritifera</i> habitat	
An Sruthan Dubh		
M23626 26139		

Site M	Larger water body but slow flowing and highly silted, narrow and tunnelled upstream. No <i>Margaritifera</i> habitat	
Barna stream upper branch		
M24369 26282		
		

Site N	Approximately 2m wide but stagnant and dry in places, very tunnelled downstream. No <i>Margaritifera</i> habitat	
Other Barna stream branch		
M26149 27013		

Site O	Tunnelled, overgrown, very little flow, <i>Callitriche</i> , sandbags, culverted pipe. Narrowed downstream, water with grey tinge	
Barna Stream main channel		
M25346 26206		
		

Site P	Good flow with mossy rocks in stream, good boulder and gravel mixed substrate. Tree-lined banks, but lots of new housing estates nearby. Rather shallow, mostly less than 20cm deep but with flow where gradient is good. Some potential but no mussels found.		
Barna Stream main channel			
M24644 23946			
			

Site Q	Near roadbridge. Still good substrate and some flow in places, tree lined but very shallow	
Barna Stream main channel		
M24750 23794		
		
Site R	Narrow valley running through rough and improved pasture, scrub along banks, range of substrates but very little flow or depth of water. Very little potential.	
Barna Stream main channel		
M24341 24621		