

**A survey of a section of the Finnow River (Munster Blackwater system)  
and a section of its tributary, the Tanyard Stream  
for the freshwater pearl mussel  
*Margaritifera margaritifera* (L.).**

Carried out on behalf of:  
**Southern Scientific Services Ltd.  
Dunrine, Killarney,  
Co. Kerry.**

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# A survey of a section of the Finnow River (Munster Blackwater system) and a section of its tributary, the Tanyard Stream for the freshwater pearl mussel *Margaritifera margaritifera* (L.).

## 1. Introduction.

*Margaritifera margaritifera*, commonly called the pearl mussel, is one of three species of large Unionacean bivalves found in Irish freshwaters. The species may occur in fast-flowing, oligotrophic, calcium deficient streams and rivers, where it can grow to lengths of 159mm (Jackson 1925) and live to ages well in excess of 100 years (Ross 1984). *Margaritifera* has been recorded in most parts of Ireland with the exception of the central limestone plain but several studies have confirmed that a significant decline has occurred in some Irish populations, notably in northern and eastern areas (Ross 1988, Moorkens and Costello 1994, Beasley and Roberts 1996). Such declining populations are usually characterised by a predominance of older mussels and an absence of juvenile recruitment (Bauer 1983).

Although very widely distributed across northern Europe, Eurasia and North America, *Margaritifera* is declining throughout its range and is extinct or seriously threatened in many parts of Europe (Wells et al. 1983). The main cause of this decline is deteriorating river water quality although a variety of other factors are also implicated (Moorkens 1999). The species is on the IUCN Invertebrate Red Data List and is protected under the Convention on the Conservation of European Wildlife and Natural Habitats (Bern Convention). *Margaritifera* is also listed in Annex II and Annex V of the Habitats Directive (92/43/EEC) and is protected by law in Ireland under the 1976 Wildlife Act (Statutory Instrument No. 112, 1990).



Photograph 1. A large adult specimen of the freshwater pearl mussel, *Margaritifera margaritifera* (L.)

The conservation status of *Margaritifera margaritifera* in Ireland has been determined as “unfavourable – bad” in the recently published, “Conservation Status in Ireland of

Habitats and Species listed in the European Council Directive on the Conservation of Habitats, Flora and Fauna 92/43/EEC” (NPWS 2008).

Pearl mussels have been known to occur in the Munster Blackwater River for many years with records extending from 1907 (Jackson 1925) up to the present time (Anon 2009). *Margaritifera* has not been recorded to date in the Finnow River which flows through Millstreet, and joins the main channel of the Blackwater River just downstream of Wallis’s Bridge.

This report describes a survey of that section of the Finnow River from its confluence with the main channel of the Blackwater River, upstream for approximately 2km to Finnow Bridge, and a survey of that section of the Tanyard Stream extending from Millstreet Waste Water Treatment Plant down to its confluence with the Finnow River. These surveys were required as part of an ecological assessment associated with the proposed upgrading of the existing WWTP.

## **2. Methods.**

The entire section of the Tanyard Stream from Millstreet WWTP downstream to its confluence with the Finnow River at W 27982 92194, was searched for *Margaritifera* on May 24<sup>th</sup>, 2009. The main channel of the Finnow River was searched from its confluence with the Blackwater River at W 28385 92519, upstream to Finnow Bridge at W26695 92052 on February 7<sup>th</sup>, May 23<sup>rd</sup>, and May 28<sup>th</sup>, 2009.

The river section was searched using a bathyscope to scan the river substrate while wading. A diving torch was used to provide additional light in heavily shaded or deeper areas. A hand held Garmin GPSmap 60C global positioning device was used to record locations and the limits of the area examined.

Data including water depth, channel width, current speed, substrate composition, and instream vegetation were recorded at intervals along the sections of the Finnow River and Tanyard Stream searched for *Margaritifera margaritifera*. Site descriptive photographs were also taken.

### 3. Results of Tanyard Stream *Margaritifera* survey.

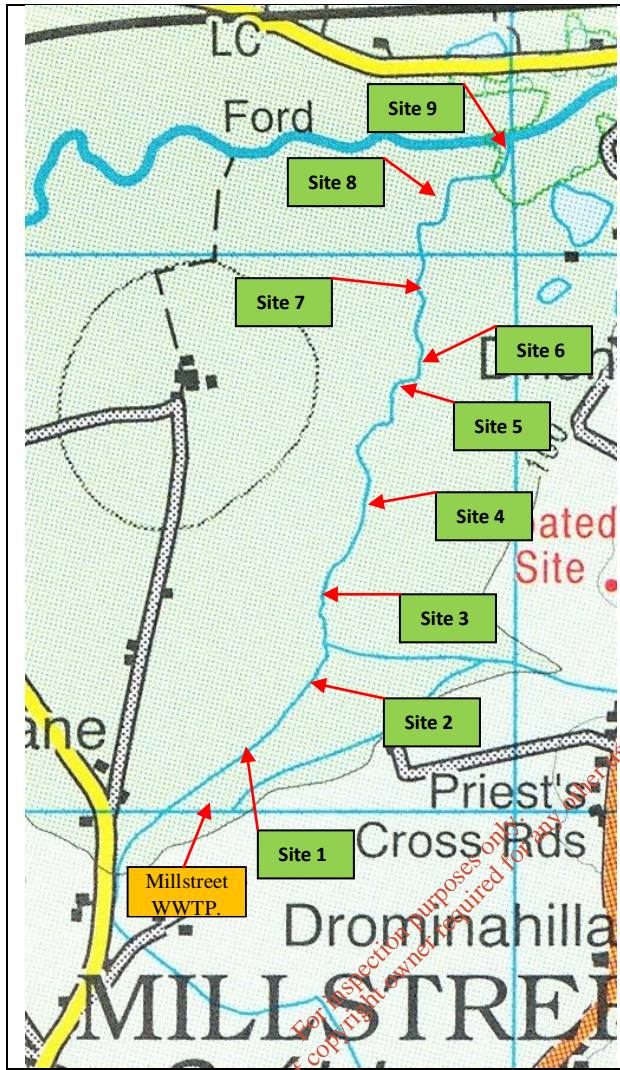
The Tanyard stream was searched for *Margaritifera* from the Bridge at the entrance to the Millstreet Waste Water Treatment Plant down to its confluence with the Finnow River at W 27991 92183. The total length of this section of the Tanyard Stream was 1.603m.

No evidence of *Margaritifera* was observed at any location in the Tanyard Stream. Although a few sections contained very limited areas of habitat that appeared superficially suitable for *Margaritifera*, most of the stream was too shallow to support a *Margaritifera* population during the drier summer months when water levels are lower and water temperatures are higher. Descriptive photographs for all nine sites where habitat data were recorded are presented in Appendix 1.

Although no mussels were observed in the Tanyard Stream, a live lamprey was observed at W 27773 91778, and a dead lamprey was recorded at W 27824 91979.

|            | Number of mussels observed | O.S. Grid Reference | Stream width (m) | River Depth (cm) | Water condition   | Shade (% overhead) | Vegetation cover  |            |             | Substrate composition |         |        |        |        |      |      |
|------------|----------------------------|---------------------|------------------|------------------|-------------------|--------------------|-------------------|------------|-------------|-----------------------|---------|--------|--------|--------|------|------|
|            |                            |                     |                  |                  |                   |                    | Filamentous algae | Bryophytes | Macrophytes | Bedrock               | Boulder | Cobble | Pebble | Gravel | Sand | Silt |
| Location 1 | 0                          | W 27531 91123       | 3.5m             | 10cm             | Riffle            | 0%                 | 0%                | 10%        | 20%         | 0%                    | 0%      | 5%     | 20%    | 75%    | 0%   | 15%  |
| Location 2 | 0                          | W 27644 91241       | 3m               | 5-10m            | Glide             | 100%               | 5%                | 40%        | 10%         | 0%                    | 0%      | 10%    | 0%     | 85%    | 5%   | 0%   |
| Location 3 | 0                          | W 27684 91395       | 2.5m             | 5-10cm           | Riffle            | 80%                | 0%                | 0%         | 0%          | 0%                    | 0%      | 30%    | 70%    | 0%     | 0%   |      |
| Location 4 | 0                          | W 27746 91557       | 2.5m             | 15cm             | Riffle            | 50%                | 0%                | 0%         | 0%          | 0%                    | 0%      | 30%    | 70%    | 0%     | 0%   |      |
| Location 5 | 0                          | W 27773 91778       | 4.5m             | 5-10cm           | Riffle            | 80%                | 5%                | 20%        | 5%          | 0%                    | 0%      | 5%     | 35%    | 60%    | 0%   | 0%   |
| Location 6 | 0                          | W 27807 91810       | 5m               | 60cm             | Glide             | 60%                | 0%                | 0%         | 0%          | 0%                    | 0%      | 10%    | 30%    | 50%    | 10%  | 0%   |
| Location 7 | 0                          | W 27824 91926       | 3.5m             | 5-15cm           | Glide into Riffle | 75%                | 0%                | 0%         | 0%          | 0%                    | 0%      | 5%     | 30%    | 60%    | 5%   | 15%  |
| Location 8 | 0                          | W 27878 92089       | 3.5m             | 40cm             | Riffle            | 10%                | 0%                | 5%         | 5%          | 0%                    | 0%      | 0%     | 20%    | 80%    | 0%   | 15%  |
| Location 9 | 0                          | W 27982 92194       | 5m               | 20cm             | Glide             | 50%                | 0%                | 0%         | 0%          | 0%                    | 0%      | 15%    | 40%    | 30%    | 0%   | 15%  |

**Table 1.** Habitat data recorded at nine sites along the section of Tanyard Stream searched for *Margaritifera margaritifera* between Millstreet WWTP and its confluence with the Finnow river. Locations of these recording sites are indicated in Figure 1.



**Figure 1.** Map of the Tanyard Stream, indicating the locations of the nine sites where habitat data were recorded.

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#### 4. Results of Finnow River *Margaritifera* survey.

The Finnow River was searched for *Margaritifera* from its confluence with the Blackwater River, upstream to Finnow Bridge. The length of this section of the Finnow River was 2.316 km.

Throughout the entire stretch searched, only two individual *Margaritifera* were observed. These were located at W 27757 92195 and W 27700 92202. No *Margaritifera* shells were observed at any point along the 2.316km searched.

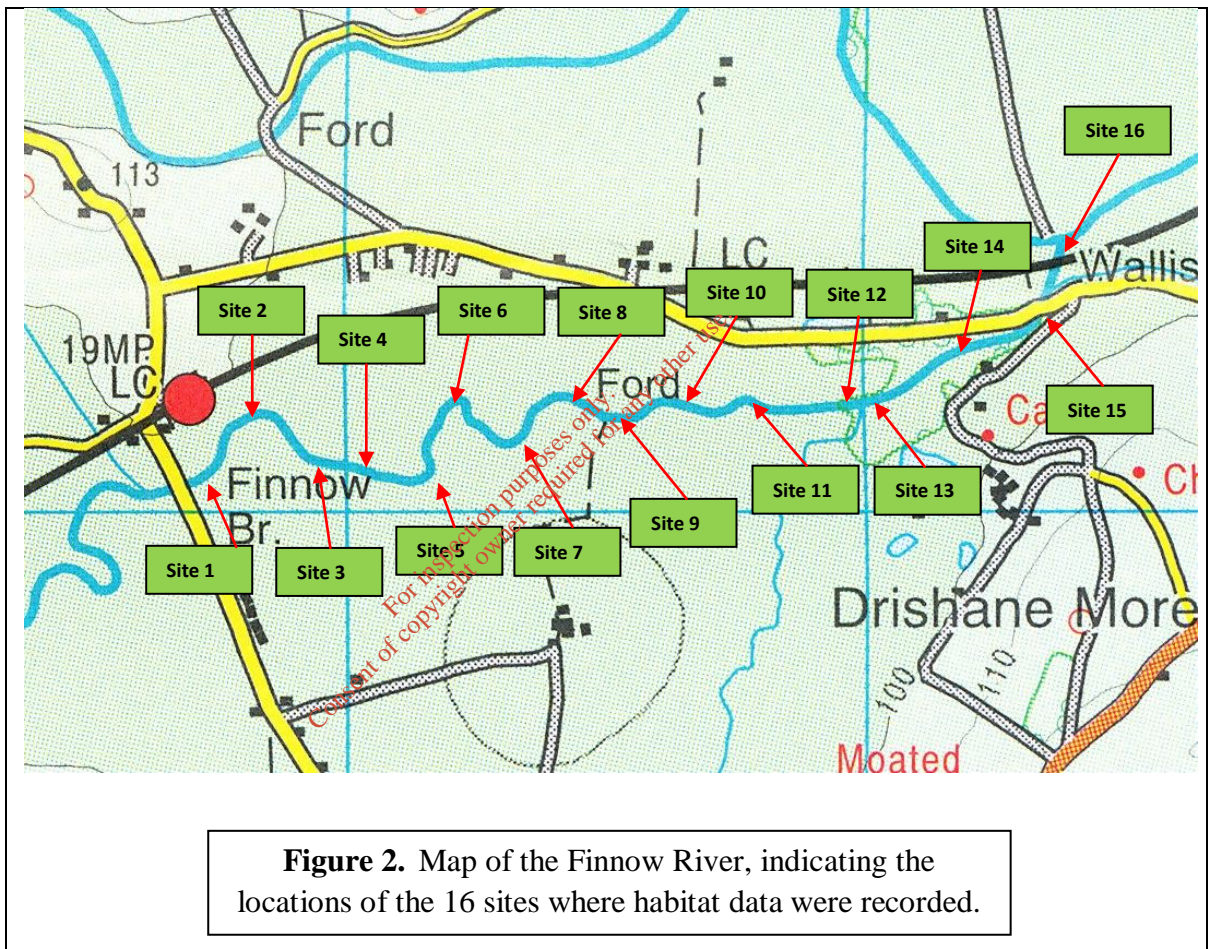
Extensive areas of habitat that appeared superficially suitable for *Margaritifera* were observed, however, growths of macrophytes, particularly water crowfoot and occasionally Umbelliferae were excessive, indicating a degree of eutrophication. Siltation was observed at seven of the 16 sites where habitat data were recorded (See Table 2 below).

|                           | Number of mussels observed | O.S. Grid Reference | Stream width (m) | River depth (cm) | Water condition | Shade (% overhead) | Vegetation cover  |            |             | Substrate composition |         |        |        |        |      |               |
|---------------------------|----------------------------|---------------------|------------------|------------------|-----------------|--------------------|-------------------|------------|-------------|-----------------------|---------|--------|--------|--------|------|---------------|
|                           |                            |                     |                  |                  |                 |                    | Filamentous algae | Bryophytes | Macrophytes | Bedrock               | Boulder | Cobble | Pebble | Gravel | Sand | Silt          |
| Location 1<br>Finnow Br.  | 0                          | W 26695 92052       | 10.0m            | 8cm              | Glide           | 20%                | 0%                | 15%        | 50%         | 0%                    | 5%      | 20%    | 20%    | 30%    | 10%  | 15%           |
| Location 2                | 0                          | W 26792 92168       | 10.0m            | 1.0m             | Glide           | 10%                | 0%                | 5%         | 50%         | 0%                    | 5%      | 20%    | 30%    | 45%    | 0%   | In slow areas |
| Location 3                | 0                          | W 26902 92125       | 10.0m            | 35cm             | Fast Riffle     | 5%                 | 0%                | 5%         | 80%         | 0%                    | 0%      | 10%    | 60%    | 30%    | 0%   | 0%            |
| Location 4                | 0                          | W 27016 92077       | 10.0m            | 1.2m             | Slow Glide      | 5%                 | 0%                | 0%         | 15%         | 0%                    | 0%      | 5%     | 25%    | 30%    | 40%  | 20%           |
| Location 5                | 0                          | W 27159 92057       | 10.0m            | 1.5m             | Slow Glide      | 0%                 | 0%                | 0%         | 10%         | 0%                    | 0%      | 10%    | 30%    | 40%    | 20%  | Heavy         |
| Location 6                | 0                          | W 27200 92204       | 10.0m            | 12cm             | Glide           | 5%                 | 0%                | 15%        | 5%          | 0%                    | 30%     | 30%    | 10%    | 15%    | 15%  | In slow areas |
| Location 7                | 0                          | W 27294 92130       | 10.0m            | 40cm             | Fast Riffle     | 5%                 | 0%                | 40%        | 80%         | 0%                    | 5%      | 60%    | 20%    | 15%    | 0%   | 0%            |
| Location 8                | 0                          | W 27398 92214       | 10.0m            | 50cm             | Fast Glide      | 10%                | 5%                | 5%         | 60%         | 0%                    | 0%      | 20%    | 40%    | 40%    | 0%   | Heavy         |
| Location 9                | 0                          | W 27500 92189       | 10.0m            | 40cm             | Fast Glide      | 0%                 | 0%                | 0%         | 45%         | 0%                    | 0%      | 10%    | 40%    | 50%    | 0%   | 0%            |
| Location 10               | 0                          | W 27619 92214       | 10.0m            | 60cm             | Riffle          | 75%                | 0%                | 10%        | 20%         | 0%                    | 0%      | 30%    | 30%    | 20%    | 20%  | 0%            |
| Location 11               | 2                          | W 27757 92195       | 12.0m            | 60cm             | Fast Riffle     | 5%                 | 0%                | 30%        | 30%         | 0%                    | 5%      | 40%    | 20%    | 30%    | 5%   | 0%            |
| Location 12               | 0                          | W 27610 92158       | 8.0m             | 1.0m             | Riffle          | 30%                | 0%                | 10%        | 5%          | 30%                   | 40%     | 20%    | 10%    | 0%     | 0%   | 0%            |
| Location 13               | 0                          | W 27991 92183       | 10.0m            | 40cm             | Riffle          | 80%                | 0%                | 5%         | 5%          | 0%                    | 5%      | 40%    | 20%    | 35%    | 0%   | Heavy         |
| Location 14               | 0                          | W 28169 92301       | 12m              | 90cm             | Riffle          | 60%                | 0%                | 5%         | 5%          | 0%                    | 10%     | 50%    | 30%    | 10%    | 0%   | Heavy         |
| Location 15               | 0                          | W 28349 92382       |                  | 30cm             | Riffle          | 0%                 | 0%                | 5%         | 0%          | 0%                    | 5%      | 60%    | 20%    | 15%    | 0%   | In slow areas |
| Location 16<br>Confluence | 0                          | W 28385 92519       |                  | 40cm             | Riffle          | 10%                | 0%                | 0%         | 0%          | %                     | 20%     | 50%    | 10%    | 20%    | 0%   | 0%            |

**Table 2.** Habitat data recorded at 16 sites along the section of Finnow River searched for *Margaritifera margaritifera* between Finnow Bridge and the confluence with the Blackwater River. Locations of these recording sites are indicated in Figure 1.

Environmental Protection Agency monitoring for the Finnow River at its confluence with the Blackwater River has recorded a Q Value of 3 (2003) which is indicative of polluted water. This poor water quality was probably related to an effluent with a strong odour of sewage, which was observed entering the Finnow river circa 200m upstream of Wallis's Bridge, on the southern bank. Such an effluent would result in serious negative impacts downstream of its discharge point.

Although *Margaritifera* has been recorded in the Finnow River during the current investigation, the population observed in the section investigated is extremely sparse.



**Figure 2.** Map of the Finnow River, indicating the locations of the 16 sites where habitat data were recorded.



**5. Conclusions relating to the Tanyard Stream *Margaritifera* Survey.**

A few very limited areas of habitat that appeared suitable for *Margaritifera* are present in the Tanyard Stream.

Conditions in the Tanyard Stream during the drier and warmer summer months are probably unsuitable for *Margaritifera*.

Results of this investigation indicate that *Margaritifera margaritifera* is not present in the Tanyard Stream.

Lamprey are present in the Tanyard Stream.

**6. Conclusions relating to the Finnow River *Margaritifera* Survey.**

Extensive areas of habitat that appeared suitable for *Margaritifera* are present in the 2.316km section of the River Finnow investigated.

Siltation, and excessive growths of macrophytes indicating eutrophication, were observed in the Finnow River.

EPA data indicated water quality in the lower Finnow River was unsatisfactory.

Although *Margaritifera* was recorded in that section of the Finnow River investigated, the population was very sparse, with only two individual mussels being observed in the entire 2.316km section searched.

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**Appendix 1 – Tanyard Stream Descriptive Photographs.**



Site 1,  
Grid Reference W 27531 91123.  
No evidence of mussels.



Site 2.  
Grid Reference W 27644 91241.  
No evidence of mussels.



Site 3.  
Grid Reference W 27684 91395.  
No evidence of mussels.



Site 4.  
Grid Reference W 27746 91557.  
No evidence of mussels.



Site 5.  
Grid Reference W 27773 91778.  
No evidence of mussels.  
Lamprey present at this site (circa 15cm in length).



Site 6.  
Grid Reference W 27807 91810.  
No evidence of mussels.

|  |   |
|--|---|
|                               |   |
| <p>Site 7.<br/>Grid Reference W27824 91926.<br/>No evidence of mussels.</p>                                    | <p>Location 8.<br/>Grid Reference W 27878 92089.<br/>No evidence of mussels.</p>    |
|                              |  |
| <p>Site 9.<br/>Grid Reference W 27982 92194.<br/>Confluence with Finnow River.<br/>No evidence of mussels.</p> | <p>Photograph of dead lamprey located at W 27824 91879.</p>                         |

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## Appendix 1 – Finnow River Descriptive Photographs.

|   |  |
|---|--|
|    |    |
| <p>Site 1.<br/>Grid Reference W 26695 92052.<br/>No evidence of mussels.</p>        | <p>Site 2.<br/>Grid Reference W 26792 92168.<br/>No evidence of mussels.</p>         |
|   |   |
| <p>Site 3.<br/>Grid Reference W 26902 92125.<br/>No evidence of mussels.</p>        | <p>Site 4.<br/>Grid Reference W 27016 92077.<br/>No evidence of mussels.</p>         |
|  |  |
| <p>Site 5.<br/>Grid Reference W 27159 92057.<br/>No evidence of mussels.</p>        | <p>Site 6.<br/>Grid Reference W 27200 92204.<br/>No evidence of mussels.</p>         |



Site 7.  
Grid Reference W 27294 92130.  
No evidence of mussels.



Site 8.  
Grid Reference W 27398 92214.  
No evidence of mussels.



Site 9.  
Grid Reference W 27500 92189.  
No evidence of mussels.









Site 10.  
Grid Reference W 27619 92214.  
No evidence of mussels.



Site 11.  
Grid Reference W 27757 92195.  
Two mussels recorded at this site.



Site 11.  
Grid Reference W 27757 92195.  
View of a mussel in the substrate at this location.

|   |   |
|---|---|
|    |   |
| <p>Site 12.<br/>Grid Reference W 27610 92158.<br/>No evidence of mussels.</p>   | <p>Site 13.<br/>Grid Reference W 27991 92183.<br/>No evidence of mussels.</p>   |
|   |    |
| <p>Site 14.<br/>Grid Reference W 28169 92301.<br/>No evidence of mussels.</p>   | <p>Site 15. Wallis's Bridge.<br/>Grid Reference W 28349 92382.<br/>No evidence of mussels.</p>  |
|    |   |
| <p>Site 16. Immediately upstream of confluence with Blackwater River.<br/>Grid Reference W 28385 92519.<br/>No evidence of mussels immediately upstream of confluence with Blackwater River (Munster Blackwater).</p> | <p>Blackwater River.<br/>Mussels were observed in the main channel of the Blackwater River (Munster Blackwater) immediately adjacent to its confluence with the Finnow River.</p> |